



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

**WORKSHOP REPORT
REGULATION 13, CLIMATE POLLUTANTS:
RULE 2, ORGANIC MATERIAL HANDLING AND
COMPOSTING OPERATIONS**



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WORKSHOP REPORT

Regulation 13, Rule 2: Organic Material Handling and Composting Operations

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I. INTRODUCTION

According to the U.S. Environmental Protection Agency, the average American produces about 4.4 pounds of waste per day, with only about 1.5 pounds of that recovered through composting or recycling.^a This means that in the US, a little over 75 percent of waste ends up in landfills. Organic wastes disposed in landfills decompose anaerobically to produce methane, a potent short-lived climate pollutant. In the San Francisco Bay Area, methane emissions from landfills account for a little over half of the entire methane emissions inventory.^b Reducing emissions of short-lived climate pollutants can have a dramatic effect on climate change in the near term as their atmospheric lifetime is much less than longer-lived greenhouse gasses, such as carbon dioxide (CO₂), and yet they are estimated to be responsible for roughly 40 percent of the current net climate forcing effect. Methane is 86 times more potent than CO₂ on a 20-year time frame.^c

The State of California has made the reduction of greenhouse gas emissions a priority. In September 2016, Governor Brown signed Senate Bill 32, which mandated a greenhouse gas emissions reduction target of 40 percent below 1990 emission levels by 2030. Senate Bill 605 (Chapter 523, Statutes of 2014) requires the California Air Resources Board to develop a plan to reduce emissions of short-lived climate pollutants, and Senate Bill 1383 (Chapter 249, Statutes of 2016) requires the California Air Resources Board to approve and implement a plan by January 2018 to achieve these reductions. SB 1383 also sets a target for reduction of methane emissions of 40 percent below 2013 levels by 2030. Pursuant to SB 605 and SB 1383, the California Air Resources Board subsequently developed the short-lived climate pollutant Reduction Strategy, adopted in March 2017. As part of this strategy, the California Department of Resources Recycling and Recovery (CalRecycle) in consultation with the California Air Resources Board is developing regulations to reduce the level of statewide disposal of organic waste by 50 percent of 2014 levels by 2020 and 75 percent of 2014 levels by 2025. CalRecycle is currently considering adoption of these regulations by the end of 2019 to take effect on or after January 1, 2022.^d

The mandated diversions of recyclables and organic material from landfills will require improvements to existing infrastructure to handle these materials. As of 2015, there were less than 50 composting facilities processing less than 1.5 tons per year of organic materials and only 10 of those facilities operating with an Air District permit. Some of this organic material will make its way to anaerobic digesters to capture the methane and put it to beneficial use, but this recovery pathway is early in its development. Several municipal waste water treatment facilities are testing the potential of increased methane yields from the addition of food waste to their anaerobic digesters, and there are two facilities in the Air District processing organic material and solid waste in dry anaerobic digesters.

The diversion mandates will result in an increase in compost production as well as anaerobic digestion of organic material throughout California, particularly in the more populated areas of the State. These activities carry the potential to generate volatile organic compounds (VOCs) and methane emissions and although composting and organic material handling facilities of sufficient size are required to obtain an Air District permit, there is currently no Air District rule specific to these operations with control measures or requirements addressing these emissions. Composting and organic material handling facilities of sufficient size are required to obtain an Air District Permit. In consultation with the California Air Resources Board and the California Air Pollution Control Officers Association, CalRecycle estimates that 12 to 15 new composting facilities will be needed in the Air District in order to process an additional 700 to 900 thousand tons per year of organic material.^e There are currently 15 permitted compost facilities in the Air

District processing between 750 thousand to 1 million tons of organic material per year. Some of these facilities may be expanded to accommodate a portion of the diverted material, but with roughly a doubling of the material processed in the Air District, a significant number of new and modified permit applications will need to be evaluated and subsequently issued.

Air District staff is developing draft Regulation 13, Climate Pollutants: Rule 2, Organic Material Handling and Composting Operations (draft Rule 13-2) to minimize emissions of methane and VOCs, including odor causing compounds from all facilities that handle organic material, and for consistency in compliance, enforcement, and permitting of composting operations and all facilities handling and processing organic material. The State-mandated diversion of organic material from landfills will result in an increase in organic material handling and composting production in the Air District. Emissions from composting operations currently represent only a small fraction of the Air District methane inventory, but emissions from landfills account for just over half. The Air District is developing draft Rule 13-2 to ensure that the organic diversion mandates result in an overall reduction in methane emissions rather than a redistribution of those methane emissions.

