Submitted by Email: compost.transfer.regs@calrecycle.ca.gov

December 5, 2014

Ken Decio
Waste Permitting, Compliance and Mitigation Division
California Department of Resources Recycling and Recovery
P.O. Box 4025
Sacramento, CA 95812-4025

Dear Mr. Decio:

The Almond Hullers & Processors Association (AHPA) is providing the following comments in response to the California Department of Resources Recycling and Recovery's (Department) proposal to amend California Code of Regulations, Title 14, Division 7, Chapters 1, 3, 3.1 and 5 and create Chapter 3.2; and, to amend Title 27, Appendix 1.

The cultivation of almonds plays a significant role in the livelihood of thousands of California families and is a major contributor to the strength and health of our economy.

Almonds are currently in the top 3 crops for value and acreage in California, which is the leading agricultural state in the U.S. in farm gate value. We produce 80% of the world supply of almonds and virtually 100% of the U.S. commercial supply. California Almonds are the No. 1 California agricultural export with a value of $3.4 billion dollars, according to the latest California Department of Food and Agriculture (CDFA) statistics. California Almonds are also the No. 1 U.S. specialty crop export, with California Almond exports alone supporting 47,000 jobs in the U.S. according to the United States Department of Agriculture.

AHPA is an association representing the California Almond industry and is organized to promote the business interests of its members. Our members represent over 90% of the California Almond industry based on volume.

Over 90 of AHPA's members take harvested almond fruit and "hull", "shell" and "process" them into hull, shell and edible nuts. In the 2013-2014 crop year, an estimated 7 billion pounds of almond fruit were hulled and shelled that resulted in: 2 billion pounds of almond kernels

(nuts); approximately 4 billion pounds of hulls; and approximately 1 billion pounds of shell. Almond hulls and shells are also a valuable by-product in their own right finding uses as animal feed, animal bedding, biomass feedstock and in the near-future biofuel feedstock.

Currently, almond hulls and hull and shell are the highest valued almond processing by-product, where in 2013 we estimate that the sale of almond hull and hull and shell into the animal feed market returned $311 million. Each of our members who manufacture, handle distribute, sell, or store almond processing by-products as animal feed are licensed and regulated by the CDFA's Feed Inspection Program and the federal Food and Drug Administration (FDA).

The Almond Fruit. Simply, an almond fruit is made of three parts, the hull, shell and nut; see Figure 1. The six almond fruit at the top of the figure - where the hull is split open exposing the shell encased nut - is the stage where almonds are harvested.

Figure 1. Almond fruit and hull, shell and nut. Source: Hilltop Ranch, Inc.

Harvest, Hulling and Shelling. Almonds are normally harvested by mechanically shaking the fruit off the tree and letting the fruit fall onto the orchard floor for a drying period of 5-10 days before collection; moisture content in the fruit at this stage is typically 12% or less. It is not unusual for twigs, sticks, leaves, rocks and dirt to inadvertently move along with the harvested fruit to hulling, shelling and processing. Harvested almonds move to on-farm and/or off-site hulling, shelling and processing facilities where they are processed into the fruit's various components, i.e. hull; hull and shell (when the shell doesn't completely separate from the hull); shell; and nuts. Figures 2-5 show the harvesting and hulling and shelling process and the resulting almond processing by-products. Nuts are also subjected to additional processing to

remove off-type nuts or culls which results in another by-product that is either re-processed for human food, pressed for oil, or moves to animal feed channels. Twigs, sticks, leaves, rocks and dirt are screened and removed during each stage. Our experience is that that twigs, sticks and leaves are handled as "agriculture materials" but under the current excluded activity cited in Section 17855(a)(1); Section 17855(a)(9); or, they are moved on to agricultural material composting. A typical hulling and processing facility handles harvested almond fruit from August to December where hulls; hull and shell; shell and cull nuts are segregated and stored onsite in piles; see Figures 6-7. Those by-products then move year-round to their respective uses as animal feed and/or other beneficial uses.

