SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Preliminary Draft Staff Report
Proposed Rule 415 – Odors from Rendering Facilities

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BACKGROUND

Proposed Rule (PR) 415 – Odors from Rendering Facilities is designed to reduce odors from facilities conducting rendering operations. Rendering is a process that converts waste animal tissue into stable, value-added commodities, including fat commodities such as yellow grease, choice white grease and bleachable fancy tallow, and protein commodities, such as meat and bone meal and poultry byproduct meal. Industries that use the commodities produced during rendering include animal feed, fertilizer, biofuels, cosmetics and other industries.

Development of PR 415 is the result of a quality of life issue that was identified by the working group for the Clean Communities Plan (CCP) in the pilot study area of Boyle Heights. In November 2010, the SCAQMD Governing Board approved the CCP. SCAQMD staff began implementing the CCP in the pilot study area of Boyle Heights, a community near the Vernon rendering facilities, by meeting with a stakeholder working group beginning in July 2011. The purpose of this working group was to identify air quality issues of importance to the community in Boyle Heights and surrounding communities. The prevalence of odors from rendering facilities in Vernon, directly south of Boyle Heights, was of great concern to the working group. As a direct result of the CCP pilot study process, SCAQMD staff undertook rulemaking to address odors from rendering operations in early 2014.

Rendering Facilities in the South Coast Air Basin

There are five existing facilities that conduct inedible rendering operations in the Basin. All five are located in Vernon in close proximity to one another. Three facilities are independent, and two are integrated with either a slaughterhouse or meat-packing plant. The differences between independent and integrated rendering facilities are described in this chapter. One facility uses a batch rendering process, in which raw rendering materials are loaded into the cooker in discrete batches, and the others use a continuous cooking operation. All five facilities will be subject to PR 415. In addition to these existing facilities, one planned facility may be subject to the proposed rule if permitted, once it becomes operational.

Rendering Industry Characterization

According to the National Renderers Association (NRA), the US livestock sector slaughters more than 150 million head of cattle, calves, hogs, and sheep and more than 55 billion pounds of poultry annually[1]. The rendering industry consists of more than three-dozen firms operating more than 200 plants across the US and Canada[2]. Rendering facilities serve animal industries by using the by-products produced in these industries. By-products amount to more than half the total volume produced by animal agriculture. By weight, approximately 49% of cattle, 44% of pigs, 37% of chicken broilers and 57% of fish are not consumed by humans[3]. By-products from animal agriculture include hides, skins, hair, feathers, hoofs, horns, feet, heads, bones, blood, organs, glands, intestines, muscle and fat tissue, and entire carcasses. Many of these by-products are processed in rendering facilities. Organic by-products are highly perishable, and may include some laden with microorganisms that are pathogenic to humans and animals. Rendering offers a system of handling and processing of animal materials that complies with the requirements of disease control.

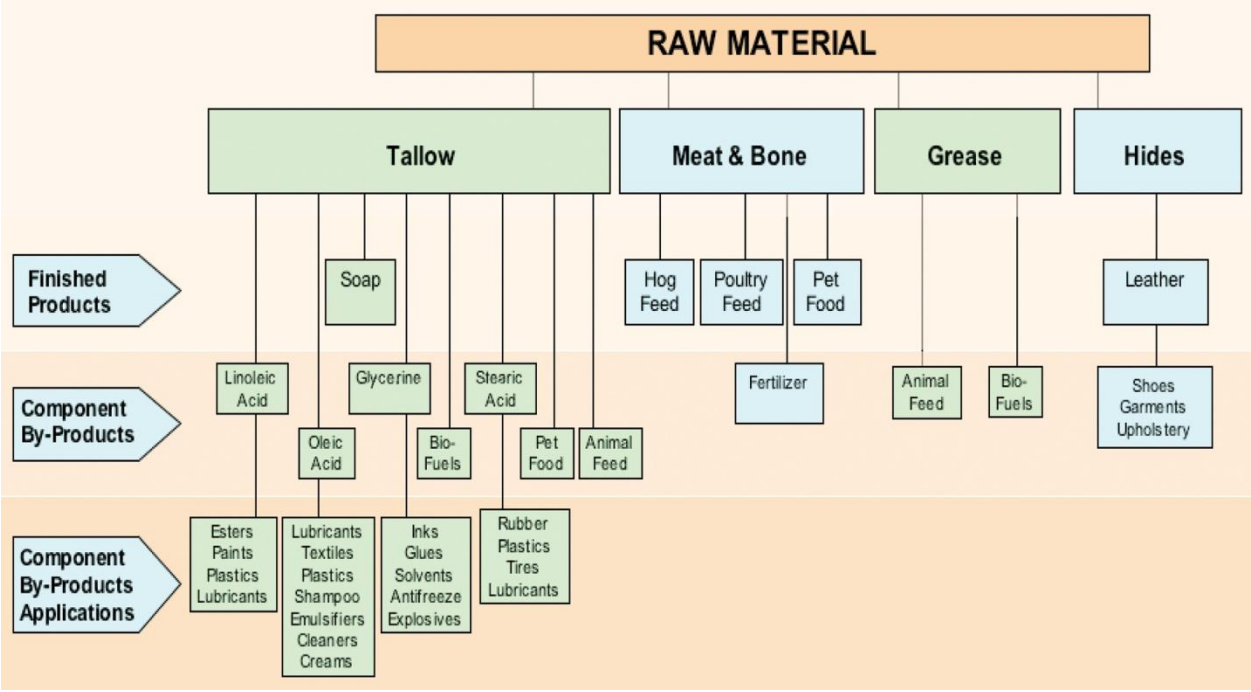
[1] NRA Website: http://www.nationalrenderers.org/
[2] NRA Website: http://www.nationalrenderers.org/
[3] An Overview of the Rendering Industry and its Contribution to Public and Animal Health; Meeker, Hamilton

In addition to disease prevention, processing of by-products from various animal industries results in nearly 20 billion pounds of animal feed and industrial products in the form of fat and protein commodities[4].

Value and Use of Rendered Products

The nearly 20 billion pounds of ingredients that renderers produce each year have been valued at more than $3 billion, of which about $900 million is exported. Meat and bone meal accounted for 6.6 billion pounds of this, poultry byproducts 4 billion pounds, and blood meal 226 million pounds[5]. These ingredients are valued for their nutrients - high protein content, digestible amino acids, and minerals — and their relatively low cost. Poultry operations and pet food manufacturers accounted for 66% of the domestic meat and bone meal market of nearly 5.7 billion pounds in 2000, while hog and cattle operations accounted for most of the remaining market[6]. Figure 1-1 shows the products and by-products of the rendering process.

Figure ES-1 – Products and By-products Produced During Rendering



http://www.sec.gov/Archives/edgar/data/916540/000091654010000031/ex99_1.htm

RENDERING OPERATIONS

The Rendering Process

In most facilities, raw materials received at the facility into a pit or enclosure and conveyed to size reduction equipment. The raw material is ground to a uniform size and placed in cookers, which evaporate moisture and free fat from protein and bone. A series of conveyers, presses, and

[4] "Survey Says: A snapshot of Rendering", Jekanowski, Render Magazine, 2011

[5] "Animal Rendering: Economics and Policy", CRS Report for Congress, Becker, 2004

[6] "Animal Rendering: Economics and Policy", CRS Report for Congress, Becker, 2004

a centrifuge continue the process of separating fat from solids. The finished fat (e.g., tallow, lard, yellow grease) goes into separate tanks, and the solid protein (e.g., meat and bone meal, poultry meal) is pressed into cake for processing into feed. Other rendering systems may be used, including those that recover protein solids from slaughterhouse blood or that process used cooking oil from restaurants. This cooking oil is recovered (often in 55-gallon drums) for use as yellow grease in non-human food products like animal feeds.

Potential for Odors from Rendering Operations

Odor control remains one of the rendering industry's greatest challenges. Research in the early 1970s indicated that untreated rendering plant emissions could be detected up to 20 miles away from rendering plants[7]. As for the sheer number of odorous compounds in rendering odors, 110 volatile compounds can be identified in rendering odors, with about 25 contributing most noticeably to rendering plant odors[8]. Most of these organic compounds are generated from the breakdown of proteins and fats during the cooking process[9] or during decay of raw material prior to cooking.

Besides organic compounds, other odor compounds of concern from rendering operations include hydrogen sulfide and ammonia. Because of the wide variety of chemical compounds contributing to rendering plant odors, current strategies for odor control rely on destroying all volatile compounds being emitted[10].

There are several operations and processes within a rendering facility that have noticeable odors associated with them. These include, in order of process flow but not necessarily odor intensity; raw material receiving, raw material size reduction, cooking, fat processing, non-condensable from the condenser following the cooker, and wastewater treatment. High intensity odors from the cooker, presses and centrifuges are currently required to be incinerated at 1202^{o}F for at least 0.3 seconds under SCAQMD Rule 472 – Reduction of Animal Matter. Incineration at this temperature is a highly effective odor control method for organic compounds, the composition of most substances in rendering odors.

Since the high intensity odors emitted from the cooking process are already required to be controlled, the nature of odors that continue to be present at a rendering facility from the processes noted are fugitive in nature. There are many points both in a batch cooking process as well as in a continuous cooking process where fugitive odors can escape. Collectively, this large number of sources of fugitive odors can create odors which are emitted from a rendering facility and can travel beyond the facility's property line.

Odor Complaints in Communities Surrounding Vernon

Odor complaints in the communities surrounding the Vernon rendering facilities were evaluated over a ten-year period. Complaints and NOVs were evaluated from January 2002 through

[7] "Odor Controls for Rendering Plants." *Environmental Science and Technology* 7 (6):504-510. Bethea, Murthy, Carey; 1973.

[8] "Gas Chromatography/Mass Spectrometry Identification of Organic Volatiles Contributing to Rendering Odors." *Environmental Science and Technology* 16 (12):883-886. Van Langenhove, Van Wassenhove, Coppin, Van Acker, Schamp; 1982

[9] http://www.rendermagazine.com/articles/2012-issues/august-2012/development-of-new-odor-control-methods/

[10] http://www.rendermagazine.com/articles/2012-issues/august-2012/development-of-new-odor-control-methods/

October 2011. An average of 35 odor complaints per year were received by SCAQMD during this ten year period. Many of these complaints were not verified by an SCAQMD inspector.

SCAQMD staff has received comments in working group meetings from the regulated industry that the relatively modest number of annual odor complaints from areas surrounding the rendering facilities does not justify rulemaking. However, staff feels the number of complaints is not fully indicative of the impact on area residents, for several reasons. First, stockyards, meat packing houses and slaughterhouses that supplied animal carcasses to rendering facilities have existed in the Vernon area for nearly one hundred years. As a result, odors from rendered animal carcasses have long been part of the landscape in the communities surrounding Vernon, impacting the quality of life for area residents. Furthermore, SCAQMD staff has learned from conducting community meetings in the area that proactive complainants didn't perceive a reduction in odors after repeated complaints, and became discouraged, resulting in a general sense from community members that reporting odors does not yield results. This may occur because SCAQMD staff is unable to pinpoint an individual facility as the source of the odor being complained of, as the facilities are relatively near one another and two are extremely close to each other.

PROPOSED RULE 415 REQUIREMENTS

Purpose

Proposed Rule (PR) 415 will reduce odors from facilities rendering animals and animal parts. PR 415 will establish odor control standards as well as best management practices (BMP) to prevent or minimize odors that can cause verified odor complaints and public nuisances in the communities surrounding Vernon. Under Rule 402, enforcement action can only be taken after the SCAQMD receives and verifies a sufficient number of complaints. Moreover, because there are several rendering facilities located within a relatively small area, in some cases the odors cannot be ascribed to one specific facility and indeed are likely contributed to by several of the facilities. Rule 402 does not contain any mechanisms to reduce odors from new and existing rendering facilities. In addition, Rule 402 does not establish minimum standards to prevent or minimize odors. Rule 402 is reactive, where PR 415 is proactive in terms of preventing or minimizing odors.

Applicability

The proposed rule applies to new and existing facilities that process raw rendering materials; facilities that process trap grease in addition to rendering, and treatment of wastewater from processes associated with rendering or processing of trap grease at these facilities.

Applicability of the proposed rule is to facilities that conduct inedible rendering operations, whether or not these facilities also conduct edible rendering. If a rendering facility is integrated with either a slaughter house or a meat packing house, or conducts both edible and inedible rendering operations, the edible rendering operations are not subject to the requirements of PR 415. Inedible rendering means that the products and by-products of the rendering process are not intended for human consumption.

Edible rendering processes are essentially meat processing operations; producing lard or edible tallow for use in food products consumed by humans. Edible rendering is generally carried out in a continuous process at temperatures lower than the boiling point of water. The process

usually consists heating edible fats (fat trimmings from meat cuts), followed by two or more stages of centrifugal separation. The first stage separates the liquid water and fat mixture from the solids. The second stage further separates fat from water. The solids may be used in food products or pet foods, and fat may also be used in food products, or soap making operations. Most edible rendering is done by meat packing or processing companies. Edible rendering operations are as odorous as inedible rendering and are exempted from PR 415.

The proposed rule does not apply to:

- Facilities conducting only edible rendering operations (producing products for human consumption) that do not also conduct inedible rendering operations or handle or process trap grease;
- Collection centers for animal carcasses and parts that do not also conduct inedible rendering operations (products not for human consumption) or process trap grease; and
- Facilities that process trap grease but do not conduct inedible animal rendering operations. It should be noted that odors from these facilities will be addressed under a separate rule-making.

In addition to the facility exemptions, certain operations are proposed to be exempt from some or all of the requirements of PR 415, as follows:

- Wastewater treatment operations at an existing facility integrated with a slaughterhouse or meat-packing plant are not subject to the enclosure requirement, provided each volume of rendering wastewater is diluted with more than 40 volumes of wastewater from other sources within the facility such that after mixing, any wastewater exposed to the atmosphere has an average chemical oxygen demand (COD) lower than 1500 mg/L. The demonstration of COD must be demonstrated through 5 years of sampling data; and
- Blood meal processing operations at a facility integrated with a slaughterhouse or meat-packing plant shall not be subject to this rule, provide the operation is conducted in a permanent enclosure operating under negative pressure and meeting the requirements of paragraph (f)(3), and the enclosure is vented to an odor control system meeting the control efficiency requirements.

Definitions

Refer to the proposed rule language for definitions. Key definitions that require further explanation or discussion are listed in Chapter 3.

Core Requirements for New and Existing Facilities

Odor Best Management Practices

All facilities would be required to implement Best Management Practices (BMP) for odor control. This requirement is applicable to new facilities upon startup, and to existing facilities within 90 days after rule adoption.

Permanent Enclosure/Operate in Closed System Requirement

All facilities would be required to operate certain odorous processes within a permanent enclosure or within a closed system. This requirement is applicable to new facilities upon startup and to existing facilities within approximately 3 to 4 years after rule adoption. Existing facilities are required to submit a permit application to the SCAQMD within 12 months after rule adoption

for odor control equipment, to be evaluated in combination with a permanent enclosure. Facilities intending to operate processes affected under PR 415 in a closed system are required to declare such intention to the Executive Officer within 12 months after rule adoption.

If an existing facility owner/operator currently operates all applicable processes within a closed system, no permit applications need to be submitted.

The SCAQMD will issue a Permit to Construct (P/C) for the proposed enclosure or retrofit of an existing non-compliant enclosure. As described above, the permanent enclosure and odor control system will be evaluated together. The timing for issuance of the P/C by SCAQMD is within 180 days after the permit application is deemed complete. Staff will try to issue these permits more quickly than the statutory limit of 180 days. A rendering facility then has up to 24 months after the date of P/C issuance to construct and commission the permanent enclosure, ventilation system and odor control system. Staff proposes this length of time to allow for time needed for budgeting, equipment design and procurement, and installation and testing. Staff believes this timing is reasonable for the proposed requirements.

Ventilation of Permanent Enclosure to Odor Control Equipment

All permanent enclosures are required to be ventilated to odor control equipment. The purpose of this requirement is to prevent release of odorous or foul air from a permanent enclosure directly into the environment. The timing for this requirement is the same as the timing for a permanent enclosure – upon startup for new facilities, and 24 months after a Permit-to-Construct (P/C) is issued for the combined permanent enclosure/odor control system for existing facilities.

Wastewater Treatment

Certain wastewater treatment processes would be required to be enclosed within a permanent enclosure (ventilated to odor control) or operated in a closed system. This includes screens, skimmers, clarifiers, including dissolved air flotation, settling tanks, sludge dewatering equipment, sludge drying equipment and the rendering facility's treated wastewater outlet to the city sewer.

This requirement is applicable to new facilities upon startup. The timing of this requirement for existing facilities is as follows. Within 12 months after rule adoption, the facility owner/operator is required to submit a permit application for necessary enclosures, to be evaluated in combination with odor control as proposed by the owner or operator. A rendering facility then has 12 months after the date of P/C issuance to construct and commission the permanent enclosure, ventilation system and odor control system for odor control of wastewater treatment operations.

Installation of Odor Complaint Contact Sign

All rendering facilities would be required to display a sign with contact information for area residents and businesses to phone in odor complaints. This requirement is applicable upon startup for new facilities and within 6 months after rule adoption for existing facilities.

The sign must list the SCAQMD's 1-800-CUT-SMOG number as the first contact for odor complaints. If desired by the rendering facility owner/operator, a secondary contact at the facility may be listed on the sign. However, if the rendering facility receives an odor complaint directly, facility personnel must notify the SCAQMD by telephone at 1-800-CUT-SMOG no

more than three hours after receiving the odor complaint or after facility personnel became aware of the complaint, or should reasonably have become aware of the complaint.

Both Rule 403 (Fugitive Dust) and Rule 410 (Odors from Transfer Stations and Material Recovery Facilities) have a similar requirement to install a complaint contact sign, so there is precedent for this requirement.

Installation of Signage Requiring Covering of Incoming Trucks

All rendering facilities would be required to display a sign at each truck entrance requiring all trucks to be enclosed or fully covered. This requirement is applicable upon startup for new facilities and within 6 months after rule adoption for existing facilities.

Notification of Intent to Enclose or Operate in a Closed System

The owner or operator is required to submit a letter to the Executive Officer within 12 months after the adoption of the proposed rule declaring the intent to either enclose certain odor-emitting processes and operations within a permanent enclosure or operate these processes and operations within closed systems. A permit application is required within 12 months for new enclosures, as described earlier in this chapter. However, for closed systems where the owner or operator may not need to submit a permit application, a mechanism to inform the SCAQMD of such intent is necessary.

Submittal of Odor Mitigation Plan

In the case of pervasive and ongoing odorous emissions from a rendering facility, the owner or operator may be required to submit an Odor Mitigation Plan (OMP). This can occur either before or after the requirement to construct an enclosure and vent that enclosure to odor control equipment within approximately 3 to 4 years after rule adoption. Submittal is required within 90 days after notification by the Executive Officer that an OMP is required. There are two situations that can trigger this requirement, as follows:

1. A Notice of Violation (NOV) is received for Public Nuisance subject to Rule 402; or
2. Three or more confirmed odor events are received in a consecutive 180-day period.

As described in Chapter 1, in order to receive an NOV under Rule 402, generally 6 or more odor complaints must be received from separate households and verified in a short period of time to constitute a public nuisance. If this occurs, the owner or operator will be required to submit an OMP. The conditions of the OMP are distinct from any corrective action that is required under the settlement terms of the NOV.

The second trigger would correspond to a long-term chronic situation, where 3 or more confirmed odor events are received within a consecutive 180-day period. A confirmed odor event is an occurrence of odor resulting in three or more complaints by different individuals from different addresses, where the source of the odor is verified by District personnel trained in inspection techniques. In this situation, a rendering facility would need to take corrective actions to prevent objectionable odors from crossing its property boundary.

Content and Approval of Odor Mitigation Plan

As previously described, an Odor Mitigation Plan (OMP) may be required either prior to or after the requirement for a permanent enclosure and odor control system is fully implemented. If an OMP is required prior to enclosure, it must include:

- Facility-specific information, as follows:
    - Facility name;
    - Location address;
    - Days and hours of operation;
    - SCAQMD facility ID number;
    - Mailing address; and
    - Title and phone number of person responsible for addressing community complaints received by facility.
- Description of all odor emitting areas within the affected facility.
- Configuration of all odor control equipment that exists at the time of OMP submittal, and the equipment, processes and buildings or rooms it serves.
- Description of work practices that exist at the time of OMP submittal designed to minimize odors from migrating off the facility property.
- A prioritization of odor-emitting areas within the facility, in order of highest-to-lowest odor intensity.
- For each odor emitting area:
    - A description of odor mitigation activities proposed to address odors from within the area;
    - The owner or operator's intent to either enclose operations and processes within a permanent enclosure or operate them in a closed system (for all equipment and processes that are not already within a permanent enclosure or a closed system); and
    - A detailed construction schedule for each proposed permanent enclosure.
- An explanation of why construction of the permanent enclosure and odor control system cannot be expedited and completed prior to the date the enclosure standard becomes effective under the proposed rule.

An OMP submitted after the enclosure standard is fully implemented must address all of the above elements, except for the intent to enclose and detailed construction schedule.

The OMP will be approved or disapproved by the SCAQMD within 90 days. If an OMP is disapproved, it must be resubmitted within 90 days for reconsideration. The Executive Officer will approve the OMP if it is complete and the Executive Officer concurs that all odor mitigation activities proposed to address odors within the odor-emitting areas at the facility are sufficient to resolve the odor problem that triggered submittal of the OMP.

Specific Cause Analysis

If a facility receives a single confirmed odor event, an analysis of the specific cause(s) surrounding the odor event is required to be conducted. The analysis is a process used by a facility subject to this rule to investigate the cause of a confirmed odor event, and involves a description of activities during the time of the odor event, any upset or breakdown conditions at the facility, including potential sources of odors and emission points for all equipment required

to be enclosed. In addition, the analysis must identify corrective measures needed, and corrective measures taken to prevent recurrence of a similar event.

Odor Best Management Practices

The proposed rule identifies 13 Best Management Practices (BMP) that will assist in reducing odors from various points or processes within a rendering facility. A full description of each odor BMP is given in Chapter 3. A summary follows:

1. Covering of Incoming Transport Vehicles: cargo area enclosed or fully tarped.
2. Delivery of Raw Rendering Materials: after enclosure standard is effective, deposit raw materials or odor-tight containers on a continuous basis. Raw material must be within enclosure within 60 minutes after material delivery. Prior to completion of a permanent enclosure, another BMP limits the holding time of incoming raw rendering material.
3. Washing of Outgoing Transport Vehicles: wash cargo area of outgoing trucks where raw rendering materials came into contact with truck.
4. Washing of Drums and Containers: wash open drums or containers that held raw materials prior to leaving facility.
5. Holding Time of Incoming Raw Rendering Materials: time limit for incoming raw rendering materials (prior to enclosure standard becoming effective) of 4 hours for ambient temperature material and 6 hours for refrigerated material to place into cooking process, or be staged in permanent enclosure of odor-tight containers.
6. Repair of Raw Material Receiving Area: fix potholes where raw rendering materials are unloaded and touch the ground outside of an enclosure within 180 days.
7. Holding Time of Raw Materials after Size-reduction: raw materials for batch cooking processes must enter the cooking process or be staged in a permanent enclosure or odor-tight container within one hour after size reduction.
8. Holding Time of Cooked Materials: cooked materials from a batch cooker must be loaded in processing equipment in odor-tight containers within one hour.
9. Transfer of Raw or Cooked Rendering Materials between Enclosures: raw or cooked rendering materials must be transported between permanent enclosures only through a closed system of conveyance, or by odor-tight containers.
10. Delivery Tanker Trucks: trap grease and other odorous liquid loads must be delivered into a closed system.
11. Venting Delivery Tanker Vehicles to Odor Control Equipment: truck must be vented to odor control equipment during unloading, except in a permanent enclosure.
12. Washdown of Receiving Area: once each working day.

13. Cleaning of Floor Drains: maintain drains in a manner that prevents accumulation of rendering materials.

Permanent Enclosure, Ventilation, Closed System and Odor Control Standards

Certain operations and processes at a rendering facility are required to be enclosed within a permanent enclosure, or to be operated within closed systems under PR 415. These include:

- Raw material receiving areas at rendering facilities. The option for a closed system is not available for raw material receiving – after the effective date that a permanent enclosure is required to be operational for the receiving area under the proposed rule raw material receiving must be conducted within a permanent enclosure;
- Conveyors associated with raw material transfer operations;
- Size reduction and conveying equipment, including but not limited to: breakers, crushers hoggers, grinders and conveyors associated with raw material sizing;
- Raw material cookers. Note that a batch cooker is not considered a closed system. The option for a closed system is not available for batch cookers; and
- Process equipment for separating rendered fat from protein materials (meat and bone meal), including but not limited to: centrifuges, presses, separators, pumps, screens, tanks that aren't completely enclosed, bins and hoppers, and conveyors used to transport materials between equipment.

A permanent enclosure must meet two key requirements related to VOC capture and ventilation. These include:

- The combined area of all routine enclosure openings through which odors can escape from a permanent enclosure must not exceed 5% of the enclosure envelope.
- The permanent enclosure must be ventilated by a system designed and operated to maintain a minimum inward face velocity through each routine enclosure opening of at least 200 feet per minute (fpm).

A closed system must meet the following minimum requirements:

- Each component of a closed system must be maintained in a manner that minimizes leaks from occurring and prevents odors from escaping from the system, to the maximum extent possible;
- Material conveyors and troughs that are components of a closed system must be completely enclosed on all sides, except for doors or panels for maintenance and personnel access;
- Bins and hoppers that are components of a closed system must be completely enclosed on all sides, except for doors or panels for maintenance and personnel access;
- Mating metal surfaces on doors or access panels described above must be sealed with gasket material;
- Air gaps in components of a closed system must be sealed with gasket material or with caulk or sealant; and
- Each section of ductwork containing vapor within a closed system must be sealed at every connection to other components of the closed system using best industry materials and practices.

These minimum requirements do not constitute a comprehensive list, and additional conditions may be imposed if a facility owner/operator is required to submit permit applications for modification of a piece of equipment that is currently permitted. The facility owner/operator may propose and use an alternative to these minimum requirements if that alternative is approved by the Executive Officer.

An odor control system that treats fugitive odors from inside a permanent enclosure must meet certain minimum standards. It must be designed and operated to maintain a control efficiency of not less than 70% for nitrogen compounds and not less than 70% for sulfur compounds.