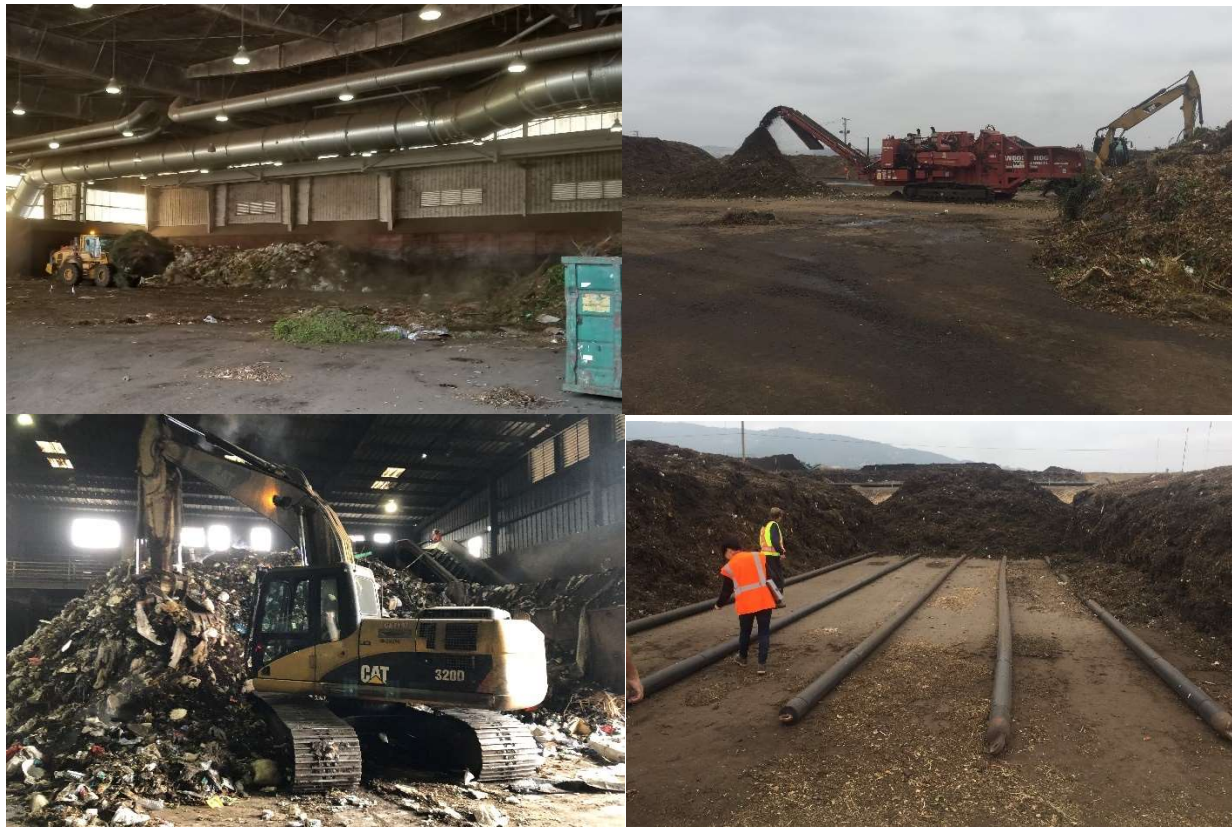


Figure 1a-1d: Organic Material Handling and Composting Operations (clockwise from top left: Transfer and Stockpiling; Chipping and Grinding; Transfer to a Sorting Line; Active Phase Composting Pile Mid-Construction)

II. BACKGROUND

A. Industry Description

Organic material is processed at a variety of different facilities across intersecting streams as it is recovered from the municipal waste stream, and many organic material handling processes are performed at multiple types of facilities. An inexhaustive list of facilities that process organic material includes: transfer stations; chip and grind operations; storage facilities; material recovery facilities (MRFs); composting operations; anaerobic digesters both wet and dry; and solid waste disposal sites.

