

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

RULE 8-40 – ORGANIC COMPOUNDS – AERATION OF CONTAMINATED SOIL AND REMOVAL OF UNDERGROUND STORAGE TANKS

(Amended June 15, 2005)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 40
AERATION OF CONTAMINATED SOIL AND
REMOVAL OF UNDERGROUND STORAGE TANKS**

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REGULATION 8
ORGANIC COMPOUNDS
RULE 40
AERATION OF CONTAMINATED SOIL AND
REMOVAL OF UNDERGROUND STORAGE TANKS

(Adopted July 16, 1986)

8-40-100 GENERAL

8-40-101 Description: The purpose of this Rule is to limit the emission of organic compounds from soil that has been contaminated by organic chemical or petroleum chemical leaks or spills, and to describe an acceptable procedure for controlling emissions from underground storage tanks during removal or replacement.

(Amended 2/15/89; 12/15/99)

8-40-110 Exemption, Storage Piles: Calculations of aeration volume under Section 8-40-204 shall not include storage piles that are covered per Section 8-40-305, nor shall they include active storage piles.

(Amended December 15, 1999)

8-40-111 Exemption, Excavated Hole: The exposed surfaces of an excavated hole shall not be included in calculations of aerated volume under Section 8-40-204.

8-40-112 Exemption, Sampling: Contaminated soil exposed for the sole purpose of sampling shall not be considered to be aerated. Inactive storage piles may remain uncovered for no longer than one hour for soil sampling purposes.

(Amended December 12, 1999)

8-40-113 Exemption, Non-volatile Hydrocarbons: The requirements of all sections of this Rule shall not apply if the soil is contaminated solely by a known organic chemical or petroleum liquid and that chemical or liquid has an initial boiling point of 302°F or higher provided that the soil is not heated.

(Amended February 15, 1989)

8-40-114 Exemption, Contaminated Soil Excavation During Organic Liquid Service Pipeline Leak Repairs: The requirements of Section 8-40-402 shall not apply if contaminated soil is being excavated in order to repair leaking organic liquid service pipelines and if no more than 5 cubic yards of contaminated soil are generated, and provided the requirements in Section 8-40-404 are satisfied.

(Adopted 2/15/89; Amended 12/15/99)

8-40-115 Exemption, Contaminated Soil Excavation Unrelated to Underground Storage Tank Activities: The requirements of Section 8-40-402 shall not apply where contaminated soil is discovered during excavations unrelated to underground storage tank activities, and provided the requirements in Section 8-40-405 are satisfied.

(Adopted 2/15/89; Amended 12/15/99)

8-40-116 Exemption, Small Volume: The provisions of this rule shall not apply to excavation or aeration projects where:

116.1 The total volume of contaminated soil is no more than 1 cubic yard, or

116.2 The total volume of contaminated soil is no more than 8 cubic yards and organic content does not exceed 500 ppmw as determined by the procedures in Sections 8-40-601 and 8-40-602. The exemption of this subsection may be applied to any single excavation site or facility no more than once in any 3 month period.

(Adopted December 15, 1999)

8-40-117 Exemption, Accidental Spills: The provisions of this rule shall not apply to soil contaminated by accidental spillage of five gallons or less of liquid organic compounds.

(Adopted December 15, 1999)

8-40-118 Exemption, Aeration Projects of Limited Impact: Exemption, Aeration Projects of Limited Impact: The requirements of Sections 8-40-403 and 8-40-405 shall not apply to any aeration project in which total project emissions of volatile organic compounds are less than 150 pounds, and total project emissions of toxic air contaminants are less than the trigger levels listed in Table 2-5-1 in District Regulation 2, Rule 5.

8-40-200 DEFINITIONS

8-40-201 Active Storage Pile: A storage pile to which soil is currently being added or from which soil is currently being removed. Activity must have occurred within one hour to be current.

(Amended December 15, 1999)

8-40-202 Aeration: Exposure of excavated soil containing volatile organic compounds to the air.

(Amended December 15, 1999)

8-40-203 Aeration Depth: The smaller of the following: the actual average depth of contaminated soil; or 0.15 meters (0.5 feet) multiplied by the daily frequency with which soil is turned.