As shown in Chapter 1, there may be 11 or more nitrogen compounds in rendering odors and 6 or more sulfur compounds. Testing of multiple compounds would be expensive, so PR 415 allows a marker compound to represent all sulfur compounds and a marker for nitrogen compounds as well. Markers are designated as follows:

1. Ammonia (NH_3) for nitrogen compounds; and
2. Hydrogen sulfide (H_2S) for sulfur compounds.

Within 180 days after the effective date to conduct operations within a permanent enclosure (where required by the rule), a performance test is required to be conducted by a third-party tester, to demonstrate the required control efficiency. Testing and analytical methods are as follows:

- SCAQMD Method 207.1 for ammonia; and
- SCAQMD Method 307 for hydrogen sulfide.

It should be noted that marker compounds are only used in the very limited application of a performance test demonstration to calculate control efficiency of odor control equipment. Marker compounds are not surrogates for fugitive rendering odors under PR 415. Minimum control efficiency requirements of PR 415 are not for testing of odor control equipment serving high intensity odors that are already addressed by Rule 472 – Reduction of Animal Matter. Odor control equipment serving high-intensity vapors must meet a much higher control efficiency.

Wastewater Treatment

Certain wastewater treatment processes at a rendering facility are required to be enclosed within a permanent enclosure, or to be operated in a closed system. These include:

- Screens
- Skimmers
- Clarifiers, including dissolved air flotation
- Settling tanks
- Sludge dewatering equipment
- Sludge drying equipment, and
- The rendering facility treated wastewater outlet to city sewer.

These equipment are subject to the timing requirements of subparagraph (d)(1)(D) in PR 415, which requires permit applications to be submitted within 12 months after rule adoption, and an effective date for operation of a permanent enclosure within 12 months after a permit-to-construct is issued by SCAQMD.

Recordkeeping

The following records would be required to be maintained at the rendering facility for at least 3 years and made available to SCAQMD personnel upon request:

- Records of all readings taken by anemometer to demonstrate compliance with the inward face velocity requirement of openings in a permanent enclosure; and
- A written log of all odor complaints received by the rendering facility. The odor complaint log must contain:
    - Date and time complaint was received;
    - Date and time of alleged odors;
    - Outdoor ambient temperature at time of complaint;
    - Odor description and intensity (i.e., week, moderate, strong);
    - Weather conditions;
    - Wind speed and direction;
    - Name and contact phone number of complainant, if provided; and
    - Determination of cause for odor emissions that generated the complaint, if found

PUBLIC PROCESS

The development of PR 415 was conducted through a public process. Through the rulemaking process, the SCAQMD staff met with a Working Group, consisting of industry, environmental and community groups. To date, four Working Group meetings were held, in July 2014, December 2014, February 2015 and June 2015. A Public Workshop was conducted on March 5, 2015, and a Public Consultation meeting is planned for June 30, 2015. Key summary comments and responses received during the rule development process are included in Appendix A of this report. A complete record of the summarized comments received and responses to them will be provided in the final staff report.

CHAPTER 1: BACKGROUND

INTRODUCTION

RENDERING OPERATIONS

REGULATORY HISTORY

INTRODUCTION

Proposed Rule (PR) 415 – Odors from Rendering Facilities is designed to reduce odors from facilities conducting rendering operations. Rendering is a process that converts waste animal tissue into stable, value-added commodities, including fat commodities such as yellow grease, choice white grease and bleachable fancy tallow, and protein commodities, such as meat and bone meal and poultry byproduct meal. Industries that use the commodities produced during rendering include animal feed, fertilizer, biofuels, cosmetics and other industries.

Development of PR 415 is the result of a quality of life issue that was identified by the working group for the Clean Communities Plan (CCP) in the pilot study area of Boyle Heights. In November 2010, the SCAQMD Governing Board approved the CCP. SCAQMD staff began implementing the CCP in the pilot study area of Boyle Heights, a community near the Vernon rendering facilities, by meeting with a stakeholder working group beginning in July 2011. The purpose of this working group was to identify air quality issues of importance to the community in Boyle Heights and surrounding communities. The prevalence of odors from rendering facilities in Vernon, directly south of Boyle Heights, was of great concern to the working group. As a direct result of the CCP pilot study process, SCAQMD staff undertook rulemaking to address odors from rendering operations in early 2014.

Rendering Facilities in the South Coast Air Basin

There are five existing facilities that conduct inedible rendering operations in the Basin. All five are located in Vernon in close proximity to one another. Three facilities are independent, and two are integrated with either a slaughterhouse or meat-packing plant. The differences between independent and integrated rendering facilities are described in this chapter. One facility uses a batch rendering process, in which raw rendering materials are loaded into the cooker in discrete batches, and the others use a continuous cooking operation. All five facilities will be subject to PR 415. In addition to these existing facilities, one planned facility may be subject to the proposed rule if permitted, once it becomes operational.

Rendering Industry Characterization

According to the National Renderers Association (NRA), the US livestock sector slaughters more than 150 million head of cattle, calves, hogs, and sheep and more than 55 billion pounds of poultry annually[1]. The rendering industry consists of more than three-dozen firms operating more than 200 plants across the US and Canada[2]. Rendering facilities serve animal industries by using the by-products produced in these industries. By-products amount to more than half the total volume produced by animal agriculture. By weight, approximately 49% of cattle, 44% of pigs, 37% of chicken broilers and 57% of fish are not consumed by humans[3]. By-products from animal agriculture include hides, skins, hair, feathers, hoofs, horns, feet, heads, bones, blood, organs, glands, intestines, muscle and fat tissue, and entire carcasses. Many of these by-products are processed in rendering facilities. Organic by-products are highly perishable, and may include some laden with microorganisms that are pathogenic to humans and animals. Rendering offers a system of handling and processing of animal materials that complies with the requirements of disease control.

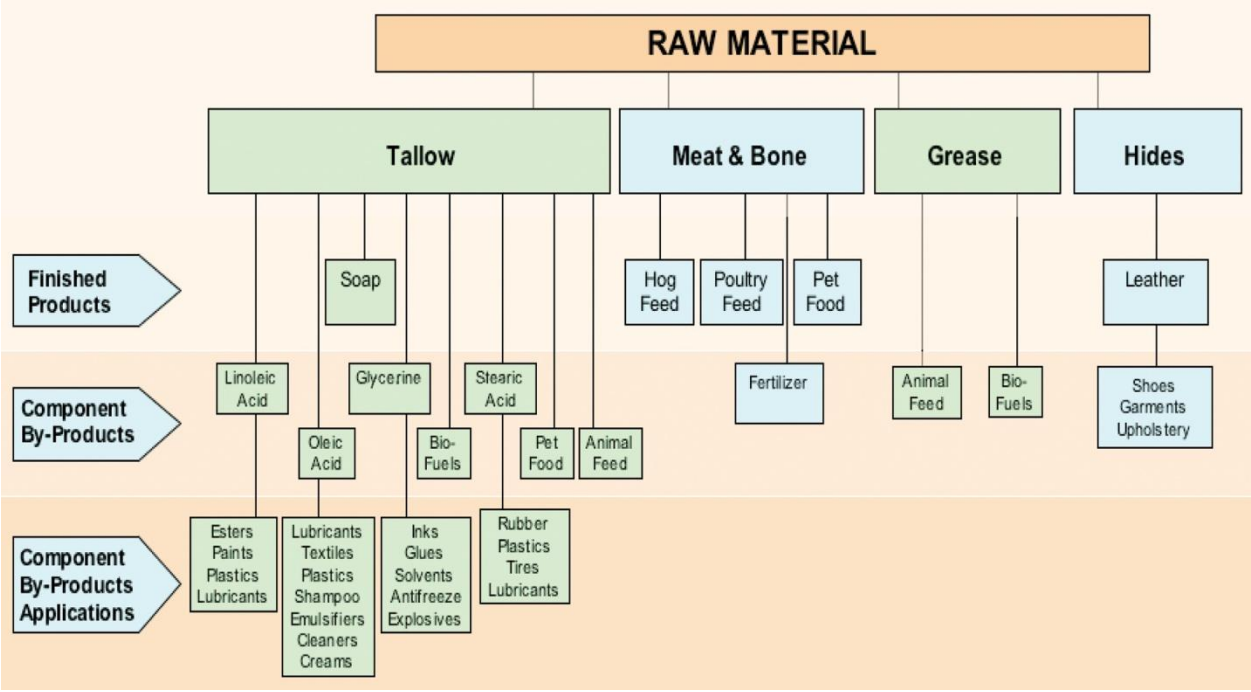
[1] NRA Website: http://www.nationalrenderers.org/
[2] NRA Website: http://www.nationalrenderers.org/
[3] An Overview of the Rendering Industry and its Contribution to Public and Animal Health; Meeker, Hamilton

In addition to disease prevention, processing of by-products from various animal industries results in nearly 20 billion pounds of animal feed and industrial products in the form of fat and protein commodities[4].

Value and Use of Rendered Products

The nearly 20 billion pounds of ingredients that renderers produce each year have been valued at more than $3 billion, of which about $900 million is exported. Meat and bone meal accounted for 6.6 billion pounds of this, poultry byproducts 4 billion pounds, and blood meal 226 million pounds[5]. These ingredients are valued for their nutrients - high protein content, digestible amino acids, and minerals — and their relatively low cost. Poultry operations and pet food manufacturers accounted for 66% of the domestic meat and bone meal market of nearly 5.7 billion pounds in 2000, while hog and cattle operations accounted for most of the remaining market[6]. Figure 1-1 shows the products and by-products of the rendering process.

Figure 1-1 – Products and By-products Produced During Rendering



http://www.sec.gov/Archives/edgar/data/916540/000091654010000031/ex99_1.htm

Integrated vs. Independent Rendering Facilities

Integrated plants operate in conjunction with animal slaughter and meat processing plants and handle 65%-70% of all rendered material. The estimated 95 U.S. and Canadian facilities (NRA) render most edible animal byproducts (i.e., fatty animal tissue), mainly into edible fats (tallow and lard) for human consumption. Edible rendering is subject to the inspection and safety standards of USDA's Food Safety and Inspection Service (FSIS) or its state counterparts. In California, that agency is the California Department of Food and Agriculture (CDFA). These

[4] "Survey Says: A snapshot of Rendering", Jekanowski, Render Magazine, 2011

[5] "Animal Rendering: Economics and Policy", CRS Report for Congress, Becker, 2004

[6] "Animal Rendering: Economics and Policy", CRS Report for Congress, Becker, 2004

plants also render inedible byproducts (including slaughter floor waste) into fats and proteins for animal feeds and for other ingredients.

Because a meat plant typically processes only one animal species (such as cattle, hogs, or poultry), its associated rendering operations likewise handle only the byproducts of that species. The inedible and edible rendering processes are segregated.

Independent operations handle the other 30%-35% of rendered material. These plants, estimated by NRA at 165 in the United States and Canada, usually collect material from other sites using specially designed trucks. They pick up and process fat and bone trimmings, inedible meat scraps, blood, feathers, and dead animals from meat and poultry slaughterhouses and processors (usually smaller ones without their own rendering operations), farms, ranches, feedlots, animal shelters, restaurants, butchers, and markets.

As a result, the majority of independent renderers are likely to handle materials from several types of animal species. Nearly all of the resulting products of the rendering process from independent facilities are intended for nonhuman consumption (e.g., animal feeds, biofuels, industrial products). The U.S. Food and Drug Administration (FDA) regulates animal feed ingredients, but its presence in rendering facilities, or in feed mills that buy rendered ingredients, is not a legal requirement if the facility does not conduct edible rendering operations.

RENDERING OPERATIONS

The Rendering Process

In most facilities, raw materials received at the facility into a pit or enclosure and conveyed to size reduction equipment. The raw material is ground to a uniform size and placed in cookers, which evaporate moisture and free fat from protein and bone. A series of conveyers, presses, and a centrifuge continue the process of separating fat from solids. The finished fat (e.g., tallow, lard, yellow grease) goes into separate tanks, and the solid protein (e.g., meat and bone meal, poultry meal) is pressed into cake for processing into feed. Other rendering systems may be used, including those that recover protein solids from slaughterhouse blood or that process used cooking oil from restaurants. This cooking oil is recovered (often in 55-gallon drums) for use as yellow grease in non-human food products like animal feeds.

Batch vs. Continuous Rendering

Batch Rendering

A batch cooker is designed to be loaded in discrete batches; then the raw materials are processed as a batch to a target moisture content percentage. Batch processing times vary due to moisture content of the raw material and the operator can adjust the temperature of the cooker as needed to achieve the desired moisture content at the end of the cycle. The batch is then unloaded for fat separation. A batch cooker can function as a cooker, dryer, hydrolyzer, or processor.

Continuous Rendering

Note: The numbers in the following description of a continuous rendering process correspond to process points indicated on Figure 1-2 – Schematic Diagram of a Typical Continuous Rendering Process.

In a typical continuous rendering process, raw material from receiving bins (1) is conveyed from the bins by a conveyor (2) and discharged across a magnet (3) that removes ferrous metal. A raw material grinder (4) then reduces the raw material to a uniform particle size for material handling and improved heat transfer during cooking. The ground raw material is then metered from a bin (5) at a constant rate into a continuous cooker operating at a constant temperature (6).

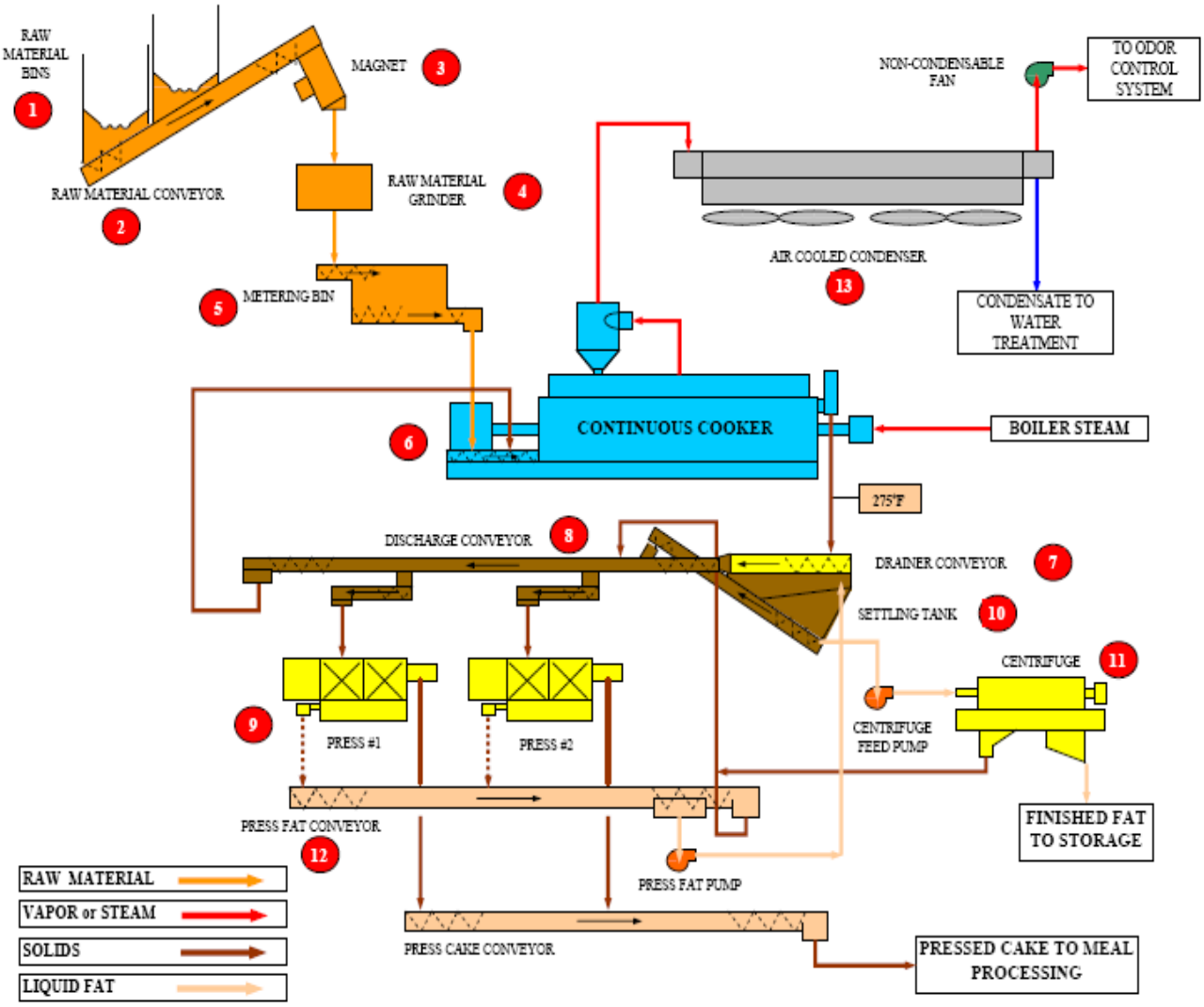
The continuous cooker is generally heated by boiler steam. The cooker brings raw material to a temperature between 240º and 290ºF, evaporating moisture and freeing fat from protein and bone. A dehydrated slurry of fat and solids is discharged from the continuous cooker and transported to a drainer conveyor (7) that separates liquid fat from solids. Solids from the drainer conveyor are combined with solid discharge from the settling tank (10) and centrifuge (11) and conveyed via discharge conveyor (8) to screw presses (9), which mechanically reduce the solids' fat content. Solids discharged from the screw presses as a pressed cake (12) are further processed into meal.

The fat removed in the screw presses (9) is pumped to a settling tank (10), along with fat discharged from the drainer conveyor. In the settling tank, heavier bone and protein particles settle to the bottom. Liquid fat from the settling tank is pumped to a centrifuge (11), which removes solid impurities from the fat. The clarified fat is further processed or stored as finished fat[7].

Water vapor, containing significant odor potential, exits the continuous cooker (6) through a vapor duct system that generally includes an entrainment trap to separate entrained solids and return them to the cooker. A duct system then transports vapor to a condenser (13). Non-condensable gases are removed from the condenser and routed to an odor control system (not shown). Odorous gases from other parts of the process are also routed to the odor control system through a ductwork system. Figure 1-2 is a schematic diagram of a typical continuous dry rendering process.

[7] Essential Rendering – Rendering Operations; Anderson

Figure 1-2 – Schematic of Typical Continuous Dry Rendering Process

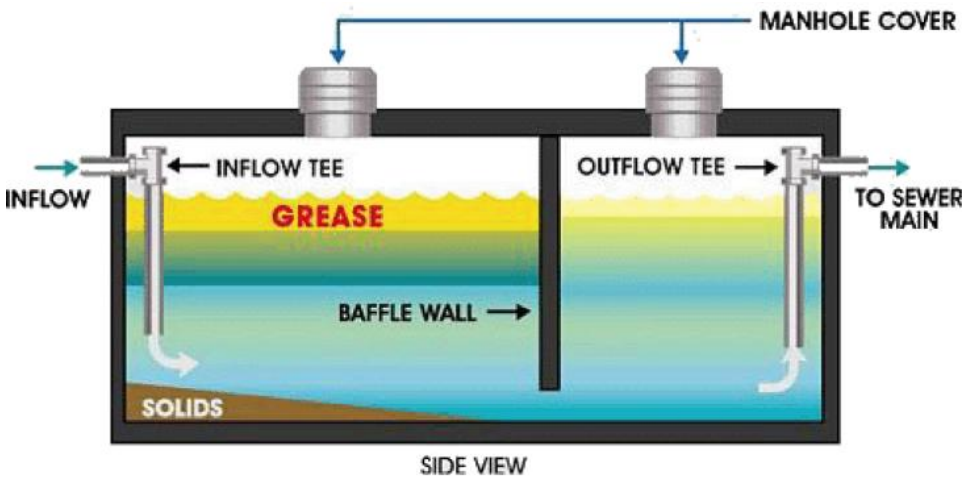


From Rendering: A Proven Disposal Technology; Hamilton, R. (2003). Kansas City, Missouri: Midwest Regional Carcass Disposal Conference.

Trap Grease Collection and Processing

Trap grease is collected at three of the affected rendering facilities. Trap grease is pumped from restaurant and other food service establishment grease traps; also known as grease interceptors. Grease interceptors are used by restaurants to reduce the volume of fats, oils and grease (FOG) from entering the city sewer systems and prevent blockages of that system as well as the accidental discharge of wastewater into the storm drain system. A typical restaurant grease interceptor is shown in Figure 1-3.

Figure 1-3 – Typical Restaurant Grease Interceptor



A grease interceptor for a large food establishment is typically located below grade and consists of discrete compartments with baffles between them that restrict the flow of grease and solids from kitchen waste, thereby only allowing water to pass into the sewer. Grease floats to the top of the inflow compartment, and food particles and other solids sink to the bottom. When the grease interceptor is pumped out (no established regulatory requirement for timing of grease trap servicing; it averages between one month and one year), water, grease and food particles are all removed and are collectively known as "trap grease".

Trap grease is required to be hauled by a licensed waste hauler, and is taken either to a local wastewater treatment facility (local POTW) or to a facility that processes trap grease. Trap grease consists mainly of wastewater, with small amounts of brown grease and solids that must be removed during processing. Processing consists of letting trap grease tankage settle and then pumping wastewater from the bottom of the tank. The wastewater requires further treatment prior to disposal in the city sewer.

At a rendering facility, wastewater from trap grease is typically processed through the same treatment system as wastewater from rendering; hence the applicability to processing of wastewater for rendering facilities that also process trap grease.

Potential for Odors from Rendering Operations

Odor control remains one of the rendering industry's greatest challenges. Research in the early 1970s indicated that untreated rendering plant emissions could be detected up to 20 miles away from rendering plants[8]. As for the sheer number of odorous compounds in rendering odors, 110 volatile compounds can be identified in rendering odors, with about 25 contributing most noticeably to rendering plant odors[9]. Most of these organic compounds are generated from the

[8] "Odor Controls for Rendering Plants." *Environmental Science and Technology* 7 (6):504-510. Bethea, Murthy, Carey; 1973.

[9] "Gas Chromatography/Mass Spectrometry Identification of Organic Volatiles Contributing to Rendering Odors." *Environmental Science and Technology* 16 (12):883-886. Van Langenhove, Van Wassenhove, Coppin, Van Acker, Schamp; 1982

breakdown of proteins and fats during the cooking process[10] or during decay of raw material prior to cooking.

Besides organic compounds, other odor compounds of concern from rendering operations include hydrogen sulfide and ammonia. Because of the wide variety of chemical compounds contributing to rendering plant odors, current strategies for odor control rely on destroying all volatile compounds being emitted[11].

There are several operations and processes within a rendering facility that have noticeable odors associated with them. These include, in order of process flow but not necessarily odor intensity; raw material receiving, raw material size reduction, cooking, fat processing, non-condensable from the condenser following the cooker, and wastewater treatment. High intensity odors from the cooker, presses and centrifuges are currently required to be incinerated at 1202^{o}F for at least 0.3 seconds under SCAQMD Rule 472 – Reduction of Animal Matter. Incineration at this temperature is a highly effective odor control method for organic compounds, the composition of most substances in rendering odors.

Since the high intensity odors emitted from the cooking process are already required to be controlled, the nature of odors that continue to be present at a rendering facility from the processes noted are fugitive in nature. There are many points both in a batch cooking process as well as in a continuous cooking process where fugitive odors can escape. Collectively, this large number of sources of fugitive odors can create odors which are emitted from a rendering facility and can travel beyond the facility's property line.

Character of Odors from Rendering Operations

Humans perceive odors when sensory neurons inside the nose are stimulated by one or more odorants. An odorant is any substance that has a noticeable odor. There are 350 possible odorant receptor genes that are responsible for the perception of odors in the neurons within the nose, and the odor receptors on each neuron are activated by one, two or more odorant compounds. The activation of multiple sensory neurons means that there are a large number of unique odors that humans can perceive[12]. Odors can be described by several qualities, including:

- Character – the qualitative property of the odor (burnt, fishy, sweet, etc.)
- Intensity – weak, mild, strong
- Frequency – how often the odor appears
- Duration – the length of time an odor is present

Together, all of these qualities define the pleasantness or unpleasantness of the odor, or "hedonic tone". Not everyone perceives odors the same way. Sensitivity to different odors can vary widely between people.

[10] http://www.rendermagazine.com/articles/2012-issues/august-2012/development-of-new-odor-control-methods/
[11] http://www.rendermagazine.com/articles/2012-issues/august-2012/development-of-new-odor-control-methods/
[12] Characterization of Odor Nuisance; Curren, 2012

Table 1-1 on page 1-8 shows 25 common chemical compounds that contribute noticeably to rendering facility odors, and includes the odor detection threshold for each, if known. The odor detection threshold is a measure of the lowest concentration of an odorant that is perceptible by the human sense of smell. This threshold is given in parts per billion (PPB). As evident from Table 1-1, some of these compounds can be detected at very low concentrations; 1 PPB or lower.