1. Organic Material Handling

Organic material handling activities include: tipping and transfer operations; sorting and size reduction; storage and stockpiling; and composting. Tipping and transfer operations occur when material is unloaded or “tipped” from a container (usually integral to or attached to a vehicle) and transferred to another usually larger vessel for transport or transferred for further processing of the material. Organic materials are often mixed with non-decomposable solid waste or recyclable materials, so must be sorted or separated from the mixed stream, or contaminants may need to be removed from the organic material. Additionally, organic material may be screened by particle size or manipulated to reduce particle size. Throughout various phases of processing operations, organic material is stockpiled temporarily often due to the batch nature of processing. While many organic material handling operations occur at locations other than composting facilities, the composting process itself involves manipulation of organic material, with most composting operations utilizing chipping and grinding, screening, and other preprocessing operations.

Organic material will decompose through natural processes that are encouraged in the presence of water, warmth, and oxygen. In general, the composting process involves a controlled means of adding moisture and constructing a physical arrangement of the material to maintain an ideal environment to facilitate this decomposition of organic material feedstock into a humus-like material rich in nutrients commonly referred to as compost. Composting operations accelerate this decomposition of organic material by controlling key parameters such as porosity, temperature, moisture, pH, and the ratio of carbon to nitrogen in the material.

2. The Composting Process

The composting process involves several steps from initial collection of the organic material to active and curing composting, to final screening of the finished compost. Compost operators receive material from public or private sources and screen the material for non-decomposable contaminants. The feedstock may need to be chipped, ground or shredded to bring the material to the appropriate size, and then it is mixed or blended, and water added to adjust the carbon to nitrogen ratio, moisture content, and bulk density or porosity. Once the desired starting conditions are achieved, the material is arranged in piles on open fields or enclosed in a vessel to begin active phase composting; most composting is conducted in piles. Micro-organisms break down the material and produce heat, raising the temperature of the material and destroying pathogens. The material is aerated through turning, mixing or forcing air through the pile by mechanical means to provide a continuous supply of oxygen to the microorganisms, as well as to control the temperature. Most of the VOC emissions occur during the active phase. As the microbial activity slows and the population in the material shifts to bacteria and fungi that break down less degradable material the curing phase begins where the material becomes more stabilized to one

that cannot undergo further microbial breakdown, which would compete with living plants for nutrients were it to be added prematurely to soil. Once the biologic activity is sufficiently slowed and the curing phase is complete, the material goes through a final screening to remove contaminants (such as glass and plastic) and oversized material that has not fully decomposed.

3. Anaerobic Digestion

In contrast to the composting process, anaerobic digestion is the breakdown of organic material by microorganisms in an oxygen deprived environment. The main product of anaerobic digestion is biogas, which is composed mostly of methane, and carbon dioxide, with trace amounts of water vapor and other gasses. Biogas is a renewable energy source that may be used to power internal combustion engines or microturbines to produce electrical power, or biogas may be compressed to fuel motor vehicles.

On an industrial scale, anaerobic digestion is performed in vessels in either a wet (feedstock with less than 15 percent solids) or dry process (feedstock greater than 15 percent solids). A typical wet-process anaerobic digester can be found at several waste water treatment plants in the Air District, where the primary purpose is to treat waste water, but biogas is captured and used to power the treatment works or is used for some other beneficial purpose. In some cases, organic materials may be added to the stream to increase biogas production. There are also dry-process anaerobic digesters that are used to reduce the volume of waste processed, to produce biogas, and to accomplish diversion goals of municipalities.

Concurrent to the development of Rule 13-2, the Air District is currently developing Regulation 13, Climate Pollutants: Rule 4, Sewage Treatment Plants and Anaerobic Digesters to minimize emissions of greenhouse gasses and VOCs from anaerobic digesters and sewage treatment plants. The proposed rule would implement portions of the 2017 Clean Air Plan and is intended to create a consistent regulatory framework for these operations. In addition, the Air District is working on amendments to Regulation 8, Organic Compounds: Rule 34, Solid Waste Disposal Sites to better address emissions of methane and non-methane VOCs from solid waste disposal facilities and improve compliance and permitting for these facilities.

B. Regulatory History

1. Air District Rules/Regulations

Currently, the Air District does not have a rule that specifically addresses emissions from either composting operations or facilities handling organic material. However, both types of facilities would be subject to particulate standards of Regulation 6, Particulate Matter: Rule 1, General Requirements and VOC standards of Regulation 8, Organic Compounds: Rule 2, Miscellaneous Operations. The Air District's Regulation 2, Permits: Rule 1, General Requirements includes permit exemptions for solid waste transfer stations processing less than 50 tons per day (§ 2-1-121.18) and composting and other similar facilities handling less than 500 tons per year (§ 2-1-113.1.2). Any facility processing more than these amounts requires an Air District Permit and may be subject to Regulation 2, Permits: Rule 2, New Source Review for criteria pollutants and Regulation 2, Permits: Rule 5, New Source Review of Toxic Air Contaminants. Depending on emission levels, this could trigger implementation of best available control technology (BACT or TBACT for toxics), as well as a requirement to provide VOC emission offsets. Facilities of sufficient size may meet the definition of a Major Facility and thereby be subject to the requirements of Regulation 2, Permits: Rule 6, Major Facility Review; this Air District rule that implements the operating permit requirements of Title V of the federal Clean Air Act.