(Amended February 15, 1989)

8-40-204 Aeration Volume: The volume of soil being aerated shall be calculated as follows: the exposed surface area (in square feet or square meters) shall be multiplied by the aeration depth. The exposed surface area includes the pile of excavated soil unless the pile is covered per Section 8-40-305.

(Amended 2/15/89; 12/15/99)

8-40-205 Contaminated Soil: Soil which has an organic content exceeding 50 ppmw as measured using the procedure in Section 8-40-602, or soil which registers an organic concentration greater than 50 ppmv (expressed as methane, C1) when measured using the procedure in Section 8-40-604.

(Amended December 15, 1999)

8-40-206 Organic Compound: Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.

8-40-207 Organic Content: The concentration of volatile organic compounds measured in the composite sample collected and analyzed using the procedures in Sections 8-40-601 and 8-40-602.

(Amended December 15, 1999)

8-40-208 Vapor Free: The process of purging gases from a tank using dry ice to replace organic vapors with an inert atmosphere.

8-40-209 Ventilation: The process of purging gases from a tank by blowing or drawing another gas through the tank.

8-40-210 Emergency Removal or Replacement or Excavation: A removal or replacement of a tank or 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 and safety.

(Adopted 2/15/89; Amended 12/15/99)

8-40-211 Organic Concentration: The concentration of volatile organic compounds measured in ppmv (expressed as methane, C1) above the soil surface using the procedures in Section 8-40-604.

(Adopted December 15, 1999)

8-40-212 Organic Liquid Service: The conveyance or storage of volatile organic compounds that are typically liquid at standard temperature and pressure, as applied to tanks and pipelines. This does not include septic tanks, sewer lines, storm water drainage, fresh water lines, natural gas lines, or electrical conduit.

(Adopted December 15, 1999)

8-40-213 Volatile Organic Compound (VOC): Any organic compound, as described in Section 8-40-206, which would be emitted to the atmosphere.

(Adopted December 15, 1999)

8-40-214 Vapor Suppressant: Any material demonstrated to be at least as effective as water spray at reducing VOC emissions from contaminated soil to the atmosphere.

(Adopted December 15, 1999)

8-40-215 Backfill: Replacement of contaminated soil to an excavated pit below existing grade or to a engineered fill location below final grade performed in such a way as to minimize exposure of contaminated soil to the atmosphere. To constitute backfill, replacement of soil may be back into the original excavation, or any other final fill site located on the site where the original excavation occurred. Backfill does not include

the use of contaminated soil in daily, intermediate, or final cover operations at solid waste disposal sites (as defined in Regulation 8-34-201).

(Adopted December 15, 1999)

8-40-216 Storage Pile: A pile of excavated contaminated soil located above existing grade level.

(Adopted December 15, 1999)

8-40-300 STANDARDS

8-40-301 Uncontrolled Contaminated Soil Aeration: Until June 1, 2000, a person shall not aerate contaminated soil at a rate in excess of that specified in Table 1 for the degree of organic content. The limitations in Table 1 shall apply to the entire facility and indicate the volume of contaminated soil that may be added, on any one day, to contaminated soil that is already aerating. These limited aeration rates shall also apply to the use of contaminated soil in daily, intermediate, or final cover operations at solid waste disposal sites (as defined in Regulation 8-34-201).

Table 1
Allowable Rate of Uncontrolled Aeration

ORGANIC CONTENT ppm (weight)	RATE OF UNCONTROLLED AERATION	
	Cubic meters/day	Cubic yards/day
< 50	Exempt	Exempt
50 - 99	459.0	600
100 - 499	91.8	120
500 - 999	45.9	60
1000 - 1999	22.9	30
2000 - 2999	11.5	15
3000 - 3999	7.6	10
4000 - 4999	5.7	8
> 5000	0.08	0.1

Effective June 1, 2000, a person shall not aerate contaminated soil except as provided in sections 8-40-304 through 306. This prohibition includes the use of contaminated soil in daily, intermediate, or final cover operations at solid waste disposal sites (as defined in Regulation 8-34-201). *(Amended 2/15/89; 12/15/99)*

8-40-302 Controlled Contaminated Soil Aeration: Until June 1, 2000, contaminated soil may be aerated at rates exceeding the limitations of 8-40-301 provided emissions of organic compounds to the atmosphere are reduced by at least 90% by weight.