Table 1-1 – Character of Odors from Rendering Operations

Chemical Abstract Service (CAS) No.	Odorant	Chemical Formula	Comments	Odor Threshold (ppb)	Odor Character	Odor Threshold References
Aldehydes and Ketones						
75-07-0	acetaldehyde	CH_3CHO	Occurs naturally in coffee, bread, and ripe fruit, and is produced by plants	50	lemon, alcohol	1
16423-19-1	geosmin (trans-1,10-dimethyl-trans-9-decalol)	$C_{12}H_{22}O$	Earthy odor contaminant in fish, beans and water	0.1	earthy-muddy odor	2
623-37-0	3-hexenal	$C_6H_{14}O$	Eye irritant	0.25	horseradish, fruity, fishy, sweaty	3
557-48-2	2,6-nonadienal	$C_9H_{14}O$	Used to flavor water.	0.01	powerful cucumber	3
18829-56-6	2-nonenal	$C_9H_{16}O$	Odor is perceived as orris, fat and cucumber. Has been associated with human body odor alterations during aging.	0.1	paper odor	3
4312-99-6	1-octene-3-one	$C_8H_{14}O$	Odorant responsible for the typical metallic smell of metals and blood coming into contact with skin. Strong metallic mushroom-like odor with a low odor detection threshold	0.005	mushroom and musky	3
Amines (Nitrogen Compounds)						
7664-41-7	ammonia	NH_3	Trace quantities in the atmosphere; produced from the putrefaction (decay process) of nitrogenous animal and vegetable matter.	17	very sharp, pungent	4
multiple	butyl amine	$C_4H_{11}N$	One of four isomeric amines of butane. Liquid having the fishy, ammonia-like odor common to amines.	1,800	fishy	5
124-40-3	dimethyl amine	$(CH_3)_2NH$	Found widely in animals and plants; present in many foods at the level of a few mg/kg. Ammonia-like odor.	37	pungent fishy	4
75-04-7	ethyl amine	C_2H_7N	Strong ammonia-like odor.	950	fishy	6
74-89-5	methyl amine	CH_3NH_2	Simplest primary amine. Has a strong odor similar to fish.	2.1	pungent fishy	4
462-94-2	cadaverine (1,5-diaminopentane)	$C_5H_{14}N_2$	Toxic in large doses.	N/A	cadaver	N/A
120-72-9	indole (2,3-benzopyrrole)	C_8H_7N	Can be produced by bacteria as a degradation product of the amino acid tryptophan. Occurs naturally in human feces and has an intense fecal odor.	1.0	fecal	4
110-60-1	putracene (1,4-diaminobutane)	$C_4H_{12}N_2$	Toxic in large doses.	N/A	putrid	N/A
83-34-1	skatole (3-Methyl-1H-indole)	C_9H_9N	Mildly toxic organic compound belonging to indole family. Occurs naturally in feces (produced from tryptophan in the digestive tract); strong fecal odor	1.2	putrid, fecal	4
121-44-8	triethylamine	$N(CH_2CH_3)_3$	Strong fishy odor reminiscent of ammonia; smell of the hawthorn plant.	480	strong fishy	7
75-50-3	trimethylamine	$N(CH_3)_3$	Product of decomposition of plants and animals. Odor associated with rotting fish, some infections, bad breath	0.8	pungent, fishy, saline odor	8
Organic Acids						
107-92-6	butyric acid (butanoic acid)	$C_4H_8O_2$	Product of anaerobic fermentation (including in the colon and as body odor). It has an unpleasant smell and acrid taste. Distinctive smell of human vomit.	1.0	sour milk, rancid butter	4
Sulfur Compounds						
109-79-5	butyl mercaptan	$C_4H_{10}S$	Fetid (extremely foul-smelling) odor, commonly described as "skunk" odor.	1.0	ode to skunk	9
624-92-0	dimethyl disulfide	$C_2H_6S_2$	Flammable liquid with an unpleasant, garlic-like odor.	12	sour, onion like odor	10
75-18-3	dimethyl sulfide	C_2H_6S	Becomes highly disagreeable at even quite low concentrations.	1.0	cabbage like	3
75-08-1	ethyl mercaptan	C_2H_6S	Strongly disagreeable odor that humans can detect in minute concentrations. Intentionally added to butane and propane to impart an easily noticed smell to these normally odorless fuels.	1.0	sour, garlic odor	11
7783-06-4	hydrogen sulfide	H_2S	Often results from the bacterial breakdown of organic matter in the absence of oxygen gas, such as in swamps and sewers; process is known as anaerobic digestion.	4.7	rotten eggs	4
74-93-1	methyl mercaptan	CH_4S	Released from decaying organic matter.	2.2	sour, garlic odor	12
Other Compounds						
2371-42-8	2-methyl-iso-borneol	$C_{11}H_{20}O$	Odor detection threshold is very low. One of the chemicals with major influence on the quality of drinking water	N/A	camphoraceous odor	N/A
123-92-2	iso-amyl acetate (3-methylbutyl acetate)	$C_7H_{14}O_2$	Used to confer banana flavor in foods.	25	banana-like odor	13

a. Reference: 1999 Proceeding of the Georgia Department of Agriculture Odor Control Program for Rendering Plants

N/A = Not Available

Odor Threshold References

1. Lakes Environmental Software, Air Toxics Index
http://www.lakes-environmental.com/toxic/ACETALDEHYDE.HTML
2. Off-flavor in Catfish Home Page, The Home Page of Dr. Peter Perschbacher
http://www.geocities.com/CapeCanaveral/5824/geosmin.html
3. Leffingwell & Associates
http://www.leffingwell.com/odor.htm
4. "Measuring Farmstead Odors", Oklahoma Cooperative Extension Services
http://www.agweb.okstate.edu/pearl/biosystems/general/f1740.htm
5. NIOSH OCCUPATIONAL SAFETY AND HEALTH GUIDELINES FOR CHEMICAL HAZARDS;
Supplement III-OHG 1995 DHHS (NIOSH) Publication No. 95-110
http://www.cdc.gov/niosh/pdfs/0079-rev.pdf
6. NIOSH/OSHA/DOE Health Guidelines
http://www.osha-slc.gov/SLTC/healthguidelines/ethylamine/recognition.html - healthhazard
7. Lakes Environmental Software, Air Toxics Index
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8. NIOSH/OSHA/DOE Health Guidelines
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http://www.mathesongas.com/msds/ButylMercaptan.htm
10. Matheson Tri-Gas, Inc. Material Safety Data Sheet
http://www.mathesongas.com/msds/DimethylSulfide.html
11. Matheson Tri-Gas, Inc. Material Safety Data Sheet
http://www.mathesongas.com/msds/EthylMercaptan.htm
12. Matheson Tri-Gas, Inc. Material Safety Data Sheet
http://www.mathesongas.com/msds/MethylMercaptan.htm
13. NIOSH/OSHA/DOE Health Guidelines
http://www.osha-slc.gov/SLTC/healthguidelines/isoamylacetate/recognition.html

REGULATORY HISTORY

Rule 402 - Nuisance

Rule 402, which mirrors state Health and Safety Code §41700, prohibits the discharge of air contaminants or other material which can cause nuisance or annoyance to any considerable number of people or to the public or which endanger the comfort or repose of any such persons, or the public. Historically, facilities within the South Coast Air Basin that emit nuisance odors have been cited for violation of Rule 402.

Under Rule 402, a Notice of Violation (NOV) for public nuisance can only be issued after the SCAQMD receives public complaints. A specified number of public complaints, generally 6 or more complaints from separate households during the same odor event, must be received to constitute a 'public nuisance'. This is because the nuisance must affect "a considerable number of persons or the public." There are limitations with the implementation of Rule 402 to address complaints regarding odors from rendering facilities. Rule 402 does not contain a mechanism to reduce odors from rendering facilities and does not establish minimum standards to reduce or minimize odors. Rule 402 is a reactive approach to public complaints, since SCAQMD staff must wait for public complaints prior to taking enforcement action. Often, there is a lag in time between the complaint and inspector verification of an odor, making it difficult to address specific odor issues. In addition, rendering facilities are located in close proximity to each other, making it difficult for SCAQMD inspectors to determine the source of an odor complaint.

SCAQMD Authority to Regulate Odors

The District is given broad authority to regulate air pollution from "all sources, other than emissions from motor vehicles." Health and Safety Code (H&SC) §40000. The term "air pollutant" includes odors [H&SC §39013]. Therefore, the District may regulate to control air pollution, including odors, from PR 415 sources. In addition, the District has authority to adopt such rules as may be "necessary and proper" to execute the powers and duties imposed on the District by law. [H&SC §40702].

The District's legal authority to adopt and enforce PR 415, establishing best management practices and requirements to reduce odors from rendering facilities also derives from H&SC §41700, which, in pertinent part, prohibits the discharge of air contaminants causing annoyance to the public. It further prohibits the discharge of air contaminants, such as odors, which "endanger the comfort, repose, health, or safety of any of those persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property." [H&SC §41700]. The District's authority granted by H&SC 41700 to protect the public's comfort and health and safety provides for the regulation of facilities in order to prevent the discharge of odors before they cause nuisance or annoyance to the public.

In addition, H&SC §40001(b) authorizes the District to adopt rules and regulations, such as PR 415, and provides, in relevant part, for the prevention and abatement of air pollution episodes which cause discomfort or health risks to a significant number of persons. PR 415 is a reasonable and proper use of the District's regulatory authority.

Findings of Public Nuisance

In order for an odor complaint to be verified by an SCAQMD inspector, the inspector needs to perform several sequential steps, which include: respond to the odor complaint; interview the complainant; detect the same odor as the complainant describes; and trace the odor back to its source. It is often difficult to complete this process during an odor event while the odors are still present, assuming that a facility source can even be identified. Due to the very long distances rendering odors can travel and the proximity of the five Vernon area facilities relative to one another, it is often not possible to pinpoint a single facility as the source of odors.

Odor events from rendering facilities in the Vernon area rarely rise to the level of public nuisance as defined under Rule 402 and H&SC §41700. This is true despite the fact that unpleasant odors typical of rendering operations can often be detected miles away from the Vernon area rendering facilities, and odors are prevalent many days out of the year. In fact, a verified public nuisance event is so rare that since 2000, only a single notice of violation (NOV) has been issued for public nuisance odors from a rendering facility in the South Coast Air Basin. However, given the difficulties of making a finding of public nuisance, SCAQMD staff does not believe the low number of NOVs is indicative of the impact on area residents.

Direct Regulation of Odor Emissions in other States

In 2000, Redwine and Lacey[13] conducted a survey of states to determine regulations pertaining to odor emissions from confined animal feeding operations (CAFOs). They reported that ten states have regulations directly limiting odor emissions directly. Thirty-four other states were found to have some regulation designed to curtail odor emissions without explicit limitations.

Of the ten states with explicit odor limits, six specify an allowable detection threshold at some location such as the property line of the operation or the affected business or dwelling. Rhode Island and Vermont "prohibit emission of objectionable odors beyond the property line,". South Carolina states that "no producer may cause, allow or permit emission of an undesirable odor into the ambient air unless preventive measures to abate/control the odor are utilized."

Finally, Washington requires that "any person that allows the emission of an odor must use recognized good practices to minimize the odors; masking is not allowed." All ten states base odor limits on human perception; none have specified limits based on analytical measurement of odorous compounds. Of the 34 states with implicit odor regulations, ten employ setback distances. Distances vary from a low of 50 ft in Arkansas to a high of 16,000 ft in Kansas. Several states require odor control plans as a part of a pollution abatement permit.[14]

Regulation of Rendering Facilities by the City of Provo, UT

In 1999, the city of Provo, UT adopted an ordinance for rendering facilities located in and around Provo. The purpose of the ordinance includes the language: ". . . to not emit offensive or noxious odors that create a nuisance limiting the ability of other persons or entities to enjoy the safe, healthful, and economic use of their property."[15] The odor control provisions of the city

[13] A Summary of State Odor Regulations Pertaining to Confined Animal Feeding Operations; Redwing, J.; Lacey, R., 2000

[14] http://www.deq.virginia.gov/Portals/0/DEQ/LawsAndRegulations/GeneralAssemblyReports/swineodor.pdf

[15] http://www.codepublishing.com/ut/provo/mobile/index.pl?path=../html/Provo07/Provo0706.html

ordinance represent the type of rendering odor control (i.e. enclosure of odorous operations; enclosure kept under negative pressure; venting enclosure to odor control system) that PR 415 seeks.

Notable requirements in this ordinance include:

- *All storage of dead animals or renderable raw material shall be inside the rendering facility and maintained under negative air pressure at all times during storage. Finished product shall be stored inside the rendering facility. [Ch. 7.06.060(1)]*
- *The dead animal or renderable raw material receiving area shall be totally enclosed and maintained under negative air pressure and the exterior door must be closed when dead animals or renderable raw material are being delivered. [Ch. 7.06.060(3)]*
- *The rendering process shall be totally enclosed and maintained under negative air pressure at all times. The air evacuation rate shall be such that . . . there are a minimum of twenty-five (25) exchanges of building air per hour for all buildings required to be under negative air pressure while the rendering process is in operation, and for two (2) hours after the rendering process has ceased to operate. [Ch. 7.06.080(3)]*
- *The rendering facility shall not operate unless the odor control system is operating and in full use. [Ch. 7.06.080(4)]*
- *The odor control system shall operate in such a manner that unreasonably offensive or noxious odors are not detectable beyond the property line of the rendering facility. When . . . investigation determines that a rendering facility emitted unreasonably offensive or noxious odors, the rendering facility shall be served with a notice of violation. [Ch. 7.06.080(5)]*
- *Openings and doors to the rendering facility shall remain closed at all times, except during actual entry or exit of trucks and/or personnel. All doors shall be equipped with closers that will ensure positive door closure. [Ch. 7.06.080(8)]*
- *All delivery trucks, trailers and any attendant containers used to carry renderable raw materials or dead animals shall be covered or carried within a covered truck or trailer and all dump doors, covers and valves shall be maintained to prevent any water, blood or other material from leaking or escaping in any manner during the transport and/or delivery of raw material.*

Requirements for Permitting of Rendering Facilities in Texas

The Texas Commission on Environmental Quality (TCEQ) issues air permits for all rendering facilities in the state of Texas. For new rendering facilities, or when changes are made to existing rendering facilities that increase throughput limits, TCEQ imposes standard conditions on rendering facilities. The odor control provisions of the standard conditions imposed by the TCEQ represent the type of rendering odor control (i.e. enclosure of odorous operations; enclosure kept under negative pressure; venting enclosure to odor control system) that PR 415 seeks.

Standard conditions include many that deal with holding times, enclosure, ventilation of the enclosure, and the odor control system, as follows:

- *Unrefrigerated raw rendering materials shall enter the receiving pit within 24 hours of slaughter.*
- *Refrigerated raw rendering materials shall enter the rendering receiving pit within 48 hours of slaughter. Of the 48 hours, not more than 24 hours of that time shall be unrefrigerated.*
- *All slaughterhouse materials received on the plant site shall be placed in the rendering process receiving pit immediately upon receipt or shall be stored in trailers . . . for a period not to exceed 48 hours before being transferred to the rendering process receiving pit. The . . . enclosure shall be completely covered and paved with concrete.*
- *All whole animal carcasses received on the plant site shall be placed in the rendering process receiving pit immediately upon receipt or shall be stored in a staging building for a period not to exceed 48 hours before being transferred to the rendering process receiving pit. The staging building shall be completely enclosed, covered, and paved with concrete. The doors to this building shall be kept closed at all times, except when loading or unloading.*
- *The raw materials with the potential to produce nuisance odor conditions and all raw materials that have exceeded 24 hours of on-site storage time shall be treated . . . with Positive Deodorant food-grade odor suppressant.*
- *At no time shall the permit holder cause or allow conditions to exist that result in noncompliance with 30 Texas Administrative Code (TAC) § 101.4 as it relates to nuisance odor conditions.*
- *All areas of the rendering building where odors can be produced shall be maintained under negative pressure during all rendering operations including the receiving of raw material, cooker operations, processing of finished product; and during any rendering equipment maintenance period which might result in odorous emissions. All doors and openings shall remain closed during rendering and drying operations, except as necessary to enter or exit the building, to receive raw materials, or conduct maintenance activities. Raw materials shall not be allowed to accumulate in a way that would prevent the closure of any doors.*
- *All plant air discharge shall be treated by a packed-bed room air scrubber before being exhausted into the atmosphere. This scrubber shall be properly installed, in good working condition, and shall achieve 30 room air changes per hour.*
- *All inedible rendering product handling areas that are not completely enclosed shall be hooded in accordance with American Conference of Governmental Industrial Hygienist standards and vented directly to the packed-bed room air scrubber. All hooding, duct, and collection systems shall be effective in capturing emissions from the intended equipment and in preventing fugitive emissions from the building. The hooding and duct systems shall be maintained free of holes, cracks, and other conditions that would reduce the collection efficiency of the emission capture system.*

Regulation of Rendering Facilities in South Carolina

South Carolina has a regulation for rendering under Chapter 22 of the South Caronia Statutes and Codes – Rendering of Livestock and Poultry Raw Material. This regulation has requirements for enclosure and odor control of rendering operations.

§47-22-60 Location and Equipment Requirements for Transfer Centers, Rendering Plants and Vehicles Used to Transfer Raw Materials.

- *Have walls, floors and ceilings made of durable, nonabsorbent materials that can be cleaned and maintained in a sanitary condition [§47-22-60(A)(3)]*
- *Utilize buildings of sufficient size and shape to accommodate all phases of actual processing [§47-22-60(B)(2)]*
- *Be operated using reasonable precautions while handling, storing, or preparing raw material to prevent objectionable odors from being discharged beyond the boundaries of the permittee's property[§47-22-60(B)(5)]*
- *Be operated using appropriate and properly-functioning rendering equipment including, but not limited to working, efficient and effective odor-control systems to prevent the emission of objectionable odors [§47-22-60(B)(6)]*

The odor control provisions of the South Carolina rendering regulation are more restrictive than those proposed in PR 415 in that they do not allow objectionable odors beyond the facility fenceline [§47-22-60(B)(5)]. This regulation requires enclosures for all phases of production, and an odor control system.

Regulation of Rendering Facilities in Mississippi

Mississippi has a regulation for rendering under Title 41, Chapter 51 of the Mississippi Code. This regulation has requirements for enclosure and setback, as follows:

- *The building must have four(4) walls complete and be provided with concrete or cement floors [§41-51-21(a)]*
- *All tanks shall be airtight except proper escapes for live steam, passing through the tanks during cooking, which steam shall be condensed by use of cold water condensers All such equipment and other equipment which may be invented, manufactured and installed for use in disposal or rendering plants shall be so constructed and maintained as to prevent any avoidable escape of odors into the air[§41-51-21(b)]*
- *No new plant shall be located or constructed, or any discontinued plant reconstructed or reopened, at any place in this state inside of, or within two (2) miles of the nearest point of, the existing corporate limits of any municipality with a population in excess of five hundred (500) according to the latest federal census, or within one (1) mile of the nearest boundary of the lands owned or controlled in connection either with any state, county, township, city or town park, or boulevard, or of any public school or hospital, or of any charitable, religious or educational institutions [§41-51-19]*

The odor control provisions of the Mississippi rendering regulation include an enclosure for operations, as does PR 415. The setback requirements for new and reconstructed facilities is a strong indication of the distance rendering odors can travel.

Summary of Rendering Facility Regulations in other States

A summary of regulations in other states is presented in Appendix B. Table B-1 in Appendix B presents a summary of the requirements imposed by 16 states on rendering facilities. These state requirements are described without references to the applicable state regulations (i.e. code sections). This list should not be taken as an exhaustive list of all requirements imposed on rendering facilities in each listed state; rather, it is a brief summary of the State regulations that SCAQMD staff was able to identify.

Odor Guidance from Other Countries

The following guidance for rendering facilities is from "Review of Odour Monitoring and Control Techniques at Rendering Plants"[16] , a document prepared to provide additional technical advice to support practical regulation of rendering plants in the UK.

4.3.1 The need for containment

> *In order to minimise the release of fugitive emissions it is necessary to ensure that as much of the rendering process is carried out within a sealed containment envelope. However, simply enclosing sources of emission is generally not sufficient to ensure that offensive emissions are prevented. It is also important to consider ventilation/extraction of air, and treatment of odorous air streams.*
>
> *The rate of ventilation required for effective containment of offensive odour released within a building depends mainly on how airtight the structure is. In a perfectly sealed enclosure, ventilation would only be required to dilute and remove contaminated air to ensure health and safety standards are met. However, no buildings are completely airtight. Deficiencies in the integrity of the structure and other openings such as doors, gaps around pipe work, gaps between cladding sheet etc. allow air to pass into and out of the building. The larger the gaps in the structure, the greater the rate of flow of air through the building and as a consequence the greater will be the rate of extract ventilation required to contain any offensive odour. Thus to prevent fugitive emission of offensive odour it is essential to ensure that the building integrity is as sound as practicable and that sufficient air is extracted from that building to prevent outward flow of air.*

The cited text highlights the importance of good odor control practices that represent the type of rendering odor control (i.e. enclosure of odorous operations; enclosure kept under negative pressure; venting enclosure to odor control system) that PR 415 seeks.

The following guidance for rendering facilities is from "Guidance Note on the Best Practicable Means for Rendering Works"[17] issued by the Hong Kong Environmental Protection Department to provide guidance on air pollution management for rendering:

4. 5 To prevent malodorous emissions arisen from the above rendering process from causing air pollution, suitable plant facilities and odour management measures shall be provided to contain fully the emissions from rendering works and associated processes as well as odorous plant ventilation. Properly designed operation process shall be installed and

[16] http://www.sniffer.org.uk/files/5713/6906/0202/ER32_project_report_FNL.pdf

[17] http://www.epd.gov.hk/epd/sites/default/files/epd/english/environmentinhk/air/guide_ref/files/bpm28_2b_eng.pdf

operated to contain and treat concentrated emissions, such as vapours and noncondensable gaseous products emitted directly from cookers and process air from presses. Feedstock treatment appliance(s) shall be of a totally enclosed vessel type to reduce process emissions and vented to an effective odour management system for treatment. The oily fume and odorous emissions from the cooker shall be collected and passed through a suitable oily fume and odour abatement equipment before discharging to the open air.

4.6 A well designed ventilation system shall be provided and operated at the plant including, but not limited to storage, handling and processing areas to control odour emission. The ventilation system shall be capable of maintaining a reasonable negative pressure to prevent an uncontrolled escape of malodorous air to outdoors. The areas from which ventilation is provided shall be connected to suitable odour abatement plant.

4.11 For buildings in which there are possible odorous sources, they shall be designed to prevent the uncontrolled escape of odorous air from the building. Typical odour management measures may include maintaining a reasonable negative pressure and fitting self-closing doors at workplace to contain odorous emission. The odorous air shall be effectively collected and vented to suitable odour abatement equipment.

4.14 Without prejudice to the above general requirements, the following control measures shall be implemented:

(a) Materials Handling and Processing

(i) All raw materials should arrive at the plant in totally covered vehicles or containers designed to minimize offensive odour and spillage of any liquid or solid matter. The time interval between the materials arising and their delivery to the plant should be kept to a minimum. Raw materials should remain in lorries parked within an enclosed area on the site for as little time as possible and be kept covered until they are discharged for processing.

(ii) Raw materials should be transported from the point of production to the processing plant in enclosed containers and handled in a designated work area operated under negative pressure and with extractive ventilation connected to an effective odour management system, as quickly as practicable. The design of containers shall be such as to minimize the emission of any offensive odour or spillage of any liquid or solid matter. Alternatively, enclosed conveyor system vented to the odour management system should be provided to reduce the process emission.

The guidance from the Hong Kong Environmental Protection Department for rendering facilities represents the type of rendering odor control (i.e. enclosure of odorous operations; enclosure kept under negative pressure; venting enclosure to odor control system) that PR 415 seeks.

Odor Complaints in Communities Surrounding Vernon

Odor complaints in the communities surrounding the Vernon rendering facilities were evaluated over a ten-year period. Complaints and NOVs were evaluated from January 2002 through October 2011. An average of 35 odor complaints per year were received by SCAQMD during this ten year period. Many of these complaints were not verified by an SCAQMD inspector.

SCAQMD staff has received comments in working group meetings from the regulated industry that the relatively modest number of annual odor complaints from areas surrounding the rendering facilities does not justify rulemaking. However, staff feels the number of complaints is not fully indicative of the impact on area residents, for several reasons. First, stockyards, meat packing houses and slaughterhouses that supplied animal carcasses to rendering facilities have existed in the Vernon area for nearly one hundred years. As a result, odors from rendered animal carcasses have long been part of the landscape in the communities surrounding Vernon, impacting the quality of life for area residents. Furthermore, SCAQMD staff has learned from conducting community meetings in the area that proactive complainants didn't perceive a reduction in odors after repeated complaints, and became discouraged, resulting in a general sense from community members that reporting odors does not yield results. This may occur because SCAQMD staff is unable to pinpoint an individual facility as the source of the odor being complained of, as the facilities are relatively near one another and two are extremely close to each other.

Location of Odor Complaints

Figure 1-4 shows locations where odor complaints indentifying rendering odors were received during the 5-year period spanning from January 2006 through September 2011. Figure 1-5 shows a representation of the wind speed and direction (wind rose) at the Central Los Angeles meteorological station; the closest meteorological station to the Vernon rendering facilities. Note that Figure 1-4 only shows locations for four of the five rendering facilities. The fifth facility is located adjacent to the facility at the corner of Soto St. and Bandini Blvd. Figure 1-5 shows the prevailing winds originating from the west and south, correlating with the clusters of complaints located to the north and east of the facilities. These complaints identified the odors as being rendering- type odors, rather than a more generic odor complaint.