2. Rules from other Air Districts

The South Coast Air Quality Management District and the San Joaquin Valley Air Pollution Control District are the only two air districts in the State that have specific rules for composting operations; however, San Diego and Ventura Air Pollution Control Districts are currently developing rules for composting operations. The South Coast and San Joaquin Valley Air Districts are both in severe or extreme non-attainment for State and federal ambient ozone standards. San Diego is adjacent to the South Coast Air Quality Management District and Ventura is adjacent to both the South Coast and San Joaquin Valley Air Districts.

The South Coast Air Quality Management District has a suite of rules governing composting operations as well as a rule to address odors from transfer stations and material recovery facilities. In 2003, several rules were adopted, including a general administrative rule for composting and related operations (Rule 1133), a rule to prevent inadvertent decomposition from chipping, grinding, and stockpiling (Rule 1133.1), and a rule to reduce VOC and ammonia emissions from composting operations of biosolids and manure (Rule 1133.2). South Coast then adopted a rule in 2006 to address odors from transfer stations and material recovery facilities (Rule 410). Lastly, in 2011, Rule 1133.1 was amended, and a new rule was adopted to reduce fugitive VOC and ammonia emissions from green waste composting operations (Rule 1133.3).

In 2007, the San Joaquin Valley Air Pollution Control District adopted a rule to address VOC emissions from operations involving co-composting and management of biosolids, animal manure, and poultry litter (Rule 4565), and then in 2011, adopted a rule to limit VOC emissions from organic material composting (Rule 4566).

In May of 2019, Ventura County Air Pollution Control District held a public consultation meeting to introduce regulatory concepts for proposed new Rule 74.32: Compostable Material Handling and Conversion Operations. This proposed rule is intended to reduce VOC and other emissions associated with the handling and processing of organic materials to produce beneficial products such as mulch, compost and renewable energy. Draft rule language has not been published, but the rulemaking is focused on regulating composting and associated processes.

3. State Regulations

At the State level, CalRecycle has regulatory authority over organic material handling and composting operations as provided in Title 14, Division 7 of the Public Resources Code. Permitting, minimum standards, and reporting requirements ensure that facilities employ adequate pathogen reduction and odor impact minimization methods. Enforcement and permit compliance are administered by Local Enforcement Agencies such as County Health Departments. As per California Health and Safety Code section 41705, odors emanating from composting operations are exempt from the Air District's authority to enforce prohibition of public nuisance as provided in section 41700 of the Health and Safety Code. Composting facilities are also subject to general waste discharge requirements of the California State Water Resources Control Board.

There are no statewide air quality regulations governing emissions from these operations other than those that address combustion emissions from portable equipment used on site. The Portable Diesel Engine Airborne Toxic Control Measure (adopted by the California Air Resources Board in 2004) applies to engines typically used to power screening, chipping and grinding operations. The California Air Resources Board also requires portable equipment registration for some equipment that is periodically operated at multiple material handling facilities. Combustion

emissions from equipment operated at these facilities is not within the scope of this present rule development effort.

4. Federal Regulations

Other than Title V operating permit requirements addressed above, there are no substantive federal air quality regulations that address these facilities. Further, there are no new source performance standards or national emissions standards for hazardous air pollutants that would apply to composting operations or non-road engines typically used in composting operations.

5. Other Air District Rule Development Efforts

Concurrent with the development of Regulation 13, Rule 2, the Air District is developing Regulation 13, Rule 4: Sewage Treatment Plants and Anaerobic Digesters to minimize emissions of greenhouse gasses and VOCs from anaerobic digesters and sewage treatment plants. The proposed rule would implement portions of the 2017 Clean Air Plan and is intended to create a consistent regulatory framework for these operations. In addition, the Air District is working on amendments to Regulation 8, Rule 34: Solid Waste Disposal Sites to better address emissions of methane and non-methane VOCs from solid waste disposal facilities and improve compliance and permitting for these facilities.