(Amended December 15, 1999)

8-40-303 Deleted December 15, 1999

8-40-304 Active Storage Piles: Effective June 1, 2000, contaminated soil shall be kept visibly moist by water spray, treated with a vapor suppressant, or covered with continuous heavy duty plastic sheeting or other covering to minimize emissions of organic compounds to the atmosphere. Covering shall be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate. For any active storage pile, the surface area not covered by plastic sheeting or other covering shall not exceed 6,000 square feet.

(Adopted December 15, 1999)

8-40-305 Inactive Storage Piles: Effective June 1, 2000, contaminated soil shall be covered during periods of inactivity longer than one hour. The contaminated soil shall be covered with continuous heavy duty plastic sheeting or other covering to minimize emissions to the atmosphere. The covering shall be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate.

(Adopted December 15, 1999)

8-40-306 Contaminated Soil - Excavation and Removal: Effective June 1, 2000, any person excavating and/or permanently removing contaminated soil shall adopt the following procedure:

306.1 During excavation, all exposed contaminated soil surfaces above existing grade level shall be kept visibly moist by water spray, treated with an approved vapor suppressant, or covered with continuous heavy duty plastic

sheeting or other covering to minimize emissions of organic compounds to the atmosphere. The covering shall be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate.

- 306.2 All contaminated soils loaded into trucks or trailers for off site disposal or treatment shall be covered with continuous heavy duty plastic sheeting or other covering so as to minimize emissions to the atmosphere. The covering shall be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate.
- 306.3 All contaminated soil shall be stockpiled separately from soil which is not contaminated, unless emissions of VOC from the storage pile are minimized according to the provisions of this Rule.
- 306.4 Within 45 days of excavation, or within 90 days for soil of organic content less than 500 ppmw as determined by the procedures in Sections 8-40-601 and 8-40-602, the following shall take place:
 - 4.1 all contaminated soil shall be backfilled and covered with at least 6 inches of uncontaminated soil, or
 - 4.2 all contaminated soil shall be removed from the site, or
 - 4.3 treatment to remove the contamination shall be initiated.
- 306.5 Treatment of contaminated soil to remove the contamination shall be subject to all applicable District Rules and Regulations.
- 306.6 During backfilling, all exposed contaminated soil surfaces shall be kept visibly moist by water spray, or treated with an approved vapor suppressant, or covered with continuous heavy duty plastic sheeting or other covering to minimize emissions of organic compounds to the atmosphere. During periods of inactivity longer than 12 hours, backfilled contaminated soil shall be covered with at least 6 inches of uncontaminated soil, or covered with continuous heavy duty plastic sheeting or other covering to minimize emissions of organic compounds to the atmosphere. The covering shall be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate.

(Adopted December 15, 1999)

8-40-310 Underground Storage Tanks - Removal or Replacement: Any person wishing to permanently remove or replace an underground storage tank which previously contained organic compounds shall follow the following procedure:

- 310.1 All piping shall be drained or flushed into the tank or other container.
- 310.2 All liquids and sludges shall be removed, to the extent possible, from the tank. A hand pump shall be used to remove the bottom few inches of product if necessary.
- 310.3 Vapors shall be removed from the tank using one of the following three methods:
 - 3.1 The tank may be filled with water, displacing vapors and hydrocarbon liquids.
 - 3.2 Vapor freeing.
 - 3.3 Ventilation.
- 310.4 Effective June 1, 2000, all soils disturbed and/or excavated as part of the tank removal shall be subject to the requirements of Sections 8-40-301 through 306, unless the soil has been determined to be not contaminated by measurement of organic content using the procedures in Section 8-40-601 and 8-40-602.

(Amended 2/15/89; 6/15/94; 12/15/99)

8-40-311 Vapor Freeing: No person shall vapor free an underground storage tank of 250 gallons or greater capacity, unless emissions of organic compounds to the atmosphere are reduced by at least 90% by weight. The emission control system shall be operated until the concentration of organic compounds in the tank is less than 5,000 ppm expressed as methane.