Figure 1-4 –Odor Complaint Locations during 5-year Period: 2006 - 2011

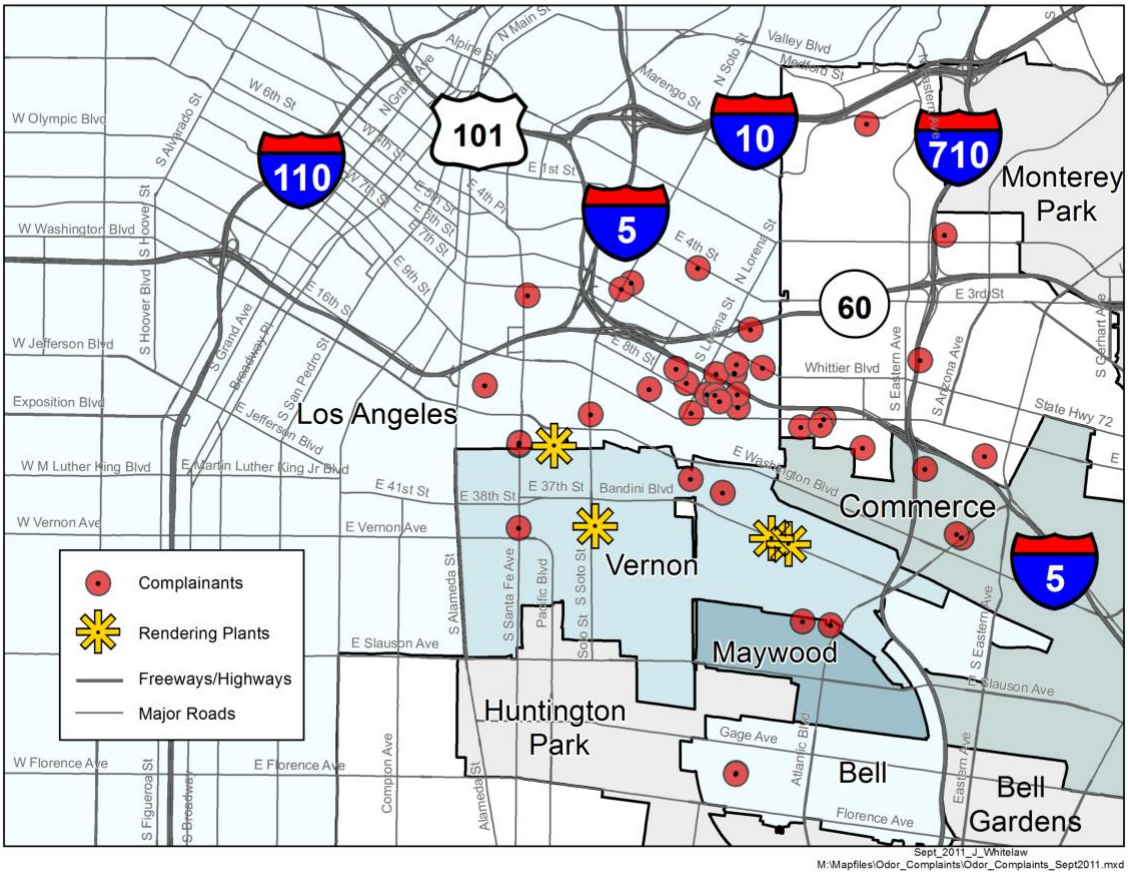
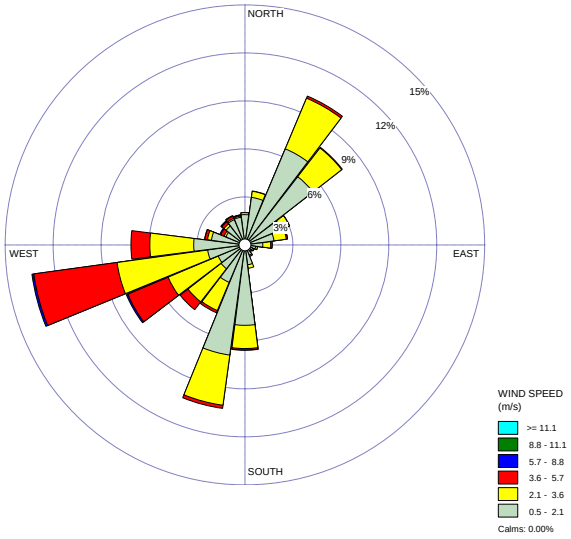


Figure 1-5 – Wind rose for Central Los Angeles Meteorological Station



Odors and Potential Health Effects

The presence of odors does not necessarily relate to the presence or absence of toxic air contaminants, and odor issues are generally addressed as a public nuisance. Odor complaints, however, are often accompanied by reports of adverse effects such as headache and nausea.

As to whether odors can cause health effects, the American Thoracic Society, a scientific society that focuses on respiratory and critical care medicine, published its official guidelines as to what constitutes an adverse health effect in 1985, and updated these guidelines in 1999. The statement is intended to "provide guidance to policy makers and others who interpret the scientific evidence for the purpose of risk management."[18] The statement acknowledges that there are graduations in the degree of effects and also differentiate between an effect that is adverse from an effect that is merely a physiological response. The ATS statement indicates that air pollution exposures which interfere with the quality of life can be considered adverse. Thus odor-related annoyance should be considered adverse, even if nausea or headache or other symptoms are not present. In the ATS guidelines, odors are clearly listed as an adverse respiratory health effect.

Unpleasant odors have long been considered as warning signs of potential health risks. More recently, there have been public health concerns that odor sensations themselves, or perhaps the agents responsible for odor, may in fact cause health effects[19]. Such odors often elicit complaints of respiratory irritation, headache, nausea and other adverse symptoms. While the mechanism for the production of these effects is not known, these effects have been noted at concentrations of substances that produce unpleasant odors. Postulated mechanisms include

[18] "What Constitutes an Adverse Health Effect of Air Pollution?", American Thoracic Society, 1999, http://www.thoracic.org/statements/resources/archive/airpollution1-9.pdf

[19] "Odour Impact - Odour Release, Dispersion and Influence on Human Well-Being with Specific Focus on Animal Production", Nimmermark, 2004

neurological changes in sensory nerves that could influence symptom production in the absence of other toxicological effects.[20]

The literature describes symptoms of exposure to odor, survey results and health studies. Two examples follow. The first is an excerpt from *The "Gray Line" Between Odor Nuisance and Health Effects*[21]:

> *Non-specific, multi-system symptoms have been experienced in communities near industrial sites, waste water treatment plants, agricultural sites, and hazardous waste sites. Citizens frequently report that chemical odors are making them sick. These symptoms include: headaches, nausea, reflex nausea, G.I. distress, fatigue, eye irritation, throat irritation, shortness of breath, runny nose, sleep disturbance, inability to concentrate, and classical stress response.*
>
> *In a survey near a waste treatment plant in 1983, one in nine respondents reported that odors had made them sick. A 1991 study of health effects from pesticides used on a potato field showed that while health effects were not related to proximity of citizens to the fields, odor perception was strongly related to the number of symptoms reported, the length of occurrence of the symptoms, and the severity of the symptoms. More recently these odor-related symptoms are being reported by large groups of citizens near agribusiness feedlots (concentrated animal confinement facilities) around the country.*
>
> *A study in 1997 conducted at the University of Iowa assessed both the physical and mental health of residents near a large-scale swine operation. This pilot scale study consisted of interviewing 18 residents within two miles of the 4,000 sow facility and 18 comparable residents living near smaller swine facilities. The results indicated that the neighbors of the large swine facility reported higher rates of a variety of symptoms including respiratory problems, nausea, headaches, and irritated eyes, nose and throat.*

The following text is from *Potential Health Effects of Odor from Animal Operations, Wastewater Treatment, and Recycling of Byproducts*[22]*:*

> *The odor exposures that have received the greatest research attention are those that involve irritation. Physiological responses to irritation in the upper respiratory tract (nose, larynx) and/or lower respiratory tract (trachea, bronchi, deep lung sites) have been documented in both humans and animals. Irritation of the respiratory tract can alter respiratory rate, reduce respiratory volume (the amount of air inhaled), increase duration of expiration, alter spontaneous body movements, contract the larynx and bronchi, increase epinephrine secretion, increase nasal secretions, increase nasal airflow resistance, slow the heart rate, constrict peripheral blood vessels, increase blood pressure, decrease blood flow to the lungs, and cause sneezing, tearing, and hoarseness. Release of the potent hormone epinephrine (also called adrenalin) subsequent to nasal*

[20] "Science of Odor as a Potential Health Issue", Schiffman, 2005

[21] http://www.fivesenses.com/Documents/Library/23%20%20Gray%20Line%20Nusance%20Health.pdf

[22] "Potential Health Effects of Odor from Animal Operations, Wastewater Treatment, and Recycling of Byproducts", Schiffman et. al, Journal of Agromedicine, Oct 2008

irritation may be a source of feelings of anger and tension that have been reported by persons exposed to odors. Epidemiological studies in communities with animal operations and municipal wastewater facilities have reported increased occurrence of self-reported health symptoms consistent with exposure to irritants.

CHAPTER 2: CONTROL TECHNOLOGIES

CONTROL OF ODORS FROM RENDERING FACILITIES

CONTROL OF ODORS FROM RENDERING FACILITIES

Factors Affecting Odors from Rendering Facilities

The cause of offsite odors from rendering facilities is very site-specific, and depends upon a number factors, including:

- location and configuration of raw material receiving area;
- proximity of nearby receptors to facility;
- intensity and direction of prevailing winds;
- ambient temperature; and
- ambient humidity level.

The quality of raw materials when they enter the rendering facility significantly affects odors generated from the receiving area. For example, fresh material and material that has been refrigerated until delivery has a lower potential for odors than raw material that is partially decomposed when it enters the facility. An example of partially decomposed material is an animal carcass that has been deceased for a period of time before it is delivered to the rendering facility.

In addition to the quality of incoming raw materials, the current operating configuration of a facility also may have an impact on odors that can travel beyond a facility's fenceline. These include fugitive odors from grinding and conveying raw material, cooking, fat processing and wastewater. All of these sources generate fugitive odors. Odors perceived by neighbors of a rendering facility depend on how well these fugitive odors are currently controlled. For example, a building with large openings that houses cooking and fat processing operations may generate fugitive odors that travel farther from a rendering facility's location, where a similar process in a building with fewer or smaller openings may be better able to limit migration of odors.

Temperature and humidity also impact odors, as odors are often stronger on summer days where both temperature and ambient humidity levels are elevated, possibly due to faster decomposition of raw materials.

Two Approaches to Regulating Odors

At the beginning of rulemaking efforts on PR 415, SCAQMD staff considered two approaches to regulating odors from rendering facilities. These approaches are described below.

First Approach - Quantitative Approach to Rulemaking

The first approach considered by SCAQMD staff was to establish an allowable odor concentration for certain compounds emitted from rendering processes. An allowable odor concentrations is the maximum level at which an odorous compound is allowed under a rule limit, as measured at the facility's property boundary or other location. An example of odorant concentrations that may be limited under this approach are the 25 odorants identified in Table 1-1.

In order to establish allowable odor concentrations, it would first be necessary to establish the level of detection for each odorant. ASTM Method E679 defines a procedure for determining

odor concentrations in a lab setting using an odor panel. The following description of ASTM Method E679 is from "A Review of the Science and Technology of Odor Measurement"[1]

> *In 1979, ASTM International published E679-79, "Standard Practice for Determination of Odor and Taste Thresholds by a Forced-Choice Ascending Concentration Series Method of Limits." This method was based on the use of dynamic olfactometry to automatically perform the dilutions of the odorous air and then present the dilution mixture to the human assessors. In March 1985, the ASTM E18 Committee officially withdrew the "Syringe Method", D1391, from publication. The dynamic dilution method, E679, was subsequently revised in late 1991, re-approved in 1997, and again revised in 2004. The 2004 procedural revisions were minor, however, two additional testing examples were added to the appendix.*
>
> *The ASTM E679 procedure is based on a presentation method called 3-alternative forced-choice (3-AFC) or triangular forced-choice (TFC). Each assessor performs the odor evaluation task by sniffing the diluted odor from an olfactometer. The assessor sniffs three sample presentations; one contains the diluted odor while the other two are blanks (odor-free air). Figure 3.2 shows one assessor (left) sniffing from the olfactometer nasal mask while the test administrator (right) operates the olfactometer. The assessor is required, or forced, to choose one of the three presentations. The assessor acknowledges their choice as a guess, a detection or recognition. As defined by E679 a response of detection is determining the selection is different from the other two, and a recognition response is that the sample smells like something.*
>
> *The assessor is then presented with the next dilution level. The assessor is again presented with three sample choices, one of which is the diluted odor sample. However, this next dilution level presents the odor at a higher concentration (e.g. two times higher). This is one-half the dilution ratio. The first dilution level presented to the assessors is below the odor thresholds (sub-threshold). The assessor proceeds to higher levels of sample presentation following these methods. The statistical approach of increasing the concentration is called "ascending concentration series."*
>
> *The convention of calculating dilution factors for olfactometry is based on the ratio of Total Volumetric Flow divided by Odorous Sample Flow (Turk, 1973; Dravnieks et. al., 1979, 1980, 1986; ASTM, 1978 1991, 2004; AWMA, 1995, CEN, 2003).*
>
> *Alternative terminology in use includes: Dilution-to-Threshold Ratio (D/T), Odor Unit (OU), and Effective Dose at 50% of the population (ED50) (ASTM, 2004).*
>
> *A large dilution ratio (e.g. 65,000) represents a high dilution of the odor sample. A high dilution of odor is similar to a person standing at a great distance from the odorous emissions. A small dilution ratio (e.g. 8) represents a small dilution of the odor sample. A small dilution of the odor is similar to a person standing close to the odorous emissions.*
>
> *The odor concentration results from olfactometry testing are expressed as a detection or recognition threshold. The detection threshold (DT) is an estimate of the number of dilutions needed to make the actual odor emission non-detectable. The recognition*

[1] A Review of the Science and Technology of Odor Measurement; St. Croix Sensory, Inc., 2005

threshold (RT) represents the number of dilutions needed to make the odor sample faintly recognizable.

A detection threshold for an odorous air sample is larger than its recognition threshold value, because more dilutions with odor-free air are needed to make the odor nondetectable compared to making the odor faintly recognizable. A large value of odor concentration (DT or RT) represents a strong odor. A small value for odor concentration represents a weak odor.

The odor panel used for the ASTM E679 test procedure consists of 5-12 trained and experienced human assessors. The assessors are recruited from the general population as individuals with no specific hypersensitivity or anosmia (lack of sensitivity) to odors. The assessors are then selected and trained following standard procedures (ASTM, 1981, 2004; CEN, 2003). The odor concentration is a number derived from the panel of assessors' responses to the laboratory dilution of odorous air samples.

From this description, it is evident that, while an odor panel may be useful in determining a detection threshold for an odorous air sample, this method does not designate an odor threshold that may be considered objectionable.

As mentioned above in the description of ASTM Method E679, an ASTM method previously used for odor analysis, known as the syringe static dilution method [ASTM D1391 - Standard Method for Measurement of Odor in Atmospheres] was withdrawn by ASTM in 1986 and was not replaced.[2]

Odor Panels

ASTM Method E679 uses an odor panel, consisting of 5-12 trained and experienced human assessors. The following description, from "A Review of the Science and Technology of Odor Measurement"[3] gives more detail regarding odor panels:

The origins of sensory evaluation and nasal organoleptic testing are in the trade industry. Products such as perfumes, coffee, tea, wine, liquors, meat and fish were smelled or tasted to determine the quality of the product. Eventually, individuals became known as expert judges and were used to rate or grade products.

In the 1940s and 1950s great advancements took place in sensory testing by researchers performing sensory evaluation for developers of U.S. government war rations. Since that time, panels of trained sensory assessors have been the preferred method of evaluation sensory characteristics of products in a laboratory setting.

In the field of environmental engineering, odorous air samples can be collected from emission sources. Odor evaluation of odorous air samples is conducted under controlled laboratory conditions following standard industry practices using trained panelists known as assessors.

An odor laboratory is an odor-free, non-stimulating space. Each odor assessor, when working on odor evaluation, focuses on the task of observing the presented odor sample.

[2] http://www.astm.org/Standards/D1391.htm

[3] A Review of the Science and Technology of Odor Measurement; St. Croix Sensory, Inc., 2005

Noise and distracting activities in the evaluation area can break the focus of the odor assessor. Odor panel sessions are organized and scheduled in order to maintain panel lengths not to exceed a period of 3-hours. Limiting panel length minimizes panelist fatigue.

Odor assessors are recruited from the community at large. From a pool of on call assessors, five to twelve assessors are selected for a scheduled odor panel. Odor panels consist of assessors that are selected and trained following the "Guidelines for Selection and Training of Sensory Panel Members" (ASTM Special Technical Publication 758) and EN13725 (ASTM, 1981; CEN, 2003). A person who smokes, who uses smokeless tobacco, who may be pregnant, or who has chronic allergies or asthma is excluded as a candidate for the odor panel.

Standing odor panel rules are part of the assessor's agreement to participate in odor testing. Assessors:

1. *Must be free of colds or physical conditions that may affect the sense of smell;*
2. *Must not chew gum or eat at least 30 minutes prior to the odor panel;*
3. *Must refrain from eating spicy foods prior to the odor panel;*
4. *Must not wear perfume, cologne, or after shave the day of the odor panel;*
5. *Must wear unscented deodorant the day of the odor panel;*
6. *Must avoid other fragrance cosmetics, soaps, etc. the day of the odor panel;*
7. *Must have their hands clean and free of odors the day of the odor panel;*
8. *Must have their clothes odor free the day of the odor panel;*
9. *Must keep the odor panel work confidential; and*
10. *Must not bias the other panelists with comments about the observed samples.*

Each odor assessor is tested to determine their individual olfactory sensitivity using standard odorants, e.g. n-butanol and hydrogen sulfide. The assessor receives training that consists of olfactory awareness, sniffing techniques, standardized descriptors, and olfactometry responses.

As evident from the description and standing odor panel rules, an odor panel is intended as a controlled event that panelists plan for, or conversely abstain from participation if there are health or other issues.

SCAQMD staff believes an odor panel may not be the ideal method of assessing the hedonic tone (pleasantness or unpleasantness), annoyance, objectionable nature and strength of odor samples obtained during an odor event, for the following reasons:

1. Odor sample degradation over time requires sample to be analyzed the same day or within 24 hours of collection[4];
2. Odor samples will require lab work prior to analysis;
3. Need to convene an odor panel on short notice to analyze odor samples taken from a rendering facility during an odor event; and
4. Difficulty of odor panelists to plan for a hastily-convened panel. Due to the uncertainties, it may not even be possible to convene a suitable odor panel.

[4] http://www.aqmd.gov/docs/default-source/laboratory-procedures/methods-procedures/307-91.pdf?sfvrsn=2

After detection thresholds are determined for each odorant under consideration, it would then be necessary to establish allowable odor concentrations for each odorant tested, as described previously. An allowable odor threshold is the level at which an odor would be considered objectionable by a reasonable person. Allowable odor concentrations may consist of a multiple of the detection threshold determined by the odor panel. The effort to determine the level at which an odor becomes objectionable would require further analysis by an odor panel. Analysis of this type is considered to be subjective in nature. From "A Review of the Science and Technology of Odor Measurement":[5]

> *Measurable, but subjective, parameters of perceived odor are:*
>
> 1. *Hedonic Tone - pleasantness vs. unpleasantness.*
> 2. *Annoyance - interference with comfortable enjoyment of life and property.*
> 3. *Objectionable - causes a person to avoid the odor or causes physiological effects.*
> 4. *Strength - word scales like "faint to strong".*
>
> *These odor parameters are subjective because individuals rely on their interpretation of word scales and their personal feelings, beliefs, memories, experiences, and prejudices to report them. Written guidelines for subjective odor parameter scales assist individuals (citizens and air pollution inspectors) in reporting observed odor, however, the nature of these parameters remains subjective.*

If staff followed this approach, allowable odor concentrations would become part of the rule proposal. To ensure these concentrations were met, it would be necessary to require periodic air sampling at a rendering facility's property boundary. This may require development of new air sampling protocols and test methods for the various odorants involved. In addition, new lab analysis instrumentation may need to be obtained to analyze samples with extremely low odorant concentrations.

Second Approach - Evaluation of Best Controls in Current Use

The second approach considered by SCAQMD staff was to evaluate the state of odor controls currently utilized by well-controlled rendering facilities in California and other states; evaluate areas of a typical rendering facility that have high potential for odorous emissions, and determine the best approach to eliminate or minimize odors from these areas.

Given the issues described in the first approach, staff opted to follow a "best control" approach, as such measures have proven effective in other facility practices. Such an approach looks at controls that have been achieved in practice at rendering facilities in other jurisdictions.

Examples of Controls in Current Practice

Tallowmasters, Miami, FL

In April 2014, SCAQMD staff traveled to Florida to investigate an odor control technology utilized by Tallowmasters LLC, a rendering facility in Miami. During this visit, staff discovered that odors from the rendering processes were considerably lower than the odor levels at any of

[5] A Review of the Science and Technology of Odor Measurement; St. Croix Sensory, Inc., 2005

the Vernon area rendering facilities. In discussions with facility personnel, it was determined that the facility has made concerted and deliberate efforts to minimize odors through a combination of odor containment by enclosure of odorous operations, new odor control technology, and work practices that minimize the potential for odors. These changes were made to address odor complaints that occurred as a result of commercial and industrial establishments that encroached upon the facility over the past 20 years.

Operating personnel followed a plan modeled on recommended industry manufacturing processes and controls. The plan was established as a guideline for every employee of the facility, and all operating personnel were trained on the "good manufacturing practices" that ensured the quality of proteins and rendered fats produced at the facility, and promoted low odors from the facility. Some of these became Best Management Practices (BMP) for the PR 415 proposal, as outlined in Chapter 2. Notable examples of the operation and work practices at this facility follow.

Resurfaced Interior Floors – all interior floors in operational areas where water, oils, fat and other drippings could collect were resurfaced to facilitate ease of cleaning and reduce standing water. Facility personnel used large squeegees to move any water or other liquids into floor drains upon discovery. Floor drains were cleaned regularly to keep them free flowing and there was no water evident in the drains. There was very little standing water present on interior floors, and there was no oil or fat residue in the cooking and fat processing rooms, in marked contrast to facilities staff visited in the Vernon area. Facility personnel stated the practice of using high pressure washdown water and not allowing standing water contributed to a major reduction in odors. Images 3-1 and 3-2 show resurfaced floors and floor drains. Image 3-3 shows the cooker. The floor around the cooker was almost completely dry.

Image 3-1 – Resurfaced Concrete Floors

Image 3-2 – Floor Drains

Image 3-3 – Cooker Room

Replacement of Leaking Components – One work practice employed by this facility is to promptly replace leaking components. The purpose of this company policy is to prevent leaking of materials containing bacteria that can cause odors. During the visit by staff, a leaking trough that houses a screw conveyor was observed by SCAQMD staff. Facility personnel noted that raw rendering materials are highly acidic and very corrosive to the carbon steel troughs, valves and fittings at the facility. When a component fails or begins leaking, it is replaced with a stainless steel component. While stainless steel is more expensive, the facility felt it was the

better long-term solution. However, replacement with stainless steel components is a decision by this facility and is therefore not incorporated as a proposed rule requirement. Images 3-4 and 3-5 show the leaking trough, and the new stainless steel trough that was intended to replace it.

Image 3-4 – Leaking Raw Material Trough

Image 3-5 – Stainless Steel Trough

Enclosure around Odorous Operations – The cooker and all processing equipment are housed inside an enclosure. Facility personnel felt an enclosure is crucial to odor containment. One work practice used at the facility is to train operating personnel to close all doors, including

access doors and roll-up doors at the entrance to the raw material receiving pits when not in use. This work practice was also considered to be very important to odor containment.

Odor control equipment – The facility utilizes odor neutralizing equipment that produces hydroxyl radicals. Hydroxyl radicals are highly reactive in the atmosphere, and consequently very short-lived. They react with many pollutants in the atmosphere, including odorous compounds that are emitted from rendering processes. Reaction with a potent oxidizer such as hydroxyl radicals or ozone can dramatically reduce the odor potential of these odorous compounds. Tallowmasters LLC uses several of these devices to control odors inside their facility enclosure, which has allowed the facility to discontinue use of their scrubber. SCAQMD staff verified the use of this technology at the facility as being very effective in reducing odors. However, staff did not have the opportunity to test one of the units to ensure they were using the technology as claimed by the manufacturer. The State of California has established standards for indoor air cleaners, due to concerns over ozone production potential and exposure of residents to ozone. The technology used by Tallowmasters LLC would require further evaluation prior to verification and potential use under Proposed Rule 415 to ensure that it constitutes an odor control technology that is safe for worker exposure.

Darling Ingredients, Fresno, CA

Darling Ingredients operates a rendering facility on West Belgravia Road in Fresno, CA. The facility is located less than half a mile from a residential community. The facility is permitted to accept up to 850,000 lbs of raw material each day and has a main processing building to house most operations. Delivery trucks enter the main processing building to empty loads of raw material, and are rinsed and disinfected prior to exiting the building. Trucks are required to be unloaded within 2 hours after entering the facility, and raw material is required to be processed within 24 hours after receipt, according to permit conditions (San Joaquin Valley APCD).

In addition to raw material delivery, all facility operations and load-out of finished product is conducted inside an enclosure. Buildings at the facility are maintained under negative pressure, and odorous air inside the building routed to two packed-tower wet scrubbers. The main processing building doors, meal building doors, and meal load-out doors are all required to be closed, except for truck entry and exit, or during an emergency. Access openings are further required to be controlled such that the building always remains under negative pressure, which keeps odors inside the building from being released to the outside.

The facility uses a thermal oxidizer to control high intensity odors generated at the cooker, presses, condenser and centrifuge. In the case of a breakdown of the thermal oxidizer, high intensity vapors are routed to the wet scrubbers, or operations are required to be shut down.

In 2011, as a result of longstanding odor complaints, the City of Fresno and Darling entered into an Abatement Agreement, where Darling – Fresno agreed to adopt a number of additional measures to further control odors. These measures included:

- Install permanent ductwork to re-route odors from the thermal oxidizer to the wet scrubbers in the event of thermal oxidizer breakdown (temporary ductwork was previously used).
- Install ductwork and/or louvers in the boiler room to provide make-up air to the boiler.

- Install a notification system on doors that are critical to maintaining negative pressure in the building so operating personnel know when a door is open.
- Modify internal ventilation system to eliminate pockets of odorous air inside building.
- Report to the City of Fresno on emerging technologies that allow real-time detection and quantification of specified odorants that can serve as an early warning system for odor events.
- Notify the City of Fresno within 24 hours after an odor complaint is made to the facility directly.
- Comply with an Odor Control Plan.

Prior to the 2011 Abatement Agreement described above, the facility continued to be the source of odor complaints from nearby residents. This is in spite of the operating conditions at the facility and all the precautions taken to that point. This represents an example of a facility that is located near a residential community that needed to do even more than simply enclosing odorous operations in order to reduce odors from the facility to acceptable levels.

Darling Ingredients, Los Angeles, CA

Darling Ingredients operates a rendering facility in Vernon, CA that will be subject to the requirements of PR 415. In 2000, after a history of odor complaints and enforcement actions by SCAQMD, Darling constructed a permanent enclosure over the receiving pits. The receiving area is ventilated to a packed bed scrubber. The existing odor control configuration serving the receiving area at the Darling-Los Angeles rendering facility represents the same type of control (i.e. permanent enclosure, under negative pressure, vented to odor control equipment) that PR 415 will impose on existing facilities in the Vernon area.

Baker Commodities, Rochester, NY

Baker Commodities operates a rendering facility on Browncroft Blvd. in the town of Penfield (Rochester area), NY. The facility converts inedible meat processing animal by-products to meal, tallow, oil and grease, and also processes spent restaurant grease into a saleable product.

Equipment and operations at the plant include: a grinder to reduce material to a slurry; a steam heater cooker to break down the by-products to soluble, insoluble, and volatile components; a condenser for the water component for the volatiles; a press to aid separation of fat solids from the remaining solids; a hammer mill for meal production from the remaining solids; and a centrifuge and filter for tallow production from the separated fats. In addition, spent restaurant grease processing operations include a grease cooker, and screening, sedimentation, and centrifugation equipment, to separate the grease from the water and entrained solids.