Figure 2a: Screening of Finished Product at a Large-Scale Composting Facility

III. TECHNICAL REVIEW

I. Emissions

Detailed emissions characterization of organic material handling and composting operations is incomplete at this time. Several studies have been conducted to determine emissions of VOC and ammonia from composting operations, with the South Coast Air Quality Management District, the San Joaquin Valley Air Pollution Control District, and the California Air Resources Board

producing emission factor reports for VOC and ammonia emissions from composting operations that process green material (vegetative material generated from gardening, landscaping or agriculture) containing less than 15 percent by weight of food material, manure or biosolids. ^{f, g, h} The California Air Resources Board has also analyzed methane emissions from composting operations in an effort to determine methods of estimating greenhouse gas emissions reductions from the diversion of organic waste from landfills to compost facilities.ⁱ The development of emission factors for compost mixtures containing larger percentages of non-green material is under development with many studies underway. As more material is diverted from landfills through household organic material collection, more food material enters the composting feedstock, and this will provide more opportunities for source testing.

Emissions from organic material handling operations are not particularly well understood, nor have emission factors been well established; however, the perception of offsite odors and reporting of complaints has been well documented in the Air District and other jurisdictions. The previously mentioned composting emission factor reports examined VOC and ammonia emissions from the overall composting process of green material, with emission factors for stockpiling of feedstock, active phase composting, and curing phase composting. The emission factors for stockpiling of organic material prior to the start of active composting can serve as a reasonable default value to estimate emissions from organic material handling operations.

Estimating the overall emissions from all organic material handling and composting operations in the Air District is difficult for several reasons. Many smaller scale organic handling facilities are either undiscovered or do not require a permit from the Air District. The development of emission factors for composting operations is fairly recent and factors provided by emission studies vary greatly. Reasons for this variance can be ascribed to operational methods, geographic location, constitution of feedstock, and test methods. Not only is the constitution of the feedstock dynamic, the amount of material processed is changing as well in response to diversion measures adopted by municipalities in concert with Statewide Diversion Mandates.

The Air District emission inventory for the base year 2011 provides an estimate of less than 1.5 tons per day of VOC and less than 0.2 tons per day of methane from composting operations.^j The estimate for base year 2015 is less than 4.2 tons per day of VOC and less than eight tons per day of methane from these operations. This increase in the methane value is most likely the result of refinement of the accepted emission factor. The amount of organic material processed in the Air District has likely increased since 2015, but it is difficult to provide an estimate of how District-wide emissions have been affected. Emissions from composting operations represent only a small fraction of the current Air District methane inventory, but emissions from landfills account for just over half. The Air District is developing draft Rule 13-2 to ensure that the organic diversion mandates do not result in redistribution of emissions, but rather a reduction in overall methane emissions.

II. Emission Control Methods

Emissions from organic material handling operations and their subsequent methods of control are largely determined by the type of organic material processed combined with the heterogeneity of the organic material mixtures processed. More stable material is generally less odorous and the potential for uncontrolled decomposition is limited during processing so long as material is moved along efficiently. This type of material tends to have a high carbon to nitrogen ratio, is too dry, or is of a sufficiently dense structure or consistency to limit aerobic decomposition. Examples include wood, paper, or non-decomposable material (i.e. recyclable materials like glass or metal) with very little organic material content. Normally, management of this type of material requires

less emissions control than mixed materials with greater organic content. More putrescible materials such as food material, manure, biosolids, and some types of green material often tend to be odorous and though dense enough to limit aeration, may contain enough moisture to encourage anaerobic decomposition. In general, most handling operations involve a mixture of materials that feature a spectrum of gradations from stable to putrescible.

Organic material handling operations processing more stable materials typically rely on water spray to suppress particulate emissions. VOC and Methane emissions are also minimized as a side benefit to water spraying. When more putrescible materials are received at these facilities they may be covered with more stable material or with a solid or flexible cover. Careful monitoring of residence times ensure that decomposition of this material is minimized. When handling less stable material, partial enclosures may be utilized to slow windborne migration of odors along with overhead misting systems of water or odor suppressant fluid. Baffles and partial curtains may also help to contain emissions.