(Amended December 15, 1999)

8-40-312 Ventilation: No person shall ventilate an underground storage tank of 250 gallons or greater capacity, unless emissions of organic compounds to the atmosphere are

reduced by at least 90% by weight. The emission control system shall be operated until the concentration of organic compounds in the tank is less than 5,000 ppm expressed as methane.

(Amended December 15, 1999)

8-40-400 ADMINISTRATIVE REQUIREMENTS

8-40-401 Reporting, Removal or Replacement of Tanks: The person responsible for the removal or replacement of tanks which are subject to the provisions of Section 8-40-310 shall provide written notice to the APCO of intention to remove or replace tanks. The written notice shall be postmarked at least 5 days prior to commencement of such removal or replacement. In the case of emergency removal or replacement of tanks, notice shall be provided as early as possible prior to the commencement of such emergency removal or replacement, to be followed by written verification not later than 30 working days after the removal or replacement is completed. The written notice of intention shall include:

- 401.1 Names and addresses of persons performing and responsible for the tank removal or replacement.
- 401.2 Location of site at which tank removal or replacement will occur.
- 401.3 Scheduled starting date of tank removal or replacement. The scheduled starting date may be delayed for no more than 5 working days, provided the APCO is notified by telephone as early as possible prior to the new starting date.
- 401.4 Procedures to be employed to meet the requirements of Sections 8-40-310.
- 401.5 If applicable, name, title and authority of the state or local government representative who has ordered a tank removal or replacement which is subject to emergency procedures.
- 401.6 Procedures to be employed to meet the requirements of Sections 8-40-301 through 306.

(Adopted 2/15/89; Amended 12/15/99)

8-40-402 Reporting, Excavation of Contaminated Soil: The person responsible for the excavation of known contaminated soil subject to the provisions of Sections 8-40-301 through 8-40-306 shall provide written notice to the APCO of intention to excavate. The written notice shall be postmarked at least 5 days prior to commencement of such excavation. In the case of emergency excavations, notice shall be provided as early as possible prior to the commencement of such emergency excavation, to be followed by written verification not later than 30 working days after excavation is completed. Written notice of intention to excavate may be submitted to the APCO at the same time written notice of intention to remove or replace tanks is submitted provided that such notification precedes the commencement of either tank removal or replacement or contaminated soil excavation by at least 5 days as indicated by postmark. The written notice of intention shall include:

- 402.1 Names and addresses of persons performing and responsible for excavation.
- 402.2 Location of site at which excavation will occur.
- 402.3 Scheduled starting date of excavation. The scheduled starting date may be delayed for no more than 5 working days, provided the APCO is notified by telephone as early as possible prior to the new starting date.
- 402.4 Procedures to be employed to meet the requirements of Sections 8-40-301 through 306.
- 402.5 If applicable, name, title and authority of the state or local government representative who has ordered an excavation which is subject to emergency procedures.
- 402.6 Estimated quantity of contaminated soil to be excavated.
- 402.7 Estimated average organic content of contaminated soil.

(Adopted 2/15/89; Amended 12/15/99)

8-40-403 Reporting, Aeration of Soil: The person responsible for aeration of any soil shall provide written notice to the APCO of intention to aerate soil, with the following information. The written notice shall be postmarked at least 5 days prior to

commencement of such excavation. The District shall again be notified within 24 hours of a change in one or more of the following parameters:

- 403.1 Estimated total quantity of soil to be aerated
- 403.2 Estimated quantity of soil to be aerated per day
- 403.3 Estimated average organic content of soil
- 403.4 Chemical composition of organic compounds (i.e., gasoline, methylene chloride, etc.)
- 403.5 A basis on which these estimates were derived (soil analysis test reports, etc.)
- 403.6 Names and addresses of persons performing and responsible for the aeration project.
- 403.7 Location of site at which the aeration project will occur.