Water from both the meat by-product and the spent grease processing operations is treated at the facility before discharge to the sanitary sewer. Non condensable volatiles from both operations are directed to thermal and chemical oxidation units for odor control.[6]

Control equipment at the Baker-Rochester facility includes three scrubbers for fugitive odor control from the plant interior, as follows:

- PCS Scrubber (25,000 CFM) treats air from the waste water treatment area.
- VC10 Scrubber (50,000 CFM) treats air from the raw material receiving and main processing areas.
- SCP Control Scrubber (60,000 CFM) treats air from the raw materials receiving, main processing and yellow grease areas.

The existing odor control configuration at the Baker-Rochester rendering facility represents the same type of control (i.e. permanent enclosure, under negative pressure, vented to odor control equipment) that PR 415 would require on existing facilities in the Vernon area. This is an example where Baker Commodities invested in odor controls similar to those proposed in PR 415 in one of the company's other locations in the United States.

Subsequent versions of the this staff report will include more examples of rendering facilities around the U.S. where odor control is achieved through an enclosure, under negative pressure that is vented to odor control equipment. In addition, more detail about each facility will be provided.

Equipment and Procedures Currently Used by Vernon Area Rendering Facilities

During site visits to four of the five rendering facilities in Vernon, it became apparent that there is a wide range of odor control efforts currently used by the Vernon-area rendering facilities. These are described below. SCAQMD staff was not afforded the opportunity to visit the fifth rendering facility – Coast Packing. Coast Packing is located adjacent to Clougherty Packing/Farmer John, near the corner of Soto St. and Bandini Blvd.

Enclosures

Enclosure of odorous rendering operations provides the most effective means of odor control. However, only one facility has a completely enclosed raw material receiving operation. The enclosed building has roll-up doors to allow delivery truck access. This building is kept under negative pressure and vented to odor control equipment.

Two rendering facilities have partial enclosures around the receiving area. One consists of a roof with three walls and the fourth wall open. The other has only a roof structure over the receiving pit.

A fourth facility has an asphalt/concrete slab, where raw materials are directly deposited, with no covering. This method of receiving raw material does not offer any protection from the sun or

[6] http://www.dec.ny.gov/dardata/boss/afs/permits/826420000300009.pdf

wind, allowing accelerated decomposition to occur in the sun during warm days and allowing odors to be readily transported off-site. The fifth facility has not provided staff an opportunity to visit and learn of their operations, despite repeated efforts to do so.

Four of the facilities had at least partially enclosed cooking and fat processing areas, consisting of a roof with one or more walls. However, in order to meet the proposed enclosure requirements, all four of these facilities would be required to do additional construction to completely enclose these operations. One facility would need to replace or repair the sheet metal sheathing which contains a number of oxidation holes.

One facility had an enclosure around the wastewater treatment area. It is an older masonry building and some additional work would need to be performed for the building to be compliant with the rule proposal. In addition, the wastewater outlet to the city sewer connection was open to the atmosphere, allowing odors from the treated wastewater to be released. The other three rendering facilities have open wastewater treatment processes that would need to be enclosed and vented to odor control (or somehow converted to closed systems) in order to be compliant with the rule proposal.

Odor Control Equipment

Rendering facilities have some means of controlling high-intensity odors from cookers, and currently comply with the requirements of Rule 472 – Reduction of Animal Matter. One facility has a packed-bed scrubber that controls odors from the raw material receiving building. The other rendering facilities would likely need to install additional control equipment to comply with the rule proposal. One facility, unlike the others, operates a batch-type operation that does not allow for enclosed continuous system of movement of material through the grinding, cooking, and pressing process.

Misting Systems

Two of the four rendering facilities use a misting system that may have a limited impact on odor control. Misting systems use products designed to mask or neutralize the characteristic odor of rendering operations. One approach to control odors in the past has been to use products that mask odor with a more pleasant smell. Masking does not modify or neutralize the odorous molecule. Instead, the maskant overpowers the odorous molecules with a stronger molecule. Maskants often use an essential oil, such as vanilla, citrus, pine or floral scents. However, at concentrations necessary to mask odors from rendering operations, masking products sometimes seem excessive after long and continuous exposure, and may become as irritating as the odor they are intended to mask.

Misting systems can also use an odor neutralizer. The perception of odor can be decreased significantly when an odorous molecule is paired with a modifying molecule. Certain pairs of odors have a neutralizing effect on each other. Each has a recognizable odor, but when combined in the vapor state, both become unrecognizable by a canceling effect. Known as "Zwaademaker pairing", this phenomenon results in *olfactory confusion*: the inability of the brain to categorize signals from the olfactory sensors.

Work has been done to quantify the response to odorous substances. Once individual odor molecules are isolated, odorous substances are identified and odor thresholds are measured using

odor panel analysis. Through experimentation, inhibitors and synergists that modify the character of the odor are identified.

Odor neutralization is usually accomplished using essential oils and organic solvents. Also called volatile oils, essential oils impart the characteristic odors of plants. Used in perfumes and food flavorings, essential oils are also used in products designed to mask or neutralize odors.

CHAPTER 3: SUMMARY OF PROPOSED RULE 415

AFFECTED FACILITIES

PUBLIC PROCESS

PROPOSED RULE 415 REQUIREMENTS

AFFECTED FACILITIES

There are five rendering facilities in the South Coast Air Basin. All are located in the Vernon area near Los Angeles. Four of these facilities use a continuous rendering process and one uses a batch-type process. All are in heavily industrial areas. PR 415 focuses on the operations and areas most likely to contribute to offsite odors, including raw material receiving, fugitives from cooking and processing operations, and wastewater treatment.

Site Visits

During this rule development process, SCAQMD staff visited four of the affected facilities on multiple occasions and interviewed facility operators to review the operating practices and equipment used for odor control. The fifth facility so far has not allowed rule development staff to make a site visit. SCAQMD Compliance personnel were also familiar with the facilities subject to PR 415 from prior visits, and interviewed facility operations personnel about the operating configurations, odor control equipment, operating practices and prior compliance history prior to site visits.

PUBLIC PROCESS

The development of PR 415 was conducted through a public process. Through the rulemaking process, the SCAQMD staff met with a Working Group, consisting of industry, environmental and community groups. To date, four Working Group meetings were held, in July 2014, December 2014, February 2015 and June 2015. A Public Workshop was conducted on March 5, 2015, and a Public Consultation meeting is planned for June 30, 2015. Key summary comments and responses received during the rule development process are included in Appendix A of this report. A complete record of the comments received and responses to them will be provided in the Final staff report.

PROPOSED RULE 415 REQUIREMENTS

Purpose

Proposed Rule (PR) 415 will reduce odors from facilities rendering animals and animal parts. PR 415 will establish odor control standards as well as best management practices (BMP) to prevent or minimize odors that can cause verified odor complaints and public nuisances in the communities surrounding Vernon. Under Rule 402, enforcement action can only be taken after the SCAQMD receives and verifies a sufficient number of complaints. Moreover, because there are several rendering facilities located within a relatively small area, in some cases the odors cannot be ascribed to one specific facility and indeed are likely contributed to by several of the facilities. Rule 402 does not contain any mechanisms to reduce odors from new and existing rendering facilities. In addition, Rule 402 does not establish minimum standards to prevent or minimize odors. Rule 402 is reactive, where PR 415 is proactive in terms of preventing or minimizing odors.

Applicability

The proposed rule applies to new and existing facilities that process raw rendering materials; facilities that process trap grease in addition to rendering, and treatment of wastewater from processes associated with rendering or processing of trap grease at these facilities.

Applicability of the proposed rule is to facilities that conduct inedible rendering operations, whether or not these facilities also conduct edible rendering. If a rendering facility is integrated with either a slaughter house or a meat packing house, or conducts both edible and inedible rendering operations, the edible rendering operations are not subject to the requirements of PR 415. Inedible rendering means that the products and by-products of the rendering process are not intended for human consumption.

Edible rendering processes are essentially meat processing operations; producing lard or edible tallow for use in food products consumed by humans. Edible rendering is generally carried out in a continuous process at temperatures lower than the boiling point of water. The process usually consists heating edible fats (fat trimmings from meat cuts), followed by two or more stages of centrifugal separation. The first stage separates the liquid water and fat mixture from the solids. The second stage further separates fat from water. The solids may be used in food products or pet foods, and fat may also be used in food products, or soap making operations. Most edible rendering is done by meat packing or processing companies. Edible rendering operations are as odorous as inedible rendering and are exempted from PR 415.

The proposed rule does not apply to:

- Facilities conducting only edible rendering operations (producing products for human consumption) that do not also conduct inedible rendering operations or handle or process trap grease;
- Collection centers for animal carcasses and parts that do not also conduct inedible rendering operations (products not for human consumption) or process trap grease; and
- Facilities that process trap grease but do not conduct inedible animal rendering operations. It should be noted that odors from these facilities will be addressed under a separate rule-making.

In addition to the facility exemptions, certain operations are proposed to be exempt from some or all of the requirements of PR 415, as follows:

- Wastewater treatment operations at an existing facility integrated with a slaughterhouse or meat-packing plant are not subject to the enclosure requirement, provided each volume of rendering wastewater is diluted with more than 40 volumes of wastewater from other sources within the facility such that after mixing, any wastewater exposed to the atmosphere has an average chemical oxygen demand (COD) lower than 1500 mg/L. The demonstration of COD must be demonstrated through 5 years of sampling data; and
- Blood meal processing operations at a facility integrated with a slaughterhouse or meat-packing plant shall not be subject to this rule, provide the operation is conducted in a permanent enclosure operating under negative pressure and meeting the requirements of paragraph (f)(3), and the enclosure is vented to an odor control system meeting the control efficiency requirements.

Definitions

Refer to the proposed rule language for definitions. Key definitions that require further explanation or discussion in this staff report are listed below.

Closed System means a system handling any combination of solids, liquids, vapor and air at a rendering facility, in which odors are contained within the system. Staff recognizes that no system can contain 100% of the solids, liquids, vapors or air that passes through it and there will always be minute amounts of fugitive emission leakage. A closed system refers to a system without significant air leakage out of the system, through which potential odors can escape. A piping system containing solids with well-sealed flanges and limited access ports is an example of a closed system. A dissolved air flotation tank in a wastewater treatment process with an open top would not be considered a closed system.

Confirmed Odor Event is an odor event that has been verified as coming from a specific source by SCAQMD Compliance personnel trained in inspection techniques, after an investigation. It takes at least three complaints, properly verified from different physical addresses to comprise a confirmed odor event. When an investigation following three or more such complaints determines that objectionable odors are being emitted from a particular facility and travelling beyond the property boundary of the facility, that event is determined to be a Confirmed Odor Event.

Enclosure Envelope means the total surface area of a building directly enclosing rendering operations and includes the enclosure's exterior walls, floor and horizontal projection of the roof on the ground. In the case of a rectangular building, this measurement would include the area of the four walls plus the area of the ceiling (not the roof, which may be pitched). The intent of this definition is to serve as the basis for calculating the area of routine enclosure openings as a percentage of the enclosure envelope.

Odor Control System means a device or equipment serving a permanent enclosure that is designed to reduce odorous emissions captured in the permanent enclosure. An example of an odor control system is a series of collection hoods and intake ports that are ducted through a ventilation system to a packed-bed scrubber or other wet scrubber that meets the minimum control efficiency requirements of the proposed rule. A closed system, as defined in this chapter is not considered an odor control system.

Permanent Enclosure means an enclosure having a permanently installed roof and exterior walls which are constructed of solid material, and completely surround one or more odor-generating sources, such that all odors from processes conducted within the enclosure are contained therein. The intent of this provision is for a permanent enclosure to be constructed of material that is capable of withstanding the pressure drop created by created by the inward face velocity requirement of the proposed rule. Examples of solid material include masonry, sheet metal, sheet plastic, wood, metal or aluminum siding, or even industrial-grade plastic flap curtains. Other materials as approved by the Executive Officer may also be used.

Receiving Area means the area, tank or pit within a rendering facility where raw rendering materials are unloaded from a transport vehicle, or transferred from another portion of the facility for the purpose of rendering these materials. In the case of an integrated facility that conducts both slaughtering and/or meat packing in addition to rendering, and has a method of conveyance to deliver animal carcasses or parts to the rendering facility other than by truck, the

receiving area would be the location where animal carcasses enter the rendering process. That area would need to be enclosed or considered a closed system according to the timetable under the proposed rule.

Routine Enclosure Opening means any of the following areas that may be open during normal operations at facilities subject to this rule, and through which odors have the potential to escape from a permanent enclosure:

(A) Vents for natural or forced-air ventilation, including but not limited to gable vents, eave vents, wall vents and rooftop vents;
(B) Windows, doors and doorways; and
(C) Spaces below metal sheathing where the sheathing does not reach the foundation.

The intent of this definition is to include all areas that are usually open where air is allowed to enter a permanent enclosure in the calculation to determine the area of routine enclosure openings as a percentage of the enclosure envelope, in order to ensure inward airflow into the permanent enclosure so odorous, foul air cannot escape the permanent enclosure.

Core Requirements for New and Existing Facilities

Odor Best Management Practices

All facilities would be required to implement Best Management Practices (BMP) for odor control. This requirement is applicable to new facilities upon startup, and to existing facilities within 90 days after rule adoption.

Permanent Enclosure/Operate in Closed System Requirement

All facilities would be required to operate certain odorous processes within a permanent enclosure or within a closed system. This requirement is applicable to new facilities upon startup and to existing facilities within approximately 3 to 4 years after rule adoption. Existing facilities are required to submit a permit application to the SCAQMD within 12 months after rule adoption for odor control equipment, to be evaluated in combination with a permanent enclosure. Facilities intending to operate processes affected under PR 415 in a closed system are required to declare such intention to the Executive Officer within 12 months after rule adoption.

If an existing facility owner/operator currently operates all applicable processes within a closed system, no permit applications need to be submitted.

The SCAQMD will issue a Permit to Construct (P/C) for the proposed enclosure or retrofit of an existing non-compliant enclosure. As described above, the permanent enclosure and odor control system will be evaluated together. The timing for issuance of the P/C by SCAQMD is within 180 days after the permit application is deemed complete. Staff will try to issue these permits more quickly than the statutory limit of 180 days. A rendering facility then has up to 24 months after the date of P/C issuance to construct and commission the permanent enclosure, ventilation system and odor control system. Staff proposes this length of time to allow for time needed for budgeting, equipment design and procurement, and installation and testing. Staff believes this timing is reasonable for the proposed requirements.

Ventilation of Permanent Enclosure to Odor Control Equipment

All permanent enclosures are required to be ventilated to odor control equipment. The purpose of this requirement is to prevent release of odorous or foul air from a permanent enclosure

directly into the environment. The timing for this requirement is the same as the timing for a permanent enclosure – upon startup for new facilities, and 24 months after a Permit-to-Construct (P/C) is issued for the combined permanent enclosure/odor control system for existing facilities.

Wastewater Treatment

Certain wastewater treatment processes would be required to be enclosed within a permanent enclosure (ventilated to odor control) or operated in a closed system. This includes screens, skimmers, clarifiers, including dissolved air flotation, settling tanks, sludge dewatering equipment, sludge drying equipment and the rendering facility's treated wastewater outlet to the city sewer.

This requirement is applicable to new facilities upon startup. The timing of this requirement for existing facilities is as follows. Within 12 months after rule adoption, the facility owner/operator is required to submit a permit application for necessary enclosures, to be evaluated in combination with odor control as proposed by the owner or operator. A rendering facility then has 12 months after the date of P/C issuance to construct and commission the permanent enclosure, ventilation system and odor control system for odor control of wastewater treatment operations.

Installation of Odor Complaint Contact Sign

All rendering facilities would be required to display a sign with contact information for area residents and businesses to phone in odor complaints. This requirement is applicable upon startup for new facilities and within 6 months after rule adoption for existing facilities.

The sign must list the SCAQMD's 1-800-CUT-SMOG number as the first contact for odor complaints. If desired by the rendering facility owner/operator, a secondary contact at the facility may be listed on the sign. However, if the rendering facility receives an odor complaint directly, facility personnel must notify the SCAQMD by telephone at 1-800-CUT-SMOG no more than three hours after receiving the odor complaint or after facility personnel became aware of the complaint, or should reasonably have become aware of the complaint.

The sign must be installed within 50 feet of the facility entrance. The reason for this requirement is that some area residents and businesses may not be aware of rendering facility operations in all cases, especially where two facilities exist in close proximity.

Other requirements for the odor complaint contact sign have to do with visibility. The sign must be 4 feet square, have lettering at least 4 inches tall that contrasts with the background and be located 6 to 8 feet above grade. Finally, the sign must be unobstructed so it is clearly visible from outside the facility property.

Both Rule 403 (Fugitive Dust) and Rule 410 (Odors from Transfer Stations and Material Recovery Facilities) have a similar requirement to install a complaint contact sign, so there is precedent for this requirement.

Installation of Signage Requiring Covering of Incoming Trucks

All rendering facilities would be required to display a sign at each truck entrance requiring all trucks to be enclosed or fully covered. This requirement is applicable upon startup for new facilities and within 6 months after rule adoption for existing facilities.

Notification of Intent to Enclose or Operate in a Closed System

The owner or operator is required to submit a letter to the Executive Officer within 12 months after the adoption of the proposed rule declaring the intent to either enclose certain odor-emitting processes and operations within a permanent enclosure or operate these processes and operations within closed systems. A permit application is required within 12 months for new enclosures, as described earlier in this chapter. However, for closed systems where the owner or operator may not need to submit a permit application, a mechanism to inform the SCAQMD of such intent is necessary.

Submittal of Odor Mitigation Plan

In the case of pervasive and ongoing odorous emissions from a rendering facility, the owner or operator may be required to submit an Odor Mitigation Plan (OMP). This can occur either before or after the requirement to construct an enclosure and vent that enclosure to odor control equipment within approximately 3 to 4 years after rule adoption. Submittal is required within 90 days after notification by the Executive Officer that an OMP is required. There are two situations that can trigger this requirement, as follows:

1. A Notice of Violation (NOV) is received for Public Nuisance subject to Rule 402; or
2. Three or more confirmed odor events are received in a consecutive 180-day period.

As described in Chapter 1, in order to receive an NOV under Rule 402, generally 6 or more odor complaints must be received from separate households and verified in a short period of time to constitute a public nuisance. If this occurs, the owner or operator will be required to submit an OMP. The conditions of the OMP are distinct from any corrective action that is required under the settlement terms of the NOV.

The second trigger would correspond to a long-term chronic situation, where 3 or more confirmed odor events are received within a consecutive 180-day period. A confirmed odor event is an occurrence of odor resulting in three or more complaints by different individuals from different addresses, where the source of the odor is verified by District personnel trained in inspection techniques. In this situation, a rendering facility would need to take corrective actions to prevent objectionable odors from crossing its property boundary.

Content and Approval of Odor Mitigation Plan

As previously described, an Odor Mitigation Plan (OMP) may be required either prior to or after the requirement for a permanent enclosure and odor control system is fully implemented. If an OMP is required prior to enclosure, it must include:

- Facility-specific information, as follows:
    - Facility name;
    - Location address;
    - Days and hours of operation;
    - SCAQMD facility ID number;
    - Mailing address; and
    - Title and phone number of person responsible for addressing community complaints received by facility.
- Description of all odor emitting areas within the affected facility.

- Configuration of all odor control equipment that exists at the time of OMP submittal, and the equipment, processes and buildings or rooms it serves.
- Description of work practices that exist at the time of OMP submittal designed to minimize odors from migrating off the facility property.
- A prioritization of odor-emitting areas within the facility, in order of highest-to-lowest odor intensity.
- For each odor emitting area:
    - A description of odor mitigation activities proposed to address odors from within the area;
    - The owner or operator's intent to either enclose operations and processes within a permanent enclosure or operate them in a closed system (for all equipment and processes that are not already within a permanent enclosure or a closed system); and
    - A detailed construction schedule for each proposed permanent enclosure.
- An explanation of why construction of the permanent enclosure and odor control system cannot be expedited and completed prior to the date the enclosure standard becomes effective under the proposed rule.

An OMP submitted after the enclosure standard is fully implemented must address all of the above elements, except for the intent to enclose and detailed construction schedule.

The OMP will be approved or disapproved by the SCAQMD within 90 days. If an OMP is disapproved, it must be resubmitted within 90 days for reconsideration. The Executive Officer will approve the OMP if it is complete and the Executive Officer concurs that all odor mitigation activities proposed to address odors within the odor-emitting areas at the facility are sufficient to resolve the odor problem that triggered submittal of the OMP. Failure to have an approved OMP within 90 days after submittal of an OMP to the District is a violation of this rule. Finally, an OMP is subject to plan fees under SCAQMD Rule 306 – Plan Fees.

Specific Cause Analysis

If a facility receives a single confirmed odor event, an analysis of the specific cause(s) surrounding the odor event is required to be conducted. The analysis is a process used by a facility subject to this rule to investigate the cause of a confirmed odor event, and involves a description of activities during the time of the odor event, any upset or breakdown conditions at the facility, including potential sources of odors and emission points for all equipment required to be enclosed. In addition, the analysis must identify corrective measures needed, and corrective measures taken to prevent recurrence of a similar event.

Odor Best Management Practices

The proposed rule identifies a number of Best Management Practices (BMP) under PR 415 that will assist in reducing odors from various points or processes within a rendering facility. These include:

1. Covering of Incoming Transport Vehicles

    Transport vehicles delivering raw rendering materials to a rendering facility from offsite locations are not permitted to pass the first point of contact at the rendering facility (such as a

guard shack or weigh station) unless the cargo area of the vehicle is completely enclosed or fully tarped.

2. Delivery of Raw Rendering Materials

   Raw rendering materials must be transferred directly from the delivery truck (or other means of conveyance in the case of inter-plant delivery within an integrated facility) into a permanent enclosure or into sealed odor-tight containers on a continuous basis after material delivery, such that raw rendering material does not remain outside of a permanent enclosure for more than 60 minutes after the end of material delivery. Sealed, odor-tight containers are permitted to remain outside of a permanent enclosure after 60 minutes, provided raw rendering material is transferred into such containers within 60 minutes after the end of delivery.

   This BMP becomes effective after the effective date that a permanent enclosure is required to be operational for the receiving area under the proposed rule. Prior to completion of a permanent enclosure, another BMP limits the holding time of incoming raw rendering material.

3. Washing of Outgoing Transport Vehicles

   Where raw rendering materials come directly into contact with a delivery truck, the cargo area of any vehicle exiting the rendering facility must be thoroughly washed prior to the truck leaving the facility. Outgoing trucks are currently required to be washed under 3 CCR §1180.35.

4. Washing of Drums and Containers

   Open drums or containers holding raw rendering materials must be washed to remove raw rendering materials prior to leaving a rendering facility.

5. Holding Time of Incoming Raw Rendering Materials

   This BMP is effective prior to the date a permanent enclosure is required to be operational for the receiving area under the proposed rule. A time limit for incoming raw rendering material is imposed by this requirement, depending on whether the material is delivered at ambient temperature or at lower-than-ambient (i.e. refrigerated material). Within 4 hours after arrival for ambient temperature material, or 6 hours after delivery for refrigerated material, incoming raw rendering materials must be placed into the cooking process, or be staged in a permanent enclosure in or sealed, odor-tight containers.

6. Repair of Raw Material Receiving Area

   Within 180 days after rule adoption, all areas of broken concrete or asphalt, including divots, cracks, potholes and spalling of concrete in the raw material receiving area of a rendering facility, (or the rendering portion of a facility integrated with a slaughterhouse or meat-packing plant) where raw rendering materials are unloaded and touch the ground outside of an enclosure must be patched, repaired or repaved as necessary to prevent standing water or puddles with a surface area greater than one square foot from accumulating. The intent of this BMP is to prevent odors from bacteria breeding in the standing water.

7. Holding Time of Raw Materials after Size-reduction

   Within one hour after size-reduction or grinding activities, raw rendering materials at a facility utilizing a batch cooking process must enter the cooking process, or be staged in a permanent enclosure or a sealed, odor-tight container.

8. Holding Time of Cooked Materials

   Within one hour after being removed from a batch cooker at a rendering facility subject to this rule, cooked materials must be placed in downstream processing equipment to be separated into protein and fat commodities or be placed in sealed, odor-tight containers for temporary storage.

9. Transfer of Raw or Cooked Rendering Materials between Enclosures

   Raw or cooked rendering materials must be transported between permanent enclosures only through a closed system of conveyance, or by odor-tight containers. If a facility transports meal or other product within the facility via transport vehicle, that intra-facility transport vehicle would qualify as a closed system of conveyance if it was sealed and odor-tight, such that odors are not allowed to escape during transport. An odor-tight container is one in which odors are substantially contained within the container and which allows minimal contact between the material and air outside the container.

10. Delivery Tanker Trucks

    Trap grease or other odorous liquid deliveries from delivery tanker trucks are not allowed to be delivered or transferred within the trap grease storage or processing areas of a facility except through a closed system, within a permanent enclosure, or through a system vented to odor control equipment. This means trap grease cannot be pumped into an open tank, unless that tank is located within a permanent enclosure.

11. Venting Delivery Tanker Vehicles to Odor Control Equipment

    The pressure relief valve on trap grease or other odorous liquid delivery trucks fitted with an internal vacuum or pressure pump must be vented to odor control equipment operating in good condition prior to unloading of trap grease, unless the truck is unloaded inside of a permanent enclosure. This BMP affects trap grease delivery trucks with an on-board pump. During pump-out of the tank, higher internal pressure is created within the tank than a pressure relief valve (PRV) is typically set for. This allows foul, odorous air to be released from the tank through the PRV. BMP (e)(10) requires the PRV to be vented to odor control equipment operating in good condition prior to unloading of trap grease. Staff has seen examples including portable carbon canisters that would suffice as odor control for this situation.

12. Washdown of Receiving Area

    Walls, floors, and other surfaces of the receiving area of a rendering facility and any equipment operated in the receiving area, including screw conveyors, pumps, shovels, hoses, etc., must be thoroughly washed free of animal matter at least once each working day. This receiving area washdown frequency is already required in each affected facility's permit. This BMP serves only to formalize that permit condition requirement into rule language.

13. Cleaning of Floor Drains

Accessible interior and exterior floor drains are to be maintained in a manner that prevents accumulation of rendering materials.