Complete enclosures are utilized when putrescible organic material is separated from solid waste, recyclable material, or other complex waste streams. Transfer stations and material recovery facilities processing mixed material are usually contained within an enclosure that minimizes exposure to outside air through high speed doors, curtains, baffles and air flow systems that maintain a negative pressure at all openings. In some cases, air flow systems are designed to ensure near complete capture of emissions from the enclosure vented to control devices such as baghouses (for particulate), biofilters (for methane and VOC) and in some cases iron sponge or other scrubbers for control of sulfurous compounds. Misting with water or odor suppressants is also often utilized at openings to enclosures or at the perimeter of operational facilities.

Biofilters are pollution control devices that use living material to capture and biologically degrade pollutants. Air flows through a packed bed and pollutants transfer into a thin biofilm on the surface of the packing material (usually shredded wood, compost, or other high carbon content organic material). Microorganisms such as bacteria and fungi are immobilized in the film and degrade the pollutant. These devices are particularly efficacious in treating odorous compounds and water-soluble VOCs. The same processes evident in a packed bed biofilter can be utilized by spreading the packing material across a surface provided the moisture content in the material is maintained and it is thick enough to ensure capture within the biofilm.

Composting operations rely on biofiltration for control of VOC emissions, whether this be through biological processes integral to the composting process, adding finished compost or woody material to serve as the biofilter, or by venting emissions from compost piles to a separate biofilter. Maintaining moisture in the compost pile encourages microbial activity in the biofilm surrounding individual particles of the compost mix. In essence, spraying the surface of compost piles encourages biofiltration at that surface, and emissions studies conducted in the San Joaquin Valley have shown a 20 percent reduction in VOC emissions using this method over baseline composting conditions. Adding a six-inch layer of finished compost or “overs” (woody material screened out after undergoing the composting process) while continuing to ensure moist conditions can reduce VOC emissions by 60 percent over baseline conditions.^h

Along with moisture, aeration is another key factor in the control of emissions from composting operations. A well-constructed compost pile is made up of properly sized materials to provide adequate porosity such that air can flow through the pile to provide oxygen to fuel microbial activity. In smaller operations, the heat released during decomposition can drive air flow up through the pile, drawing in surrounding air from the sides of the pile or windrow. Turning the pile

ensures that the material is mixed to provide contact with water, microbes and oxygen by breaking up channels that may develop.

Larger operations provide aeration through the use of blowers which inject (positive aeration) or draw (negative aeration) ambient air through an array of pipes or other means at the bottom of the pile. Positive aeration systems are typically used in conjunction with a cover on the top of the pile serving as a biofilter. In a typical covered aerated static pile (CASP), this cover is made up of at least 6 inches of finished compost or overs. In other applications, the cover takes the form of a semi-porous material that allows air but not moisture to pass through. Negatively aerated systems draw the air from the pile and route it to a separate biofilter for emissions control. Composting operations can also be conducted within an enclosure equipped with an air flow system designed to ensure near complete capture of emissions and vented to biofilter.

IV. DRAFT RULE

A. Purpose

Draft Rule 13-2 is being developed to ensure that emissions of VOC and methane are minimized during organic material handling and composting operations, and to provide consistency in compliance and permitting of all affected facilities handling and processing organic material. The Rule also contains a reporting requirement designed to enable Air District Staff gather information about these facilities and evaluate best management practices and other means to minimize excess emissions of methane and VOCs, including odor-causing compounds.

B. Applicability

Draft Rule 13-2 would apply to operations at any facility that receives, handles, stores, distributes, transfers, or composts organic material. A nonexhaustive list of facilities that may be subject to draft Rule 13-2 includes green material chipping and grinding facilities, MRFs, transfer stations, composting operations, anaerobic digesters, and solid waste disposal facilities.

C. Exemptions

The requirements of draft Rule 13-2 are not intended to apply to small scale composting operations conducted by individuals or small groups of individuals using material generated by those individuals to produce compost for their own use. The scale of these exempt operations must not exceed 100 cubic yards of organic material and that material may not occupy a foot print of more than 750 square feet. The scale of the operation is expressed this way for immediate determination without the need for recordkeeping as would be required if the limit was expressed as a volume processing rate (e.g. tons per year). Composting operations limited to the same size that are conducted at a parks, golf courses and other recreational facilities are exempt from the standards section of the Rule, but are required to report on their operations so that Air District staff may gather more information about this sector and a similar limited exemption from standards applies to agricultural operations, but the size limitations are consistent with the permit exemption limits found in Air District Regulation 2, Permits: Rule 1, General Requirements.