(Amended, Renumbered 2/15/89; Amended 12/15/99)

8-40-404 Reporting, Contaminated Soil Excavation During Organic Liquid Service Pipeline Leak Repairs: The person responsible for the excavation of no more than 5 cubic yards of contaminated soil generated by an organic liquid service pipeline leak repair shall provide written notice to the APCO as early as possible, but not later than 30 working days, after excavation is completed. The written notice shall include:

- 404.1 Names and addresses of persons performing and responsible for excavation
- 404.2 Location of site at which excavation occurred.
- 404.3 Date of excavation.
- 404.4 Quantity of contaminated soil excavated.
- 404.5 Estimated average organic content of contaminated soil.
- 404.6 Procedures to be employed to meet the requirements of Sections 8-40-301 through 306.

(Adopted 2/15/89; Amended 12/15/99)

8-40-405 Reporting, Contaminated Soil Excavations Unrelated to Underground Storage Tank Activities: The person responsible for contaminated soil excavations unrelated to underground storage tank activities where contaminated soil is discovered shall provide notice as early as possible upon detection of such contaminated soil, to be followed by written verification not later than 30 working days after excavation is completed. The written verification shall include:

- 405.1 Names and addresses of persons performing and responsible for excavation.
- 405.2 Location of site at which excavation occurred.
- 405.3 Date of excavation.
- 405.4 Quantity of contaminated soil excavated.
- 405.5 Estimated average organic content of contaminated soil.
- 405.6 Procedures to be employed to meet the requirements of Sections 8-40-301 through 306.

(Adopted 2/15/89; Amended 12/15/99)

8-40-600 MANUAL OF PROCEDURES

8-40-601 Contaminated Soil Sampling: Composite samples shall be collected and analyzed for-excavated contaminated soil as follows:

- 601.1 Until June 1, 2000, for every 50 cubic yards of excavated contaminated soil to be aerated as per Table 1 in Section 8-40-301, at least one composite sample shall be collected from each storage pile within 12 hours of excavation.
- 601.2 For excavation projects seeking exemption under the provisions of Section 8-40-116.2, at least one composite sample shall be collected and analyzed.
- 601.3 For excavation projects subject to Sections 8-40-306.4 (90 day limit only) or 8-40-310.4, involving 250 cubic yards of contaminated soil or less, at least one composite sample shall be collected and analyzed for every 50 cubic yards of excavated contaminated soil.
- 601.4 For excavation projects subject to Sections 8-40-306.4 (90 day limit only) or 8-40-310.4, involving more than 250 cubic yards of contaminated soil, at

least one composite sample shall be collected and analyzed for every 100 cubic yards of excavated contaminated soil.

601.5 Each composite sample shall consist of four separate soil samples taken using the procedures described below. The soil samples shall remain separate until they are combined in the laboratory just prior to analysis.

601.6 Each pile for which a composite sample is required shall be considered to have four equal sectors. One sample shall be taken from the center of each sector. Samples shall be taken from at least twelve inches below the surface of the pile. Samples shall be taken using one of the following methods:

6.1 Samples shall be taken 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

6.2 Samples shall be taken using a clean brass tube (at least twelve 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.

(Amended 2/15/89; 12/15/99)

8-40-602 Measurement of Organic Content: Organic content of soil shall be determined by EPA Reference Methods 8015B and 8021B or any method determined to be equivalent by the United States Environmental Protection Agency and approved in writing by the APCO or designee.

(Amended 2/15/89; 10/6/93; 12/15/99)

8-40-603 Determination of Emissions: Emissions of organic compounds as specified in Sections 8-40-302, 8-40-311 and 8-40-312 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Amended 2/15/99; 6/15/94; 12/15/99)

8-40-604 Measurement of Organic Concentration: Organic concentration as specified in Section 8-40-205 shall be measured at a distance of three inches from the surface of the excavated soil with an organic vapor analyzer complying with 40 CFR Part 60 Appendix A, EPA Method 21 Section 3, "Determination of Volatile Organic Compound Leaks, Monitoring Instrument Specifications," or any method determined to be equivalent by the United States Environmental Protection Agency and approved in writing by the APCO or designee. For the purpose of determining contamination, the soil surface of the excavated soil pile may be disturbed to obtain a measurement.

(Adopted December 15, 1999)

8-40-605 Analysis of Samples, Initial Boiling Point: Samples of organic compounds shall be analyzed by ASTM D-1078-93 for the determination of initial boiling point as specified in Section 8-40-113.

(Adopted December 15, 1999)