Permanent Enclosure, Ventilation, Closed System and Odor Control Standards

Certain operations and processes at a rendering facility are required to be enclosed within a permanent enclosure, or to be operated within closed systems under PR 415. These include:

- Raw material receiving areas at rendering facilities. The option for a closed system is not available for raw material receiving – after the effective date that a permanent enclosure is required to be operational for the receiving area under the proposed rule raw material receiving must be conducted within a permanent enclosure;
- Conveyors associated with raw material transfer operations;
- Size reduction and conveying equipment, including but not limited to: breakers, crushers hoggers, grinders and conveyors associated with raw material sizing;
- Raw material cookers. Note that as described below, a batch cooker is not considered to be a closed system, due to fugitive odors escaping from the batch cooker whenever the door is opened to load or unload material. Therefore, the option for a closed system is not available for batch cookers; and
- Process equipment for separating rendered fat from protein materials (meat and bone meal), including but not limited to: centrifuges, presses, separators, pumps, screens, tanks that aren't completely enclosed, bins and hoppers, and conveyors used to transport materials between equipment.

A permanent enclosure must meet two key requirements related to VOC capture and ventilation. These include:

- The combined area of all routine enclosure openings through which odors can escape from a permanent enclosure must not exceed 5% of the enclosure envelope. This requirement comes from EPA Method 204, which establishes criteria for and verification of a permanent total enclosure for VOC capture efficiency.
- A permanent enclosure must be ventilated by a system designed and operated to maintain a minimum inward face velocity through each routine enclosure opening of at least 200 feet per minute (fpm). This requirement also comes from EPA Method 204, which establishes criteria for and verification of a permanent total enclosure for VOC capture efficiency.

The inward face velocity for each permanent enclosure is to be measured using an anemometer, or an equivalent approved device at the center of the plane of any opening of the permanent enclosure. Verification of inward face velocity will be done by SCAQMD staff during inspections.

Exterior walls of a permanent enclosure are to be constructed of material that is capable of withstanding the pressure drop created by maintaining the required inward face velocity. This pressure drop is expected to be extremely modest (<<1" H_2O) , and a variety of materials are allowed for the exterior walls, including masonry, sheet metal, sheet plastic, wood, metal or aluminum siding, or even industrial overlapping plastic flap curtains, or other material as

approved by the Executive Officer. Building materials chosen and used for construction are up to the discretion of the affected facility, and SCAQMD does not endorse or advocate any building material over another. If a certain material is not ideal for an application, it is expected a facility will choose a material that better fits the application.

A closed system must meet the following minimum requirements:

- Each component of a closed system must be maintained in a manner that minimizes leaks from occurring and prevents odors from escaping from the system, to the maximum extent possible;
- Material conveyors and troughs that are components of a closed system must be completely enclosed on all sides, except for doors or panels for maintenance and personnel access;
- Bins and hoppers that are components of a closed system must be completely enclosed on all sides, except for doors or panels for maintenance and personnel access;
- Mating metal surfaces on doors or access panels described above must be sealed with gasket material;
- Air gaps in components of a closed system must be sealed with gasket material or with caulk or sealant; and
- Each section of ductwork containing vapor within a closed system must be sealed at every connection to other components of the closed system using best industry materials and practices.

These minimum requirements should not be considered a comprehensive list, and additional conditions may be imposed if a facility owner/operator is required to submit permit applications for modification of a piece of equipment that is currently permitted. The facility owner/operator may propose and use an alternative to these minimum requirements if that alternative is approved by the Executive Officer.

A batch cooker is not considered to be a closed system due to fugitive odors escaping from the batch cooker whenever the door is opened to load or unload material. Therefore, operation of batch cookers is only allowed inside a permanent enclosure that is vented to odor control equipment.

An odor control system that treats fugitive odors from inside a permanent enclosure must meet certain minimum standards. It must be designed and operated to maintain a control efficiency of not less than 70% for nitrogen compounds and not less than 70% for sulfur compounds.

As shown in Chapter 1, there may be 11 or more nitrogen compounds in rendering odors and 6 or more sulfur compounds. Testing of multiple compounds would be expensive, so PR 415 allows a marker compound to represent all sulfur compounds and a marker for nitrogen compounds as well. Markers are designated as follows:

1. Ammonia (NH_3) for nitrogen compounds; and
2. Hydrogen sulfide (H_2S) for sulfur compounds.

EPA estimates that achievable emission reductions for inorganic gases from packed-bed scrubbers are over 95%. From EPA's *"Air Pollution Control Technology Fact Sheet" [EPA-452-/F-03-015]*[1]

> ***Achievable Emission Limits/Reductions:***
> *Inorganic Gases: Control device vendors estimate that removal efficiencies range from 95 to 99 percent (EPA, 1993).*
>
> *VOC: Removal efficiencies for gas absorbers vary for each pollutant-solvent system and with the type of absorber used. Most absorbers have removal efficiencies in excess of 90 percent, and packed-tower absorbers may achieve efficiencies greater than 99 percent for some pollutant-solvent systems. The typical collection efficiency range is from 70 to greater than 99 percent (EPA, 1996a; EPA, 1991).*

The intent of using inorganic marker compounds (NH_3 and H_2S) is that they provide an indication of the control efficiency of nitrogen compounds and sulfur compounds respectively and methods for testing and analysis are readily available. Rendering odors also include VOC compounds, as shown in Table 1-1. Staff believes control efficiencies higher than 70% are achievable; however, the lower value of 70% in the literature was chosen to ensure an achievable control efficiency for organic compounds as well.

Within 180 days after the effective date to conduct operations within a permanent enclosure (where required by the rule), a performance test is required to be conducted by a third-party tester, to demonstrate the required control efficiency. Testing and analytical methods are as follows:

- SCAQMD Method 207.1 for ammonia; and
- SCAQMD Method 307 for hydrogen sulfide.

It should be noted that marker compounds are only used in the very limited application of a performance test demonstration to calculate control efficiency of odor control equipment. Marker compounds should not be seen as surrogates for fugitive rendering odors, and are not used or allowed in any other application under PR 415. It should also be noted that the minimum control efficiency requirements of PR 415 are not for testing of odor control equipment serving high intensity odors that are already addressed by Rule 472 – Reduction of Animal Matter. Odor control equipment serving high-intensity vapors must meet a much higher control efficiency.

Wastewater Treatment

Certain wastewater treatment processes at a rendering facility are required to be enclosed within a permanent enclosure, or to be operated in a closed system. These include:

- Screens
- Skimmers
- Clarifiers, including dissolved air flotation
- Settling tanks
- Sludge dewatering equipment

[1] http://www.epa.gov/ttnchie1/mkb/documents/fpack.pdf

- Sludge drying equipment, and
- The rendering facility treated wastewater outlet to city sewer.

These equipment are subject to the timing requirements of subparagraph (d)(1)(D) in PR 415, which requires permit applications to be submitted within 12 months after rule adoption, and an effective date for operation of a permanent enclosure within 12 months after a permit-to-construct is issued by SCAQMD.

Recordkeeping

The following records would be required to be maintained at the rendering facility for at least 3 years and made available to SCAQMD personnel upon request:

- Records of all readings taken by anemometer to demonstrate compliance with the inward face velocity requirement of openings in a permanent enclosure; and
- A written log of all odor complaints received by the rendering facility. The odor complaint log must contain:
    - Date and time complaint was received;
    - Date and time of alleged odors;
    - Outdoor ambient temperature at time of complaint;
    - Odor description and intensity (i.e., week, moderate, strong);
    - Weather conditions;
    - Wind speed and direction;
    - Name and contact phone number of complainant, if provided; and
    - Determination of cause for odor emissions that generated the complaint, if found

CHAPTER 4: IMPACT ASSESSMENT

REDUCTIONS IN ODORS

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

SOCIOECONOMIC ANALYSIS

AQMP AND LEGAL MANDATES

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE 40727.2, COMPARATIVE ANALYSIS

REDUCTIONS IN ODORS

Implementation of PR 415 will require rendering facilities to implement Best Management Practices (BMP) and will require processes with the greatest potential for generation of off-site odors to be enclosed. The odor BMPs in the proposal are achieved in practice and reasonable measures that will result in odor reductions from rendering facilities. Implementation of PR 415 will minimize odors from rendering facilities through a combination of odor capture by enclosing odor-generating processes, odor control by venting odorous air from within enclosures to odor control equipment, and BMPs. Requiring affected facilities to submit a permit application for the combination of enclosure and odor control to be analyzed as a single permit unit will give a measure of assurance regarding the efficacy of an enclosure/control combination proposed by a rendering facility to effectively capture and treat odors.

Although implementation of PR 415 is expected to minimize odors from rendering facilities, there is no practical way to measure odors before and after measures are implemented; therefore, the magnitude of odor reduction is not quantifiable. However, to demonstrate the effectiveness of odor control equipment, marker compounds to represent certain classes of compounds (i.e., nitrogen and sulfur) can be used. Implementation of PR 415 provides a proactive approach to controlling odors that is expected to reduce the number of odor complaints and significantly improve the air quality for residents that live or work in the Vernon area.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

PR 415 is considered a "project" as defined by the California Environmental Quality Act (CEQA), and the SCAQMD is the designated lead agency. Pursuant to CEQA and SCAQMD Rule 110, the SCAQMD will be preparing the appropriate environmental documentation to evaluate any potential adverse significant impacts associated with implementing the proposed rule. An environmental impact is defined as an impact to the physical conditions which exist within the area which would be affected by the proposed project.

SOCIOECONOMIC ANALYSIS

Staff is preparing a socioeconomic analysis of PR 415 which will be released for public review and comment at least 30 days prior to the SCAQMD Governing Board hearing as currently scheduled for September 4, 2015. The analysis will identify affected facilities and present the capital costs of new enclosures (specific to each affected facility) and the capital and operating costs of ventilation systems and odor control equipment. In addition, the analysis will present the potential costs of best management practices such as repaving receiving areas where raw materials touch the ground and properly covering incoming trucks. The socioeconomic report will also assess the employment impacts of PR 415 on the regional economy, including the potential impacts on small businesses.

AQMP AND LEGAL MANDATES

There are no specific legal requirements for SCAQMD to propose Rule 415, and it will not be submitted into the State Implementation Plan (SIP). PR 415 is a direct result of a quality of life issue that was identified by the working group for the Clean Communities Plan (CCP) in the pilot study area of Boyle Heights. In November 2010, the Governing Board approved the CCP. SCAQMD staff began holding meetings of the stakeholder working group in July 2011 in order to identify air quality issues in Boyle Heights and surrounding communities that the working group felt should be addressed. The prevalence of odors from the five rendering facilities in Vernon, directly south of

Boyle Heights was of great concern to the working group and the reduction of rendering odors a top concern. As a direct result of the CCP pilot study process, SCAQMD staff undertook rulemaking in 2014 to minimize public exposure to the distinct odors.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE 40727.2, COMPARATIVE ANALYSIS

Under Health and Safety Code (H&SC) Section 40727, the SCAQMD is required to make findings of necessity, authority, clarity, consistency, non-duplication and relevance. Under H&SC Section 40727.2, the SCAQMD is also required to perform a comparative written analysis when adopting, amending or repealing a rule or regulation. The comparative analysis is relative to existing federal requirements, existing or proposed SCAQMD rules and air pollution control requirements and guidelines which are applicable to odors from rendering.

The draft staff report released 30 days before the Governing Board hearing will include the required findings, and a comparative analysis of other current state and federal requirements regulating odors from rendering facilities. See Section 40440.5(c)(3) requiring draft staff report for SCAQMD to include draft findings

ANALYSIS OF ALTERNATIVES

The final staff report will include an analysis of alternatives relative to key rule requirements.

COMMENTS AND RESPONSES

Key comments responses are included in Appendix A. A summary of the comments received in writing will be responded to in the final staff report.

CONCLUSIONS AND RECOMMENDATIONS

This rulemaking is the direct result of a quality of life issue that was identified by the working group for the CCP in the pilot study area of Boyle Heights. The need to address odors from the Vernon rendering facilities is a key air quality priority for the CCP stakeholders in the communities where they live, work, and breathe.

As noted, the impacts of odors vary for each individual, but can lead to serious health impacts. The cumulative impacts from the facilities on the surrounding communities is unacceptable and needs to be addressed. PR 415 is consistent with existing technology- and BMP-based requirements in other states and countries that were implemented to protect the public health from odors. In addition, it is reflective of existing good industry practices and is a balanced approach given the nature of the existing local rendering facility operations. PR 415 is a pro-active approach to addressing these odors with provisions designed to reduce odors before they come to the level of a public nuisance, whereas existing statutes are solely reactive after the impact has occurred. For these reasons, PR 415 is necessary.

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REFERENCES

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APPENDIX A: PUBLIC COMMENTS AND RESPONSES

Selected Comments from PR 415 Working Group

Several comment letters were received during the rule development for PR 415. Following are selected key comments and responses. A complete record of comments and staff responses will be available in the Final Staff Report.

1. Comment: Rendering protects the environment, prevents disease and provides products for other industries. Without rendering plants, diseased and rotting carcasses would cause a stench and the spread of viruses and bacteria. Inedible wastes containing carbon and nitrogen are recycled into usable materials. Without recycling, financial and environmental costs of these products would likely increase.

   Response: SCAQMD staff agrees that rendering is an important industry.

2. Comment: Waste recycled by a rendering facility will not disappear if the rendering operations shut down. What does SCAQMD propose happen to these wastes in the absence of rendering operations in the South Coast Air Basin?

   Response: SCAQMD staff has repeatedly said at working group meetings and other public meetings that it is not the intent of PR 415 to cause any rendering facility to shut down. Staff has worked in good faith with the commenter as well as other rendering facilities to minimize cost impacts, including making substantial changes to the scope of PR 415 from early versions of draft rule language. The commenter has not substantiated that provisions of PR 415 would require it to shut down. In fact, staff has learned that the commenter has used similar controls in at least one other facility it operates in the United States. The commenter's question regarding the absence of rendering operations within the SCAB is hypothetical and supposes every existing rendering facility will not be able to operate under the requirements of PR 415. Staff does not believe such a scenario is supported by the requirements of PR 415 or the impacts on rendering facilities.

3. Comment: SCAQMD has regulated odors since 1976 under Rule 402. Rule 402 conforms to California H&SC §41700. PR 415 is unnecessary because the SCAQMD already has Rule 402.

   Response: SCAQMD staff disagrees that PR 415 is unnecessary. PR 415 intends to establish odor control standards as well as best management practices (BMP) to prevent or minimize odors that can cause verified odor complaints and public nuisances in the communities surrounding Vernon. Under Rule 402, enforcement action can only be taken after the SCAQMD receives and verifies a sufficient number of complaints. Moreover, because there are several rendering facilities located within a relatively

small area, in some cases the odors cannot be ascribed to one specific facility and indeed are likely contributed to by several of the facilities. Rule 402 does not contain any mechanisms to reduce odors from new and existing rendering facilities. In addition, Rule 402 does not establish minimum standards to prevent or minimize odors. Rule 402 is reactive, where PR 415 is proactive in terms of preventing or minimizing odors. For these reasons, SCAQMD staff feels PR 415 is necessary.

4. Comment: SCAQMD derives authority from the Legislature. SCAQMD lacks statutory authority to adopt a rule more stringent that §41700, or to regulate bacteria.

Response: The District is given broad authority to regulate air pollution from "all sources, other than emissions from motor vehicles." Health and Safety Code (H&SC) §40000. The term "air pollutant" includes odors [H&SC §39013]. Therefore, the District may regulate to control air pollution, including odors, from PR 415 sources. In addition, the District has authority to adopt such rules as may be "necessary and proper" to execute the powers and duties imposed on the District by law. [H&SC §40702].

The District's legal authority to adopt and enforce PR 415, establishing best management practices and requirements to reduce odors from rendering facilities also derives from H&SC §41700, which, in pertinent part, prohibits the discharge of air contaminants causing annoyance to the public. It further prohibits the discharge of air contaminants, such as odors, which "endanger the comfort, repose, health, or safety of any of those persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property." [H&SC §41700]. The District's authority granted by H&SC §41700 to protect the public's comfort and health and safety includes the regulation of facilities in order to prevent the discharge of odors before they cause nuisance or annoyance to the public. The District is authorized under H&SC §41508 to adopt rules imposing requirements that are stricter than those set forth in state law, including Section 41700.

In addition, H&SC §40001(b) authorizes the District to adopt rules and regulations, such as PR 415, and provides, in relevant part, for the prevention and abatement of air pollution episodes which cause discomfort or health risks to a significant number of persons. This statute, which is phrased very similarly to Section 41700, allows rules to prevent air pollution episodes caused by any type of pollutant, not just criteria air pollutants. *Ultramar v. SCAQMD* (1993) 17 Cal. App. 4th 689,707. PR 415 serves to prevent or at least reduce the likelihood of the occurrence of a nuisance through imposing reasonable odor control measures. PR 415 is a reasonable and proper use of the District's regulatory authority.

5. Comment: Not every odor constitutes a public nuisance. An odor must be substantial and unreasonable. If normal persons would not be annoyed or disturbed, an odor is not significant. Unreasonableness must compare the social utility against the harm it inflicts. SCAQMD's failure to implement Rule 402 prevents lawful consideration of laches or coming to a nuisance. Current residents knew about our facility's presence when they moved into the area.

   Response: SCAQMD staff has been present at complainants' locations and agrees that in many cases, normal persons would be annoyed or disturbed by the odors. PR 415 seeks to require reasonable controls to prevent or minimize public nuisances odors from rendering operations. The doctrines of laches and coming to the nuisance do not apply to the adoption of a rule designed to prevent the occurrence of a public nuisance. The case cited regarding "coming to the nuisance", *Hellman v. La Cumbre Golf & Country Club*, (1992) 6 Cal. App. 4th 1224, involved an action for private nuisance. The case cited for the application of laches involved a unique situation where the City Board of Permit Appeals had ruled that the defendants' home was a legal use, but many years later the City sought to declare their occupancy illegal, and due to the passage of time the transcripts of the Board hearing had been lost. *City and County of San Francisco v. Pacello* (1978) 85 Cal. App. 3d 637. This is not precedent for arguing that a source of objectionable odors should not be required to minimize such odors merely because of the passage of time. SCAQMD staff believes that all residents are entitled to protection from air pollution and offensive odors regardless of where they live.

6. Comment: SCAQMD staff informed the Governing Board that public nuisance involves complaints from 6 or more households or business; odors must be confirmed by an inspector, traced back to the source and the complainant must sign a form. SCAQMD staff contends PR 415 is necessary because odors in Boyle Heights cannot be traced to a specific company. If the source cannot be traced to a facility, SCAQMD lacks authority to require the facility to comply with PR 415. SCAQMD cannot bypass Rule 402.

   Response: As noted in response #4, SCAQMD has authority to adopt rules to prevent the occurrence of a nuisance, and to adopt rules more stringent than the state nuisance law. Staff has explained in the following response #7 that rendering odors are very distinctive, and staff has also experienced that all of the subject facilities, including the commenter's facility, produce objectionable odors. The difficulty in tracing the odors to a specific facility does not mean there is not a problem. Instead, the difficulty in pinpointing one source in many cases results from the fact that the rendering facilities are located relatively near one another. In many cases, it is likely that more than one facility is contributing to the odor. This creates the need to require all facilities to take reasonable measures to

reduce odors emanating from their operations. In similar fashion, the SCAQMD requires many facilities to take all reasonable measures to reduce pollutants such as PM2.5, even though no one facility is solely responsible for creating a violation of the NAAQS.

PR 415 would not bypass Rule 402. Both would be tools and approaches that would be available to staff. The rules would not be duplicative because Rule 402 does not require specific actions of the facility, and is reactive when there is a problem. PR 415 would require specific requirements that are designed to be proactive in nature, to reduce or prevent the potential for offsite odors.

7. Comment: Vernon is an industrial city, currently housing more than 1,800 businesses. Between our facility and Boyle Heights there are freeways, rail yards and other facilities that cause odors. SCAQMD has not demonstrated that odors in Boyle Heights are not caused by another use, or the effect of proximity to an industrial city. SCAQMD cannot claim that odor issues in Boyle Heights are caused by rendering facilities located miles away. There is no proof our facility is causing a public nuisance in Boyle Heights.

   Response: SCAQMD staff acknowledges there may be other odorous industrial and commercial operations in Vernon in addition to rendering facilities. However, the smell of rendering is distinctive and SCAQMD staff does not believe odors created by rendering facilities are attributable to other sources. In particular, odors from decaying organic raw materials, cooking of animal carcasses and parts, cooker condensate, as well as other sources of wastewater containing fats, oils and greases is distinctive and offensive to many in the communities surrounding the city of Vernon. SCAQMD staff disagrees with the commenter's claim that odors alleged by complainants in Boyle Heights and other communities surrounding Vernon to be from rendering facilities, are in fact from another source not identified by the commenter.

8. Comment: PR 415 applies to all rendering plants regardless of whether the plant creates public nuisance. The definition of "confirmed odor event" requires only 3 verified complaints. This standard is inconsistent with Rule 402. Why are rendering facilities held to a different standard than other facilities?

   Response: SCAQMD has found it necessary to adopt certain rules which are designed to reduce odors in specific industries. Besides PR 415, these include Rule 410-*Odors from Transfer Stations and Material Recovery Facilities*, and the currently-proposed amendments to Rule 1148.1-*Oil and Gas Production Wells*. The commenter is correct in the assertion that rendering facilities are subject to PR 415 irrespective of whether an

affected facility has received a notice of violation (NOV) for public nuisance in the past. This is true of all rules adopted by SCAQMD, including Rule 410 – *Odors from Transfer Stations and Material Recovery Facilities*. PR 415 establishes certain requirements that are applicable to all rendering facilities, and then requires an Odor Mitigation Plan if certain triggering events occur. The commenter is also correct in stating that a confirmed odor event is defined in the proposed rule as 3 verified odor complaints by different individuals from different addresses. The purpose of defining a confirmed odor event in PR 415 is that it is one of two "triggers" for submittal of an odor mitigation plan (OMP). The number of verified complaints necessary for a confirmed odor event, while less than SCAQMD normally requires for issuing an NOV for violating Rule 402, is considered to indicate a higher potential for causing an odor nuisance. Because this rule is designed to prevent such occurrences, the threshold is intentionally lower than the typical standard for actually causing a public nuisance. A confirmed odor event is simply a measure under PR 415 whereby a facility that receives 3 confirmed odor events within a 180 day period is required to take further action to control odors from their rendering facility. As such, there is no inconsistency between a confirmed odor event and Rule 402.

9. Comment: The most sensitive person can create an odor event. An operation or process is a source if an odor 'may' be emitted. PR 415 mandates an on-site zero odor threshold. This standard is not reasonable and cannot be met. On-site odors may not cause migrating public nuisance level odors. If implementation of Best Management Practices (BMP) sufficiently reduces odor at a facility, why is it necessary for an existing facility to operate in a closed system or permanent enclosure?

Response: SCAQMD staff disagrees that a single person can create a confirmed odor event, regardless of how sensitive that person is to rendering odors. A confirmed odor event is defined by 3 verified odor complaints from separate addresses. In order to be verified, the source of an alleged odor must be determined according to standard SCAQMD procedure. This involves a trained inspector tracing an odor back to a specific source. If a source cannot be determined, the odor complaint cannot be verified. The most a single person can do is call in an odor complaint to SCAQMD. A complainant cannot verify the source of that odor, no matter how sensitive they are to rendering odors. Verification requires an SCAQMD inspector. Even after a complaint is verified, a confirmed odor event requires two more verified complaints, from different addresses, following the same verification procedure as for the complaint from the highly-sensitive person.

The commenter is correct in stating that an odor generating source, as defined under paragraph (c)(14) means an operation or process from

which odors may be emitted. The definition goes on to give examples of odor generating sources.

SCAQMD staff disagrees that PR 415 mandates an on-site zero odor threshold. Staff recognizes that there may still be odors at the facility even after implementation of PR 415. The intent of the rule is to minimize the likelihood that odors will travel off-site and cause an odor nuisance in the community. If odors generate at least 3 complaints, properly verified by an SCAQMD inspector as previously described, and this occurs over the course of 3 separate and distinct events, these odors will trigger a requirement for a facility to submit an OMP detailing actions that a facility will take to reduce odors.

SCAQMD staff believes that while BMPs should help to reduce odors, BMPs by themselves do not represent the best control that can reasonably be achieved for odors. Staff concludes that more effective controls for odors from rendering facilities are to enclose the operations that generate odors within a permanent enclosure, keep the enclosure under negative pressure to contain odors within the enclosure, and vent those odors to control equipment. Staff believes that a closed system of cooking and processing equipment is an acceptable alternative to a permanent enclosure, provided fugitive odors from that closed system do not continue to cause verified odor complaints. If these core requirements do not prevent the occurrence of an odor nuisance, or three or more confirmed odor events within 180 days, then the facility must implement an Odor Mitigation Plan.

10. Comment: SCAQMD lacks authority to require the BMP requiring covered trucks.

Response: SCAQMD staff disagrees with the commenter that the SCAQMD lacks authority to require the truck covering BMP or any other BMP in PR 415, for the reasons expressed in staff's response to comment #4.

11. Comment: It has not been demonstrated that these measures will reduce odors in Boyle Heights. The Executive Officer has unfettered authority to require an Odor Mitigation Plan (OMP) and approval of that plan. SCAQMD requires a facility to do its work in investigating the cause of a confirmed odor complaint.

Response: SCAQMD staff believes the requirement to operate odorous equipment and processes within a permanent enclosure or a closed system under PR 415, as well as requiring BMPs will result in a high level of fugitive odor control from rendering operations. Staff believes PR 415 will not only reduce odors in Boyle Heights but also in other impacted communities surrounding Vernon. The commenter's implication that the Executive Officer can require submittal of an OMP arbitrarily is not correct. Under

PR 415, an OMP will be required only if a facility receives an NOV for public nuisance, or has 3 confirmed odor events within a 180 day period. Both triggers for OMP submittal are subject to odor complaint verification, requiring SCAQMD inspectors to verify 6 or more complaints in the case of an NOV, or 9 or more complaints over the course of three separate events in the case of confirmed odor events. The standard for triggering an OMP is therefore rigorous. If an OMP is triggered under either of these scenarios, it indicates that a rendering facility either is causing a public nuisance or has a high potential for doing so, and should do more to control odors. If the facility believes its plan was improperly disapproved, or had improper conditions imposed upon it, it has the right to appeal the plan action to the Hearing Board under Rule 221(e).