D. Definitions

Definitions are provided to clarify exemptions, standards and administrative requirements including monitoring, recordkeeping, and facility summary reporting. Handling is broadly defined so that organic material handling operations include transfer, storage, and any manipulation of organic material including but not limited to screening, chipping and grinding, tipping, sorting, and debagging. Active phase and curing phase composting are defined periods in the composting process determined by metrics such as time, temperature, respiration and maturity of the organic material. Definitions are provided for the various types of organic material, including biosolids, digestate, food material, green material, manure, and putrescible material, which is a class of organic material likely to decompose rapidly, causing odors, vector attraction, or other offensive conditions. Where possible, terms are stated to provide consistency with the California Code of Regulations to prevent duplicative recordkeeping and reporting to that required as a result of SB 1383; however, CalRecycle has yet to finalize the form of these regulations. A final version is expected later this year.

E. Standards

Draft Rule 13-2 would address organic material handling, storage and stockpiling, and active and curing phase composting, with a mixture of emissions control standards and utilization of best management practices that have been shown to minimize emissions of VOC and methane. Best management practices are drawn from regulations adopted by the San Joaquin Valley Air Pollution Control District and the South Coast Air Quality Management District, along with emissions studies funded or compiled by CalRecycle and the California Air Resources Board.

Section 13-2-301, Organic Material Handling Requirements: Best management practices implementation is required for facilities processing up to 10,000 tons per year of green material that contains no more than 15 percent by weight of putrescible material. These best management practices include a partial-enclosure to act as a wind barrier, misting systems, limited drop heights and periodic scraping or sweeping of material handling areas. Facilities processing greater quantities of organic material containing more than 15 percent of putrescible materials would be required to do so within the confines of an enclosure that captures the interior air and vents to a biofilter or other control device such that 80 percent combined capture and control of VOC and methane emissions is achieved.

Section 13-2-302, Storage and Stockpiling Requirements: Organic material stockpiles must be labeled at the time of construction to ensure limited duration depending on the material, and best management practices are required for more putrescible material. Green material stockpiles may not remain on site for more than 72 hours. Putrescible material cannot be stored more than 48 hours on site and must be covered overnight or kept within the confines of an enclosure vented to a biofilter or other control device such that 80 percent combined capture and control of VOC and methane emissions is achieved. Pile dimensions are proscribed, and the temperature of stockpiles must remain below 122 degrees Fahrenheit to prevent the start of active phase composting.

Section 13-2-303, Active Phase Composting Requirements: Active Phase Compost piles must be labeled to indicate when the pile was constructed or turned, and dimensions are prescribed to prevent anaerobic conditions within the pile. Best management practices for emissions control are provided in graduated levels to maintain VOC emissions below 15 pounds per day based on VOC emissions control estimates from the California Air Resources Board and other sources. All

composting facilities must ensure that the composting material is adequately wetted during pile construction and after any turning of the pile to achieve 20 percent control of VOC emissions. Composting operations processing greater than 2,000 tons per year, in addition to the above measure, must utilize a six-inch finished compost cover as a biofilter, maintaining 50 percent moisture content to achieve 40 to 60% control of VOC emissions. Composting operations processing greater than 3,500 tons per year, in addition to the moisture provisions, must employ a positive aeration system with a six-inch finished compost cover as a biofilter maintaining 50 percent moisture content to achieve 80% control of VOC emissions. Composting facilities may implement alternative methods approved by the Air District that demonstrate equivalent VOC control as the methods described above. Best management practices are also provided to ensure efficient decomposition of organic material to minimize emissions of methane.

Section 13-2-303, Curing Phase Composting Requirements: Best management practices are provided to ensure that material does not reenter the active phase nor pose a risk of spontaneous combustion. Labeling of piles is required to record residence times, maximum pile dimensions are specified, and temperatures in the piles must be maintained below 122 degrees Fahrenheit.

Section 13-2-305, Composting Staff Certification Requirement: Composting operations processing greater than 500 tons per year are required to have an employee on-site that has obtained and maintained in good standing certification from the United States Composting Council as a Certified Compost Operations Manager. The effective date for this requirement is one year after adoption of the proposed rule to provide operational personnel time to meet the certification requirements.

F. Administrative Requirements

The draft Rule includes a requirement for all facilities subject to the Rule to submit a Facility Summary Report that details best management practices, control measures, equipment and procedures to minimize methane and VOC emissions. The Facility Summary Report would provide facility information, technical data including a process flow diagram and facility layout or floorplan, and a breakdown of material processed at the facility. The owner or operator submitting a Facility Summary Report is provided the opportunity to designate as confidential any information claimed to be exempt from public disclosure as trade secret or by any other provisions of law. Submittal of a Facility Summary Report is due within six months of adoption of the proposed rule and must be reviewed and updated every two years to account for changes in operations.