Regarding the commenter's assertion that a facility is doing SCAQMD's work in investigating the cause of a confirmed odor event, SCAQMD staff feels that facility personnel are better situated than SCAQMD inspectors to determine causation for and the actual source of odors on a real-time basis after a confirmed odor event, due to complaint response lag time. In public meetings, a recurring theme heard by SCAQMD staff was that rendering facility personnel know their facility better than SCAQMD.

12. Comment: PR 415 will make it impossible for our facility to operate in the City of Vernon. When a regulation goes too far, it is taking, and the owner is afforded a remedy under the US and California Constitutions. The Fifth Amendment provides that just compensation be made for taking by the federal government. The California Constitution contains a similar requirement.

Response: The commenter has not presented evidence to show that PR415 would make it impossible for the commenter to operate in the City of Vernon. Nevertheless, staff has revised the proposed rule in an effort to address the commenter's concerns without sacrificing the primary benefits of the proposed rule. If the commenter were to make a business decision to cease its operations in Vernon, that would not turn the proposed rule into a taking under the Constitutional provisions cited. A taking will generally be found if a regulation completely deprives an owner of "*all* economically beneficial uses" of the property. *Lucas v. South Carolina Coastal Council,* 505 U.S. 1003, 1004 (1992) But if a regulation is otherwise a valid exercise of the government's regulatory power, the fact that it has the effect of prohibiting a particular beneficial use to which the property has previously been put does not make it a taking. *Goldblatt v. Hempstead,* 369 U.S. 590, 593 (1962). The courts will examine the individual facts of each case, considering three basic factors: (1) the character of the government action (taking is more likely to be found for physical invasion of property)(2) the economic impact of the regulation on

the plaintiff, and (3) the property owner's distinct investment–backed expectations for the use of that property. *Penn Central Transp. Co. v. New York City*, 434 U.S. 104, 124 (1978). The commenter has not presented evidence on these issues, including information on its profits, and how any expenses to comply with the rule would affect the commenter. In addition, staff has learned that the commenter's facility in the Rochester New York area already uses similar controls as would be required under PR 415.

13. Comment: The Confirmed Odor Event standard is vague. There is no time frame in which complaints must occur. The original draft of PR 415 requiring an SCAQMD inspector to verify an odor was removed. Any untrained staff member or the Executive Officer can verify an odor event. Odor verification is at the discretion of each SCAMQD employee.

Response: A time frame is not specified for a confirmed odor event because a single event can last for an indeterminate length of time. If a time limit is specified in PR 415, SCAQMD compliance staff would be obligated to consider a new event at the conclusion of the time limit. For example, if a time limit of 24 hours is specified in the proposed rule and 3 complaints are received and verified for this time period; if the odor event continues for more than 24 hours, any complaints received and verified after this period would be counted toward another odor complaint event.

SCAQMD staff disagrees that "any untrained staff member" can verify a complaint. The rationale for the language change to "verified by District personnel" under paragraph (c)(4) was to allow an SCAQMD compliance supervisor or manager to verify a complaint. Supervisory personnel receive the same training as inspectors with regard to verifying complaints. Clarifying language has been added to paragraph (c)(4) to be: ". . . and the source of the odor is verified by District personnel *trained in inspection techniques*".

14. Comment: Why is a violation of an approved OMP also a violation of PR 415? How can an OMP be required when there is no violation of the rule? Public nuisance is not a prerequisite for this requirement. There are no standards for an approvable OMP. What are the standards for approving or disapproving an OMP?

Response: A violation of an approved OMP is considered a violation of PR 415 because it is necessary to make the requirements of the plan enforceable against the facility, and it is impractical to spell out the individual requirements of each facility's plan in the rule language itself. This principle is already part of District Rules. Pursuant to Rule 221, an "operation shall not be conducted contrary to any conditions specified in the approved plan" and "a violation of the plan is a violation of the rule."

The requirement to submit an odor mitigation plan (OMP) by a facility subject to PR 415 is based on a facility receiving either a notice of violation (NOV) for public nuisance, or three confirmed odor events within a 180-day period, as specified in subparagraphs (d)(2)(A) and (d)(2)(B). Therefore, the commenter's statement is not correct: public nuisance is one of the triggers for submittal of an OMP. However, the commenter is correct in stating that submittal of an OMP is not based on violation of a requirement of the proposed rule. The Executive Officer will approve or disapprove an OMP within 90 days, as stated in subparagraph (h)(3)(A). In addition standards for approval of an OMP are addressed in subparagraph (h)(3)(C).

15. Comment: Standards for closed system, permanent enclosure and odor control equipment must be articulated in PR 415.

Response: Paragraph (f)(4) defines the minimum requirements for a closed system. Paragraph (f)(3) defines the requirements for a permanent enclosure and the ventilation system capable of maintaining the required minimum face velocity through enclosure openings. Paragraph (f)(5) defines the requirements for an odor control system and associated testing requirements.

16. Comment: How will SCAQMD maintain consistency between odors from different rendering operations? How will an inspector determine whether a complainant's odor comes from a rendering facility? What methodology will SCAQMD use to determine the cause of an odor complaint? How will SCAQMD determine whether odors are escaping from individual pieces of equipment?

Response: SCAQMD compliance inspectors are trained to follow standard surveillance procedures to identify the source of an odor. Prior to conducting odor surveillance, inspectors attempt to gather information about the community impacted by the alleged emissions, along with any available information about potential odor sources in the general vicinity. These information gathering activities often involve interviews of individuals who have reported air quality complaints to SCAQMD, during which inspectors typically inquire about the character, intensity, frequency, timing, and duration of odors reported by the complainants.

During odor surveillance, the inspector periodically measures wind speed and direction using a District-issued wind meter, noting and documenting information about the character and intensity of any detectable emissions at each location where such measurements have been taken. Based on this information and/or on information from previous surveillance activities, the inspector follows a surveillance route that begins downwind of, and traces detectable emissions, if any, to their apparent source. The inspector

continues along the surveillance route to a point upwind of the apparent source where the emissions are no longer detectable, then returns to a downwind location and performs repeated surveillance activities in this manner, from downwind to upwind locations, ruling out all other possible sources, until a probable emissions source can be identified. The inspector documents these findings, and may prepare a table or map that shows the surveillance route(s) taken, wind data collected, and the character and intensity of odor emissions detected at key locations along the route. Once a probable source has been determined, the inspector typically enters to verify whether the emissions detected at that source match those described by the complainant(s) and/or detected by the inspector at locations downwind of that location, and to identify the particular equipment and/or process from which the emissions emanate.

17. Comment: Our facility should be permitted to use alternative methods to address odors when there is a violation of Rule 402. Construction of a permanent enclosure is cost-prohibitive and our facility cannot retrofit existing structures because of control system requirements.

Response: As indicated in response #6, staff has observed objectionable odors emanating from all rendering facilities staff visited. However, in many cases it is difficult to pinpoint a particular odor nuisance as coming from one specific facility. Indeed, odors from two or more facilities may contribute to a single nuisance event. Therefore, staff believes reasonable preventative measures are necessary for all affected facilities. SCAQMD staff has worked in good faith with the commenter to modify the language and requirements of PR 415 in order to accommodate the commenter's existing facility configuration and minimize the number and size of permanent enclosures that the commenter would need to construct under the proposed rule. Regarding the commenter's assertion of prohibitive construction costs for enclosure, SCAQMD staff is aware of other facilities subject to PR 415 where cost estimates for new permanent enclosures are considerably lower on a per-square-foot basis than estimated by the commenter. Moreover, staff has learned that the commenter has at least one other facility that uses a similar control strategy as would be required under PR 415 in terms of enclosure of rendering operations, maintaining negative pressure on the enclosure and routing to odor control equipment.

18. Comment: We have not received an answer regarding whether our facility's existing operation complies with the closed system requirement. What standards will determine if a system is closed? Is our facility's equipment, excepting the raw material pit considered a closed system? Is a screw that is covered considered a closed system? What areas is our facility required to permanently enclose under PR 415? What parts of the trap grease

process need to be enclosed? What materials should be used for the permanent enclosure?

Response: The commenter's existing operation in the main processing building is not considered a closed system. During a site visit in April 2015, SCAQMD staff noted several pieces of equipment that are not closed, including two inclined screw conveyors as well as a hopper feeding the grinder. These would need to be enclosed in order to consider the conveying, grinding, cooking and post-cooking processing equipment in the main building a closed system. Paragraph (f)(4) defines the standards for a closed system, including sealing requirements. A screw conveyor that meets these minimum requirements would be acceptable as part of a closed system. Trap grease processing needs to be closed from the point of delivery, through separation and into wastewater treatment, or conversely, these processes need to be conducted within a permanent enclosure. Subparagraph (f)(3)(D) defines acceptable materials from which a permanent enclosure may be constructed. Notwithstanding the materials used in construction, the receiving area must be enclosed, including the receiving pit from which the screw conveyors move material toward processing equipment.

19. Comment: PR 415 must include language stating that our current operation fully complies with the closed system requirement and no more will be required. Why is a permit application for enclosure required if a facility complies by a closed system?

Response: PR 415 does not include language stating the existing operations at the commenter's facility or any other facility subject to PR 415 fully comply with the closed system requirements. As noted in response #18, the facility does not currently comply with the requirements for a closed system. Under subparagraph (d)(1)(B), a permit application for a permanent enclosure is required to be submitted within 12 months after the date of rule adoption. A permit application is required for a closed system only if modifications are made to currently permitted equipment that is part of a closed system. Otherwise, a permit application is not required for a closed system. The proposed rule has been clarified to provide that a permit application for an enclosure must be submitted only where an enclosure is required, and that a facility must give notice if it is instead intending on using a closed system.

20. Comment: What types of negative air pressure systems are acceptable? Does a closed system need a negative pressure system? Is the negative air pressure standard reasonable considering some enclosures are partially open or regularly opened?

Response: PR 415 does not specify the type of negative pressure system; only that the system is capable of meeting the inward face velocity requirements of paragraph (f)(3). A negative pressure system for a partially-open enclosure will need to be designed to maintain the required minimum inward face velocity through all openings. Likewise, a system for an enclosure with regularly opened doors will need to maintain minimum face velocity accounting for all doors open at once. Note that subparagraph (f)(3)(A) limits the combined area of all routine enclosure openings through which odors can escape from a permanent enclosure to 5% of the enclosure envelope.

21. Comment: It is not reasonable to require implementation of all BMPs within 90 days. Additional washing will generate significant wastewater and may require modification to wastewater facilities, including permitting.

Response: SCAQMD staff disagrees that BMPs, excluding paragraph (e)(5) – Repair of Raw Material Receiving Area cannot be implemented beginning 90 days after rule adoption. Staff also disagrees that the requirements of PR 415 will result in additional water usage, for reasons expressed in Response to Comment #26. However, if the commenter is required to modify its wastewater permit to comply with the requirements of subdivision (g), the timing of requirements to submit permit applications and operate within a permanent enclosure are contained in subparagraph (d)(1)(D). If a facility is unable to meet the construction deadlines in paragraph (d)(1)(D) due to conditions beyond its reasonable control such as delay in obtaining a permit from a wastewater agency, it may apply for a variance.

22. Comment: What if material holding BMPs cannot be met due to breakdown or variation from standard procedure or other circumstances beyond our facility's control? Will emergency breakdown provisions apply or an NOV be issued? What are penalties for NOV? Are penalties defined or up to SCAQMD discretion? When would a notice to comply be issued instead of an NOV?

Response: Rule 430 – *Breakdown Provisions* provides for relief from most rule requirements during breakdowns, excluding Rule 402, provided the breakdown is reported by telephone in a timely manner and a written, complete Breakdown Emissions Report is submitted in a timely manner. Penalties for violations of District rules are set forth in H&SC §§42400 et seq., and the maximum penalties vary depending on whether the violation involved excess emissions and whether it was negligent, strict liability, knowing, etc. In all cases the Court or the District in settling a case must consider all relevant factors including those set forth in H&SC §42403, including the extent of harm caused by the violation, the length of time over which it occurs, the financial burden to the defendant, and any action

taken by the defendant to mitigate the violation. If the facility and the District cannot agree on a settlement, then the District must prove its case in court. A notice to comply may be issued where a minor violation may be promptly corrected, depending on factors such as the facility's prior history.

23. Comment: Why is there a 3-hour deadline to contact SCAQMD when our facility receives an odor complaint? What if the complaint is made after hours or on the weekend? What if the odor is not coming from our facility?

Response: PR 415 (i)(2) requires a facility to notify SCAQMD ". . . no more than three hours after receiving an odor complaint, after facility personnel became aware of the complaint, or after facility personnel should reasonably have become aware of the complaint." If a complaint is made directly to a facility after hours or on a weekend, and facility personnel do not become aware of the complaint until Monday morning, the SCAQMD should be advised of the complaint within 3 hours after facility personnel become aware of the compliant on Monday. This requirement is necessary to enable SCAQMD to respond to the complaint in a timely manner in the event that a complainant contacts a rendering facility directly but does not contact SCAQMD. The contact number (1-800-CUT-SMOG) is accessible 24-hours a day, 7 days a week in the event that the commenter receives a complaint after hours or on the weekend. The requirement to contact SCAQMD does not indicate that the commenter is the source of the odor; only that the commenter received a complaint. SCAQMD will investigate the complaint and, if possible, determine the source of the odor.

24. Comment: Why does PR 415 establish deadlines for repairing leaking components? Why is a written log of leaking valves, flanges, etc. required?

Response: The BMP to repair leaking components within 72 hours (formerly paragraph (e)(18) in the 2/18/15 rule draft) has been removed from the rule.

25. Comment: It will cost our facility about $8.5 million to pave all of the areas required by PR 415, not including costs to repave cracks. What type of cracks and potholes need to be repaired? What are standards for maintaining facility grounds?

Response: The pothole repair BMP under paragraph (e)(6) has been clarified to limit repairs to the raw material receiving area where material touches the ground, rather than the entire facility grounds as defined in paragraph (c)(9). Potholes that hold standing water with a surface area greater than one square foot are required to be repaired under this BMP. The intent of this BMP is to prevent standing water that can allow odorous bacteria to

multiply. When SCAQMD staff visited the commenter's facility in April 2015, no potholes were noted in the raw material receiving area that met the criteria in paragraph (e)(6). The concrete in the receiving area appeared to be very durable in spite of being decades-old. It is expected that the receiving area will be maintained in similar condition. Therefore, staff assumes the commenter will not need to fill any potholes to comply with this BMP and the compliance costs will be minimal. Costs to comply with the BMP will be included as part of the socioeconomic impact assessment.

26. Comment: PR 415 requires washing of trucks, drums, containers and grounds. Washing requirements will increase standing water and wastewater.

Response: SCAQMD staff disagrees with the commenter that PR 415 requirements will increase either standing water or wastewater volume. Outgoing trucks are currently required to be washed under 3 CCR §1180.35. BMP (e)(4) for washing of drums and containers has been limited such that only drums and containers that previously contained raw rendering materials that are open upon exiting the facility are required to be washed. With regard to standing water, facility grounds at facilities that staff visited, including receiving areas appeared to be sloped to drain standing water to wastewater control. The commenter is not correct regarding a requirement to wash facility grounds. Facility grounds were not required to be washed in earlier versions of the rule. Staff believes washing with high-pressure water will decrease water usage, relative to washing with water at line-pressure. However, this BMP has been removed due to concerns expressed by industry in light of the current drought.

27. Comment: Processing material within 4 hours is unreasonable. Our facility does not receive enough material to process every 4 hours. It is not practical to wash the exterior of trucks as proposed in the rule.

Response: The BMP for holding time of incoming raw rendering materials under paragraph (e)(5) [paragraph (e)(7) in the 2/18/15 rule draft] allows for three options for handling incoming raw material, including the material entering the cooking process within the holding time limit, being staged in a permanent enclosure, or stored in a sealed container. The holding time BMP allows 6 hours holding time for material that enters the facility at lower-than-ambient (i.e. refrigerated) temperature, in addition to 4 hours holding time for material at ambient temperature as the BMP was originally proposed. It should be noted that the 4-hour or 6-hour time limit begins when material enters the facility; the BMP does not require material to be processed "every 4 hours" as the commenter suggests. After an enclosure for raw material receiving is constructed, the holding time BMP is no longer effective, as facility owners/operators will be required to move material into the enclosure within 60 minutes on a

continuous basis after delivery. The requirement under paragraph (e)(3) [paragraph (e)(5) in the 2/18/15 rule draft] to wash truck exteriors was removed.

28. Comment: The 30 minute time limit for cleaning spilled material is unrealistic.

Response: The BMP to clean materials washed out of transport vehicles within 30 minutes [formerly paragraph (e)(8) in the 2/16/15 rule draft] has been removed.

29. Comment: What are standards for preventing accumulation and drippings in the plant?

Response: The requirement for preventing accumulations of processed materials has been removed. However, staff feels it is only common sense for a facility to monitor accumulations and remove them before they create odor issues.

30. Comment: Our facility does not own or operate all trucks that enter its facility and has no control over whether trucks use tarps on public streets. If tarping requirements are limited to truck entry, the tarp would only be on the truck for a few minutes until being removed for material unloading. This requirement is not unlike currently existing requirements under Rule 1157.

Response: Owners/operators of third-party trucks will have 6 months to become familiar with the requirements of paragraph (e)(1), Covering of Incoming Transport Vehicles. Staff feels it is not likely that after going to the trouble to make a truck compliant with the covering requirements, a third-party owner or operator would choose to wait until arriving at the commenter's facility before covering an incoming load.

31. Comment: Trucks transfer meal to the grinding department. Do these trucks need to be sealed? What is an odor tight container?

Response: BMP (e)(9) requires cooked material to be transported between permanent enclosures only through a closed system of conveyance, or by odor-tight containers. An intra-facility transport vehicle would qualify as a closed system of conveyance if it was sealed and odor-tight, such that odors are not allowed to escape during transport. An odor-tight container is one in which odors are substantially contained within the container and which allows minimal contact between the material and air outside the container.

32. Comment: The requirement for venting trap grease delivery vehicles is unclear.

Response: BMP (e)(10) requires trap grease to be delivered into a closed system or permanent enclosure, or through a system vented to odor control equipment. This means it cannot be pumped into an open tank, unless that

tank is located within a permanent enclosure. BMP (e)(11) affects trap grease delivery trucks with an on-board pump. During pump-out of the tank, higher internal pressure is created within the tank than a pressure relief valve (PRV) is typically set for. This allows foul, odorous air to be released from the tank through the PRV. BMP (e)(10) requires the PRV to be vented to odor control equipment operating in good condition prior to unloading of trap grease. Staff has seen examples including portable carbon canisters that would suffice as odor control for this situation.

33. Comment: Commenter states that CEQA requires the SCAQMD to evaluate the potential environmental impacts caused by the adoption of PR 415 in an EIR. Commenter outlines 10 specific environmental topic areas that should be evaluated further:

- Aesthetics
- Greenhouse Gas (GHG) Emissions
- Land Use / Planning
- Agriculture and Forestry Resources
- Public Services
- Solid Waste
- Transportation
- Utility/Service Systems
- Air Quality
- Hydrology/Water Quality

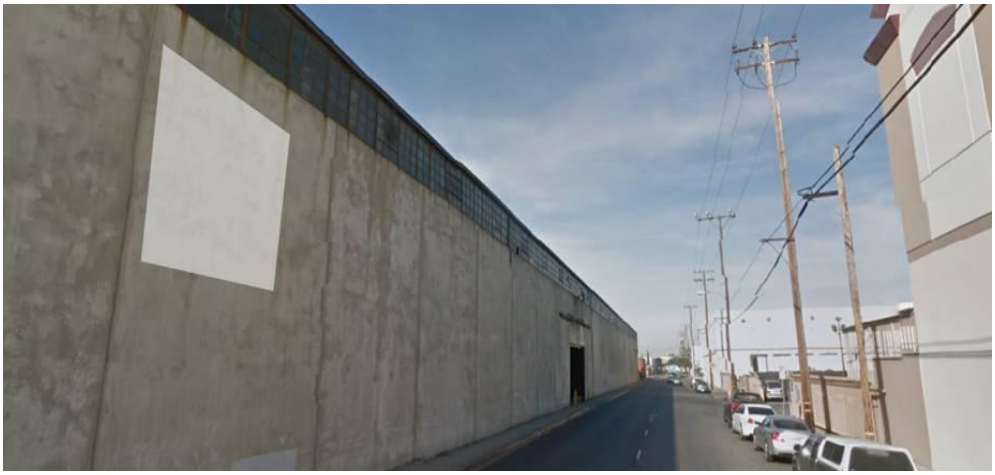
Response: While CEQA does require the evaluation of potential environmental impacts caused by the proposed project, an EIR or EIR equivalent document is only required if the environmental analysis determines that significant environmental impacts could occur as a result of the proposed project. This type of document is then circulated for a 45-day public review and comment period. If no potential significant environmental impacts are expected to occur as result of the proposed project, an environmental assessment is prepared and circulated for a 30-day public review and comment period. Through the environmental analysis conducted for PR 415, it has been determined that based on the current proposal, implementation of the proposed project is not expected to significantly adversely impact any environmental topic area. Therefore, an environmental assessment demonstrating the analysis and conclusions is being prepared and will be circulated for a 30-day public review and comment period. A summary of responses to the commenter's issues is provided here.

The commenter outlines:

- Aesthetics

The commenter states that the proposed project requires the construction of massive buildings that would change the visual character of the existing setting. The affected rendering facilities are located in the City of Vernon, CA, which is an existing highly industrialized commercial area that does not have any known scenic vistas or scenic resources (see below). The types of enclosures required by PR 415 are not expected to be any larger or visually dissimilar to other structures on the existing facilities or neighboring properties. Since all the affected facilities are located in a highly industrialized setting, the construction of new enclosures or buildings would not obstruct any scenic resources or degrade the existing visual character of any affected site. Further, the proposed project would not involve the demolition of any existing buildings or facilities (it would rather require enclosing specific operations), require the acquisition of any new land or the surrendering of existing land, or the modification of any existing land use designations or zoning ordinances. All new enclosures would be developed within the existing footprints of the affected facilities. Thus, the proposed project is not expected to degrade the visual character of any site or its surroundings from the existing visual character, affect any scenic vista, or damage scenic resources. Based upon these considerations, significant adverse aesthetics impacts are not anticipated.

The following pictures are typical views of the setting in which the affected rendering facilities are located:



- Greenhouse Gas (GHG) Emissions

  The commenter claims that PR 415 is inconsistent with State GHG reduction goals and plans. The SCAQMD applies the brightline approach of calculating GHG impacts from the project to a 10,000 metric ton per year (MT/yr) threshold. However, the intent of the proposed rule is to capture and control odors from rendering operations, not cease rendering operations. Rendering operations within the basin are not expected to cease because of the requirements included in PR 415, and thus would not result in an increase of GHG emissions due to non-operation and subsequent transport of rendering material over longer distances. GHG emissions associated with the construction of the required enclosures and control equipment, as well as the operation of the control equipment will be evaluated in the environmental assessment. Rendering operations are known to have associated odors specific to the rendering process. Greater capture and control of these odor emissions due to BMPs requiring efficient handling of the rendering material (BMPs that limit holding time of raw and cooked materials) potentially reducing decomposition may reduce current rendering facility GHG emissions.

- Land Use / Planning

  The commenter states that rendering provides a sustainable method of handling unique wastes and repurposing them into valuable products, while protecting human and animal health. SCAQMD understands that the rendering industry provides an important function in handling and disposing of various wastes and byproducts from animal/livestock related operations. However, there are no provisions in the PR 415 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments and no land use or planning requirements would be altered by the proposed project. Facilities would continue to handle unique wastes and repurpose them into products, and odor controls in PR 415 would not change that. Affected facilities would still have to comply with local ordinances and land use

requirements. Additionally, since any physical changes caused by the proposed project would primarily occur within the established footprints of existing facilities, PR 415 will not require or result in physically dividing an established community and will not affect any habitat conservation or natural community conservation plans, or agricultural resources or operations, and would not create divisions in any existing communities. Based upon these considerations, significant adverse land use and planning impacts are not expected from the implementation of the proposed project.

- Agriculture and Forestry Resources

  The commenter questions how will the cattle and dairy industries dispose of animal mortalities without rendering operations. As stated previously, the intent of the proposed rule is to capture and control odors from rendering operations, not cease rendering operations. Rendering operations within the basin are not expected to cease because of the requirements included in PR 415. If a rendering facility is not able to meet the requirements of PR 415, it is reasonably foreseeable to expect that one or more of the other currently existing local rendering facilities would have the ability or generate the ability to accept the displaced rendering material, thus not creating an excess build-up of rendering material or animal waste. With regard to agriculture and forestry resources, construction of new enclosures or installation of new control equipment as a result of the implementation of the proposed project are expected to take place within the current footprint of existing rendering facilities, which are located within highly urbanized areas that are typically designated as commercial/industrial. Therefore, adoption of the proposed project would not result in any new construction of buildings or other structures that would convert farmland to non-agricultural use or conflict with zoning for agricultural use or a Williamson Act contract. The proposed project would not require converting farmland to non-agricultural uses because the potentially affected facilities are expected to be already completely developed. For the same reasons, the proposed project would not result in the loss of forest land or conversion of forest land to non-forest use. Based upon these considerations, significant adverse agricultural and forestry resource impacts are not anticipated.

- Public Services

  The commenter states that rendering is important to assist cities in meeting their state mandated recycling requirements and warns that if the materials are not disposed of properly, they will cause more odors and spread bacteria and disease. As stated previously, the intent of the proposed rule is to capture and control odors from rendering operations, not cease rendering operations. Rendering operations within the basin are not expected to cease because of the requirements included in PR 415. In the

unlikely event that a rendering facility is not able to meet the requirements of PR 415 and makes a business decision to close, it is reasonably foreseeable to expect that one or more of the other currently existing rendering facilities would have the ability or generate the ability to accept the displaced rendering material, thus not creating an excess build-up of rendering material or animal waste. Physical changes that are expected to occur because of the proposed project (e.g. installation of enclosures and control equipment) will be located at already existing facilities. All newly installed enclosures and control equipment would be expected to be compliant with fire department standards, therefore, they would not increase the risk of fire to occur. No other physical modifications or changes associated with the proposed project are expected and no flammable substances are necessary to operate rendering equipment. As such, the proposed project will not increase the chances for fires or explosions that could affect local fire departments. Finally, PR 415 is not expected to increase the need for security at affected facilities, which could adversely affect local police departments. Because the proposed project does not require or involve the use of new hazardous materials or generate new hazardous waste, it will not generate an emergency situation that would require additional fire or police protection, or impact acceptable service ratios or response times.