G. Monitoring and Records

The owner or operator of any facility subject to the proposed rule must monitor and record all parameters necessary to demonstrate compliance with the provisions set forth in the standards section of draft Rule 13-2. This would include a breakdown of throughput, temperature readings, moisture monitoring, stockpile and compost pile residence times, and parameters directly related to control equipment efficiency. These records may also aid in review and updating of the Facility Summary Report as required in the administrative requirement section of the rule. Agricultural or recreational facility composting operations seeking an exemption from the control standards must keep daily records to ensure that they qualify for that limited exemption.

H. Manual of Procedures

Draft Rule 13-2 contains test methods for determining compliance with requirements of the rule. Test methods for compost parameters are drawn from the US Composting Council Research and Education Foundation. Determination of capture efficiency for enclosures is drawn from the United States Environmental Protection Agency methods. The method for determining moisture content is drawn from the San Joaquin Valley Air Pollution Control District regulations.

V. RULE DEVELOPMENT / PUBLIC PARTICIPATION PROCESS

As part of its Methane Emissions Expert Panel Series, staff has reached out to regulatory, community, and industry experts of the organic recovery sector. In November of 2017, staff met with representatives from State and local agencies, members of the composting and wastewater treatment industry, along with academic researchers to discuss current trends in the fields of composting and anaerobic digestion. It soon became clear these two subjects merited individual focus, and staff made plans to hold additional expert panel sessions for composting and anaerobic digestion separate from one another. Staff held a second Expert Panel on June 14, 2018 titled Composting, Part II in order to allow facility operators to provide their perspective. Presentation topics included Composting and Air Emissions, Designing and Siting Composting Facilities, along with a panel discussion on operating composting facilities provided by composting facility operators as well as other panel speakers from the industry and regulatory community.

Air District staff held a Regional Convening on the Organics Recovery Strategy on June 25, 2018 to provide a holistic examination of the organic material diversion and recovery and the Air District's efforts to minimize excess emissions from these processes. This meeting provided an early opportunity to solicit feedback into organic material handling and composting rule development efforts.

At a series of Climate Pollutant public workshops held in early November 2018, staff presented a concept paper for draft rules 13-2: Organic Material Handling Operations and 13-3: Composting Operations, along with a workshop presentation for draft Rule 13-1: Significant Methane Releases, a concept paper on Regulation 13: Climate Pollutants and updates on development efforts for new draft Rule 13-4: Sewage Treatment and Anaerobic Digestion, and amendments to Rule 8-34: Solid Waste Disposal Sites. Workshops were held in San Francisco, Martinez, Dublin and San Jose. In March of 2019, Air District staff decided to combine Rules 13-2 and 13-3 into a single rule, draft Rule 13-2.

Rule development staff visited 20 facilities (six material handling facilities, ten composting facilities, and four anaerobic digestion facilities) at locations in eight of the nine counties that make up the Air District. Staff visited organic material handling facilities processing green material, mixed streams of recyclables, as well as mixed solid waste at locations in Alameda, Napa, San Mateo, San Francisco, and Santa Clara Counties. Staff toured composting facilities operating static piles, windrows, and CASP systems, at locations in Alameda, Marin, Napa, San Francisco, Santa Clara and Solano Counties. In addition, staff visited anaerobic digestion facilities in Alameda and San Mateo counties. Staff met with facility personnel and toured their operations to better understand the industry and examine up-close their efforts to minimize emissions from these operations.

VI. CONCLUSIONS / RECOMMENDATIONS

Air District staff developed draft Rule 13-2 to minimize emissions of methane and VOCs, including odor causing compounds from all facilities that handle organic material, and for consistency in compliance, enforcement, and permitting of composting operations and all facilities handling and processing organic material. The State mandated diversion of organic material from landfills will result in an increase in compost production in the Air District along with increases in organic material handling. Air District staff developed this draft Rule 13-2 to encourage efficient decomposition methods in order to ensure that the methane emitted from landfills is not diverted to composting operations. Staff has provided this draft Rule 13-2 and workshop report for public review in hopes of receiving feedback to inform subsequent development in advance of proposing adoption of the rule for Air District Board of Directors consideration in the fourth quarter of 2019.

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