Implementing the proposed project would not induce population growth or dispersion because no additional operational workers are expected to be needed at the existing affected facilities and construction workers will be temporary, not permanent. Therefore, with no increase in local population anticipated as a result of adopting and implementing the proposed project, additional demand for new or expanded schools or parks is also not anticipated. As a result, no significant adverse impacts are expected to local schools or parks. Based upon these considerations, significant adverse public services impacts are not expected from the implementation of the proposed project.

- Solid Waste

The commenter questions where will products be disposed of that cannot be rendered, seeing that disposal of rendering materials at landfills does not comply with state and local statutes and regulations related to solid waste. The intent of the proposed rule is to capture and control odors from rendering operations, not cease rendering operations. Rendering operations within the basin are not expected to cease and animal waste is not expected to be diverted because of the requirements included in PR 415. PR 415 will require existing rendering facilities to enclose certain rendering operations, install odor emission control equipment and carry out best management practices. If a rendering facility is not able to meet the requirements of PR 415, it is reasonably foreseeable to expect that one or more of the other currently existing rendering facilities would have the ability or generate the ability to accept the displaced rendering material, thus not creating an excess build-up of rendering material or animal waste. Therefore, it is not expected that rendering material will be diverted to landfills as a result of the proposed project.

All new enclosures and control equipment are expected to be installed within the currently developed footprint at already existing facilities. Because the newly installed control equipment has a finite lifetime, it will ultimately have to be replaced at the end of its useful life. Affected equipment may be refurbished and used elsewhere or the scrap metal or other materials from replaced units has economic value and is expected to be recycled, so any solid or hazardous waste impacts specifically associated with the proposed project are expected to be minor. As a result, no substantial change in the amount or character of solid or hazardous waste streams is expected to occur.

Sanitation districts forecast future landfill capacity and encourage recycling. Any portions of spent control equipment in the future that cannot be recycled are expected to be able to be disposed of in the available landfill capacity. Additionally, any waste generated by construction activities associated with the installation of new enclosures or control equipment is expected to be minor. The proposed project is not expected to significantly increase the volume of solid or hazardous wastes from affected facilities, require additional waste disposal capacity, or generate waste that does not meet applicable local, state, or federal regulations.

Based upon these considerations, the proposed project is not expected to increase the volume of solid or hazardous wastes that cannot be handled by existing municipal or hazardous waste disposal facilities, or require additional waste disposal capacity. Further, implementing the proposed project is not expected to interfere with any affected facility's ability to comply with applicable local, state, or federal waste disposal regulations.

- Transportation

The commenter states that the demand for on-site truck parking facilities will increase in order to clean and process delivery trucks per PR 415. The main focus of PR 415 is to establish odor best management practices (BMPs) and requirements to reduce odors from facilities rendering animals and animal parts. There are 13 BMPs currently proposed in PR 415 that will assist in reducing odors from various points or processes within a rendering facility. Only four of these BMPs involve delivery trucks:

3. Covering of Incoming Transport Vehicles

Transport vehicles delivering raw rendering materials to a rendering facility from offsite locations are not permitted to enter the rendering facility beyond the first point of contact (ex: guard shack or weigh station) unless the cargo area of the vehicle is completely enclosed or fully covered with a tarp.

There is no change to traffic/transportation due to covering the open beds of trucks. Because this requirement only affects the type of trucks that are allowed to enter rendering facilities and not the number of trips, this BMP is not expected to increase the demand for on-site truck parking facilities in any way.

4. Washing of Outgoing Transport Vehicles

Where raw rendering materials come directly into contact with a delivery truck, the cargo area of any vehicle exiting the rendering facility must be thoroughly washed prior to the truck leaving the facility.

This requirement is expected to be a quick process that consists of hosing down the cargo area of the delivery trucks prior to exiting and is not expected to slow down the delivery/exiting process creating the need for extended on-site truck parking facilities.

5. Trap Grease Delivery Trucks

Trap grease from delivery trucks must be delivered and transferred within the trap grease storage and processing area(s) within a closed system, inside of a permanent enclosure, or through a system vented to odor control equipment.

Since this BMP only outlines specific areas that trap grease delivery trucks can be unloaded, this BMP is not expected to delay normal trap

grease unloading operations, and therefore does not create the need for extended on-site truck parking facilities.

6. Venting Trap Grease Delivery Vehicles to Odor Control Equipment

   The pressure relief valve on trap grease delivery trucks fitted with an internal vacuum or pressure pump must be vented to odor control equipment operating in good condition prior to unloading of trap grease, unless the truck is unloaded inside of a permanent enclosure.

   Since this BMP only requires that trap grease delivery trucks must be vented to odor control equipment prior to unloading, this BMP is not expected to delay normal trap grease unloading operations, and therefore does not create the need for extended on-site truck parking facilities.

Additionally, implementation of the proposed project would not result in a net change in or cause additional transportation demands or services. Similarly, the implementation of the proposed project is not expected to adversely affect circulation patterns on local roadways or the level of service at intersections near affected facilities.

All potential physical changes caused by implementation of the proposed project are expected to occur within the existing boundaries of the affected facilities. Therefore, no offsite modifications to roadways are anticipated for the proposed project that would result in an additional design hazard or new incompatible uses. Furthermore, the proposed project is not expected to impact existing emergency access. Based upon these considerations, PR 415 is not expected to generate significant adverse project-specific or cumulative transportation/traffic impacts.

- Utilities / Service Systems

  The commenter questions what is the increase in utilities to comply with PR 415? Potential impacts to energy resources, as well potential water demand impacts, will be addressed and evaluated in the environmental assessment.

- Air Quality

  The commenter states that if carcasses are burned, it will create more air pollution. The main focus of PR 415 is to establish odor BMPs and requirements to reduce odors from facilities rendering animals and animal parts. The main requirements of the proposed project are to operate certain odorous processes within a permanent enclosure or within a closed system, ventilate the enclosures to odor control equipment, and implement BMPs for odor control. Facilities are currently not allowed to openly burn

carcasses. None of the provisions in PR 415 are expected to result in the burning of carcasses at any of the affected facilities. Therefore, no adverse impact to air quality from the burning of carcasses is anticipated.

Air quality impacts from the construction activities required from the implementation of PR 415 will be addressed and evaluated in the environmental assessment.

The commenter questions what are the air quality impacts of trucks returning to their original locations to be tarped? All of the affected facilities are knowledgeable of where their animal wastes are delivered from and have standing contracts with many of the delivering entities. It is reasonably foreseeable that affected facilities can notify delivering parties of the tarping BMP requirement prior to the actual delivery of animal waste product, therefore, eliminating the need for a return trip to their original location to be tarped.

The commenter states that the SCAQMD does not consider odors to be significant under CEQA unless a Rule 402 violation occurs or has occurred. This is correct. However, PR 415 will be implemented in addition to continued enforcement of public nuisances under Rule 402.

Construction air quality impacts associated with the development of the permanent enclosures, installation of control equipment, and any associated paving or trenching activities that are required as a result of the proposed project will be addressed and evaluated in the environmental assessment. Additionally, operational impacts from new control equipment and BMPs will be addressed and evaluated as well.

- Hydrology / Water Quality

The commenter states that the proposed BMPs impose significant watering requirements during a drought which interferes with California water policies. The proposed BMPs do require several washing activities, including the washdown of receiving areas, and the washing of outgoing transport vehicles, drums and containers. However, BMP (e)(4) for washing of drums and containers has been limited such that only drums and containers that contained raw rendering materials that are open upon exiting the facility are required to be washed. Outgoing trucks are currently required to be washed under 3 CCR §1180.35. Therefore, the proposed BMPs would not interfere with any California water policies.

The commenter claims that PR 415 will generate a significant amount of wastewater and degrade the quality of water. As stated above, outgoing trucks are currently required to be washed under 3 CCR §1180.35. BMP (e)(4) for washing of drums and containers has been limited such that only drums and containers that contained raw rendering materials that are open

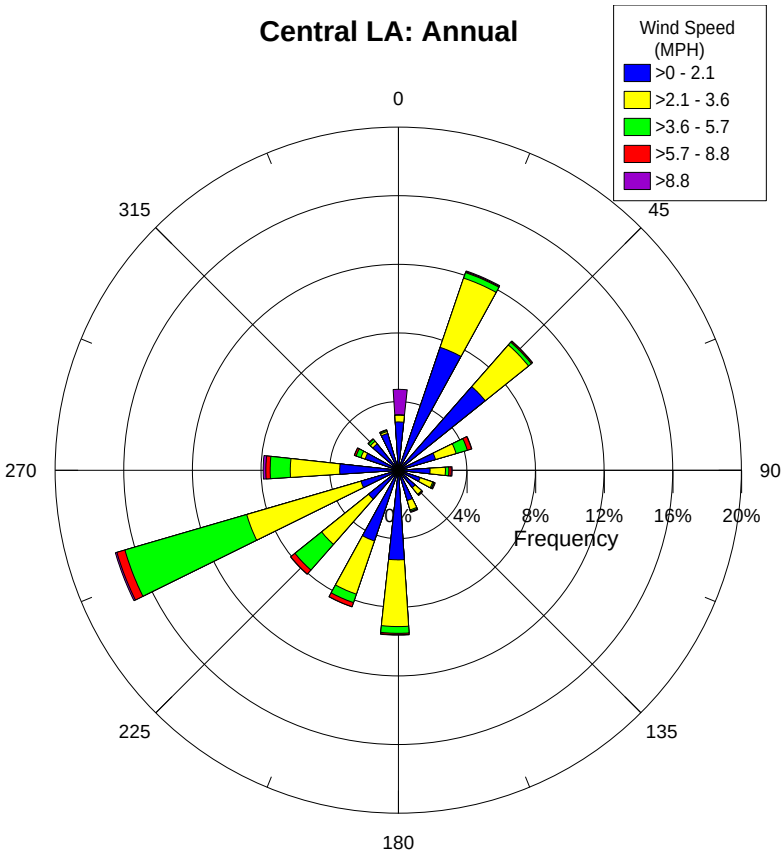
upon exiting the facility are required to be washed. The minimal additional amount of water required for washdown of the receiving areas and of any open drums and containers leaving the facilities is not expected to be near the water demand significance threshold (262,820 gallons per day of potable water) nor degrade the quality of water.

The commenter also claims that the construction of massive buildings will change the existing drainage pattern of the sites, and contribute more storm water to the drainage system. The permanent enclosures are expected to be built within the existing footprints of the affected facilities, which are already completely developed with existing storm water collection systems. The addition of one or several enclosures at the already highly developed affected facilities is not expected to generate a substantial amount of new storm water runoff, and existing storm water collection systems are likely to easily be able to handle the minimal increase in storm water runoff that the newly developed enclosures may generate. If the footprint of the new enclosures are developed over existing stormdrains, it is expected that new stormdrains could be installed and tied into the existing stormwater collection system at the facility.

Further, the proposed project has no provision that would require the construction of additional water resource facilities, increase the need for new or expanded water entitlements, or alter existing drainage patterns in a substantial manner. The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. The proposed project would not create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. Further, since the BMPs for washing activities involve equipment/containers/surfaces that currently come into contact with rendering materials, there would be no change in the composition of existing wastewater streams from the potentially affected facilities. In addition, the proposed project is not expected to require additional wastewater disposal capacity, violate any water quality standard or wastewater discharge requirements, or otherwise substantially degrade water quality. Based upon these considerations, significant hydrology and water quality impacts are not expected from the implementation of the proposed project.

34. Comment: The study *"Odor Controls for Rendering Plants." Environmental Science and Technology 7 (6):504-510. Bethea, Murthy, Carey; 1973* infers that SCAQMD Headquarters, which is within 20 miles from Rendering Row in Vernon would be impacted. However, it does not appear that any SCAQMD staff ever called to complain about rendering odors.

Response: SCAQMD staff does not think that the quote from the referenced study ". . . rendering plant emissions could be detected up to 20 miles away. . ." assumes these odors are necessarily offensive at that distance. Westerly winds (SCAQMD headquarters is due east of renderer's row) only blew approximately 8% of the time, as evident from the following wind rose compiled using 2005 to 2007 data from the central Los Angeles meteorological station. As can be seen in the wind rose, westerly winds were most often present below 3.6 mph, requiring at least 6 hours to travel 20 miles. Staff believes there is ample opportunity for dispersion during a 6-hour, 20 mile trek. Assuming that westerly winds coincided with high odor concentrations on renderer's row, and westerly winds began blowing in mid-afternoon, as is the typical diurnal wind pattern in the area, such odors would reach SCAQMD headquarters in the late evening/night-time hours. Nearly all SCAQMD staff is gone during these hours.



35. Comment: Approximately 313,000 vehicles travel the I-5 corridor daily. Odors from rendering plants are also found in vehicles in exhaust emissions (e.g. mercaptans are from the sulfur in gasoline), poor maintenance (e.g. catalytic converter, leaking oil, coolant, burning clutch and A/C) and human body odor. The majority of these vehicles are stuck in traffic, with single passenger vehicles.

Response: Regarding the commenter's suggestion that rendering odors are actually caused by mobile source emissions from passenger vehicle traffic, SCAQMD staff believes if this were even plausible, similar complaints alleging rendering-type odors would be received all along the hundreds of miles of freeways in the South Coast Air Basin, many of which are impacted by daily rush hours causing slow traffic speeds similar to the speeds in the communities surrounding the Vernon rendering facilities. Regarding the suggestion that rendering-type odors are actually caused by human body odor from people in single-passenger vehicles, staff does not believe the commenter earnestly intends this theory to be taken seriously.

APPENDIX B: SUMMARY OF RENDERING FACILITY REGULATIONS IN OTHER STATES

Summary of Rendering Facility Regulations in Other States

Table B-1 presents a summary of the requirements imposed by 16 states on rendering facilities, without references to state regulations. It should not be taken as an exhaustive list of all requirements imposed on rendering facilities in each listed state; rather, a brief summary of the State regulations that SCAQMD staff was able to identify. Citation of the chapter for each state's regulations will be provided in subsequent versions of this staff report.

State	Summary of State Rendering Requirements
Alabama	Render in a pressure tank where temperature is not lower than 220 degrees for not less than 4 hours. Use steel-bodied trucks or trucks with impervious liners for transport. Thoroughly clean and disinfect transport vehicles after each trip. Separate room with concrete floor for skinning and cutting up dead animals. Do not store grease or other tankage in room for skinning/cutting up.
Arizona	Note: Arizona requirements divided into: 1. Slaughter Establishments; 2. Rendering to Produce Certified Animal Fat; 3. Meat from Dead Animals used as Animal Food. Raw materials free from condemned and/or diseased material. Walls of smooth, finished Portland cement plaster, glazed tile, or other approved material impervious to moisture. Floors constructed of dense concrete or floor tile, sloped to drain. Hot and cold water connections shall be provided. No openings between an inedible products department and an edible products department. Loading dock shall be paved, drained, and of sufficient size to accommodate the largest truck used. Raw materials not certified for animal fat production separated at all times (transport, storage and rendering) from other material in separate marked containers identified as such. Hot and cold water provided (hot water at least 180° F). Drainage and plumbing system and sewage disposal system that will not serve as a breeding place for flies, constitute a hazard, or endanger public health. Floors, walls, ceilings, partitions, posts, doors, and other structures of materials capable of being thoroughly cleaned. Floors must have sufficient drainage to preclude stagnant accumulations of moisture. All outside windows and doors shall be screened. Rooms with well-distributed ventilation to prevent uncontrolled mold growth and filth or bacteria that may endanger health. Plant kept free from flies, rats, mice, and vermin.

California	Note: California requirements inclusive of renderers, collection centers, dead animal haulers and transporters of inedible kitchen grease. Vehicles used in transportation leakproof and constructed of impervious material to permit cleaning and sanitizing and to control insects and odors and prevent the spread of disease. Vehicles used to transport dead animals cleaned and sanitized at the end of each day. Rendering facilities must be physically separate from any facility with meat or meat byproducts. Rendering facilities that receive carcasses from any source other than a slaughter facility on the premises cannot operate within 1000 yards of a facility that slaughters livestock or other animals for human consumption. Rendering facilities must comply with the California Building Code (2007). Buildings of sound construction, to discourage entrance/harboring of pests. Floors, walls, ceilings, partitions and doors of material and finish as to make them readily cleanable. Unloading slab of sufficient size to contain all waste material unloaded on it; constructed of concrete and sloped to result in quick draining of fluids. Floors of rooms graded to cause runoff into drains and avoid pooling. No excessive build-up of dust and organic matter on equipment, floors, walls and ceilings or excessive accumulation of water, blood, manure, raw material, grease or organic matter on floors and passageways. Plant premises kept free of excessive junk, wood piles, debris and weeds that provide potential breeding places and harborage for rodents; excessive accumulation of raw materials, including manure piles, paunch contents, hair piles, dead animals and other places suitable for fly breeding; pooling water; and similar nuisances and potential breeding areas for insects and vermin.
Colorado	Rendering plants of sound construction and kept in good repair, to prevent the entrance into, or the harboring therein, of rodents, birds, insects, vermin, dogs, cats. Plant premises kept clean and orderly and free of strong or foul odors, smoke and other pollutants. Outside areas kept free from refuse, rubbish and waste materials, to prevent harborage of rodents, insects, vermin. Supply of running water available, adequate for operations. Water temperature not less than 180 degrees F., or a chemical sanitizing agent used for washdown. Vehicles used in the transportation of dead animal carcasses, parts, bone and raw tankage material constructed and maintained to prevent leakage of blood & tissue. Load compartment covered whenever a load is on board. Floors, walls, ceiling, partitions, posts, doors, and other parts of each plant structure shall be of material, construction, and finish to be readily and thoroughly cleaned. Floor kept water tight.

Georgia	Floors constructed of concrete or other non-absorbant material. Ample hot water supply (140 F). Adequate drainage. Drainage only into sewer. Cleaned and sanitized daily to prevent odor. Trucks used to transport carcasses or refuse on public highways must prevent seepage and residue from escaping. Carcasses/refuse not allowed to accumulate or be held except at rendering plant. Rodent/vermin control diligently practiced. Barrels used to transport carcasses/refuse marked "INEDIBLE" with letter at least 2 inches high.
Idaho	Rendering establishments must be constructed to protect finished product and prevent pollution of surrounding environment or creation of a nuisance to the public. Rendering material transported to the rendering establishment in covered and leak-proof vehicles, such vehicles to be used for this purpose only and to be cleaned and disinfected after delivering each load. Rendering material shall be heated to a sufficient temperature for a sufficient length of time to destroy all pathogens, and processed under sanitary procedures that prohibit the recontamination of the product after cooking.
Illinois	Floors constructed of concrete or other non-absorbent material. Adequate drainage. Rooms to be equipped with sufficient steam and steam hose to clean floors and trucks. Floors, walls and equipment kept in sanitary condition and cleaned with steam. Trucks and truck equipment kept in sanitary condition and cleaned with steam.
Kentucky	Haul carcass in covered vehicle, bed or tank which is constructed so that no drippings or seepings from carcass can escape. If driver suspects that animal died of communicable disease, vehicle must be disinfected.
Michigan	Except for approved escapes for steam, all tanks, cookers, boilers, driers, and condensers must be airtight. Steam shall be controlled in a manner that does not constitute a public or private nuisance or pose a threat to the health of the public or animals. Floors and walls constructed of a material that can be easily cleaned and disinfected. Floors have adequate surface drainage so that liquids will not collect or create standing pools. Adequate supply of running hot water for cleaning purposes. Loading and unloading docks/platforms constructed so that drainage is adequate and natural precipitation will not collect or create standing pools. Equipment necessary to maintain the facility in a clean and sanitary condition, including insect and pest control equipment. The floor space and equipment in a licensed facility shall be kept clean and free of accumulations of filth and debris. Accumulations of dead animals shall not create a public or private nuisance or health hazard. Odors in and around licensed facilities shall not be allowed to create a public

	or private nuisance. Odor control equipment available on the premises. Dead animals stored indoors on floors constructed of concrete. Contents of the digestive tract and manure not allowed to accumulate on the premises of any licensed facility for more than 6 days and disposal not allowed to create a public nuisance or health hazard or endanger the health of livestock. The contents of the digestive tract shall be stored in covered containers that do not leak.
Mississippi	No new plant located or constructed within two miles of the nearest point of any municipality with a population in excess of five hundred (500) according to the latest federal census, or within one mile of the nearest boundary of lands owned or controlled in connection either with any state, county, township, city or town park, or boulevard, or of any public school or hospital, or of any charitable, religious or educational institution. Building must have four walls complete and be provided with concrete or cement floors and with good drainage and be thoroughly sanitary in construction and maintenance. Any sewage, drainage, or waste water, if of an offensive or obnoxious character or odor, not be permitted to escape until first treated. All sewage and plant wastes disposal according to recognized and accepted sanitary engineering methods which will not create a public health hazard or unsanitary situation so as to be a nuisance. Plants must be equipped and operated with steel tanks, enclosed dryers and cold water condensers. Tanks must be airtight except proper escapes for live steam, passing through the tanks during cooking, which steam shall be condensed by use of cold water condensers. All equipment for use in disposal or rendering plants constructed and maintained as to prevent any avoidable escape of odors into the air. Skinning and dismembering done within a building so that no unnecessary annoyance caused to other persons by the conditions or unsightly appearance. All such bodies/parts disposed of within 24 hours after delivery to plant.
Ohio	Floors constructed of concrete or some other nonabsorbent materials. Have adequate water supply, and be supplied with sufficient steam and steam hose to clean the floors of the plant and its trucks. All parts of building and all equipment kept in a sanitary condition and cleaned at least once each day with steam. All raw rendering material processed or disposed of within forty-eight hours after arrival at the rendering plant. Cooking vats/tanks airtight, except for proper escapes for steam. Steam disposed of so as to cause no nuisance. All skinning and dismembering of an animal body or part thereof done within a building.

Oklahoma	Floors constructed of concrete, or some other non-absorbent material, adequate drainage, be thoroughly sanitary, be provided with adequate water supply and sufficient hot water to properly and adequately clean floors and trucks. Plants separated by a permanent wall and apart from any other business operation. Maintain the facilities in such sanitary manner as to eliminate insofar as possible, all odors, insects, and vermin. Separate building or storage area shall be provided for the purpose of storing the finished products in order to avoid contamination after processing. No tools or equipment used in handling the unfinished product used in storage area, or in handling of finished product. Rodent and vermin control diligently practiced. Uncontrolled animal and birds not tolerated on premises. Buildings and surrounding grounds shall be kept clean and free from refuse, trash, or the accumulation of product or products of processing, including paunch manure. Barrels used for transporting and storage of scrap or used cooking grease and oils clearly marked "inedible" with letters not less than three inches in height.
Oregon	All interior surfaces of impervious materials. All areas of the building and equipment used in the conduct of the business shall be maintained in a clean and sanitary condition. Areas and equipment, including storage pits and transfer augers, cleaned at the end of every work day, and a log kept. Floors, walls and ceilings shall be free of any observable raw material. Liquid not allowed to collect or pool. Sanitary drainage provided, leading to a sewage disposal system. Hot water and steam available to maintain the areas and equipment. Outside premises shall be maintained free of raw material, any dried liquid matter from animal parts and litter. Immediately after unloading for processing or into transfer pits, raw material sprayed with an odor control spray. Raw material for rendering not to remain longer than eight hours on the premises of a business without being refrigerated, processed or transferred to another processing site. If circumstances outside control of the business arise which prevent action within eight hours, business to maintain raw material in such a manner that no public annoyance is caused by the unsightly appearance or odor of the raw material. Cooking area must be separate from the storage area and the area where raw materials are skinned, butchered or dismembered. The latter two areas shall also be separate from each other. The cooking, loading and unloading areas shall be enclosed. Pressure control to be automatic, checked daily. Pressure control calibrated, and tested annually. Traps capable of preventing odor in the disposal of steam or exhaust installed on steam vents. Transport of raw material in a manner that no public annoyance

	is caused by the unsightly appearance of such material. Vehicles maintained to prevent drippings or seepings. Use industrial grade seals. Inspect seals regularly. Maintain seals to prevent drippings or seepings. Vehicles and containers cleaned after every work day to ensure that no raw material, liquids or scraps remain, and a log kept.
South Carolina	Be located on site zoned for use, have a potable water supply, wastewater and solid disposal; utilize buildings and partitions to prevent any contact between raw material and finished product; ensure adequate drainage and sanitation, walls, floors and ceilings constructed of nonabsorbent materials; have adequate supply of hot water and cleaning agents; operate using reasonable precautions to prevent objectionable odors from being discharged beyond the boundaries of the permitee's property; practice rodent and vermin control; mark all barrels with "INEDIBLE" in letters at least two inches in height; have a control and recontamination program that prevents cross-contamination between raw material and finished product.
South Dakota	A rendering plant must include a building or buildings provided with concrete floors with good drainage and constructed to be maintained in a sanitary condition. There must be provision to prevent entrance to the buildings of rodents or other animals. All windows, doors, and other openings must be screened unless a program for insect extermination is followed in the buildings and on the premises where the buildings are located. All skinning and dismembering of carcasses must be done in buildings constructed for that purpose. The cooking vats must be airtight except for vents for the live steam used in cooking. All steam vents must be furnished with closing mechanisms and steam valve gauges to ensure that cooking is at the required steam pressure. All carcasses and parts must be disposed of by subjecting them to a cooking and rendering procedure in vats or tanks under steam pressure. Floors and walls of the plant must be thoroughly flushed or scrubbed daily with live steam or boiling water when the plant is in operation. All floor washings and other liquid waste or accumulation of water from washing the viscera must be disposed of through disposal facilities.
Texas	Clean floors at the end of each day's operation. Premises kept clean and free from refuse, waste, rodents, insect breeding, & standing water. Collection containers leak-proof and sanitary. Transfer and loading of dead animals must prevent release of animal parts, spills and leaks. Construction/layout of operation must prevent development of malodorous conditions or nuisance. Floors, walls and ceilings constructed of impervious and easily cleanable materials. Exterior walls/roof and openings must protect against intrusion of insects, rodents and other

	vermin. Provide a paved area adequate to wash & sanitize trucks. Drain paved area to sanitary sewer system. Provide sufficient ventilation to dispel disagreeable odors, condensate and vapor.