Figure 2: Hull Split indicating that it's time to harvest.

Figure 3: Trees are shaken and in hull fruit falls to the ground.

Figure 4: Inhull fruit lay on the orchard floor for 5-10 days to dry to less than 12% hull moisture before being picked up and brought to the huller/sheller.

Figure 5: Equipment is used to sort orchard debris, hulls, shells, and kernels.

Figure 6: Hulls are separated and stored in bulk on the auger lines until sold as livestock feed.

Figure 7: Shells are separated and stored in bulk on auger lines until sold as bedding or other beneficial uses.

Amended and New Definitions. Of particular interest to AHPA are the Department's proposed amended and new definitions of "agricultural materials", "disposal" and "land application." Our review of the Initial Statement of Reasons (ISOR) and some of the documentation used to support the proposed regulation, specifically the white papers entitled "Agricultural Land Application of Compostable Material" and "Compostable Materials Storage Volume Limitations" indicates to us that the changes and addition of these particular definitions were in response to the issues faced by the Department, CDFA, agricultural interests and local enforcement agencies across the state dealing with less than ideal storage of compost and/or compostable materials and agronomically-challenged applications of finished composts and un-composted wood waste, green material, mulch, and yard trimmings to agricultural lands. In our opinion, the amended and new definitions as proposed have the potential to pull almond hullers and processors and almond processing by-products further into an unnecessary regulatory scheme intended to regulate composting and final deposition of finished composts, digestates, and compostable materials that are "wastes" not high quality and valuable animal feed, animal bedding, biomass feedstock or future biofuel feedstocks.

AHPA offers the following comments and recommendations:

1. **Section 17852(a)(11). Compostable Materials.** Our primary concern here is that we continue to hear reports that Local Enforcement Agencies (LEAs) are engaging our

members regarding the regulation of stored or stockpiled almond processing by-product as a "compostable material." We've concluded that in either the current or proposed regulatory environment that the majority of almond processing by-products shouldn't be regulated because they don't not meet the definition of a compostable material. By volume and monetary value, the leading almond processing by-product is almond hull and hull and shell. They are for all practical purposes completely utilized as animal feed. They are never purposely composted or land applied.

Section 17852(a)(11) defines a compostable material as an "organic material that when accumulated will become active compost as defined by Section 17852(a)(1)"; that means, "…compost feedstock that is in the process of being rapidly decomposed and is unstable. Active compost is generating temperatures of at least 50 degrees Celsius (122 degrees Fahrenheit) during decomposition; or is releasing carbon dioxide at a rate of at least 15 milligrams per gram of compost per day, of the equivalent of oxygen uptake." We can say definitely that almond processing by-product, at the stage it is stored or stockpiled for beneficial use, when accumulated unless it is handled improperly it will not become active compost. As previously mentioned, harvested unshelled almonds typically contain 12% moisture when harvested. We know by experience that stable storage or stockpiling of almond processing by-product requires the material to be at < 13% moisture content. We are not experts in composting but we believe that moisture contents at much greater rates are required for active composting to take place. There are multiple regulatory and economic drivers that require huller, shellers and processors to maintain conditions which are conducive to low moisture content in their stored product that include but are not limited to: state and federal food and animal feed safety rules and regulations, feed quality standards and ultimately worker health and safety.

CDFA and the FDA oversee the current animal feed and food safety rules and will be instrumental in implementing the federal Food Safety Modernization Act which will require us to maintain practices to prevent fungal and bacterial growth that pose risk to animal and public health. A key risk management in this regard is moisture content management, e.g. drying, spreading, monitoring, tarping, etc. The same conditions that keep almond processing by-product moisture content low also prevent decomposition (active composting) of our product. We absolutely cannot afford to allow conditions (high moisture) that are conducive to the growth of food and feed borne pathogens and their resulting toxins. We also need to comply with CDFA feed regulations that require almond processing by-products to contain less than 13% moisture (3CCR Section 2773.5(a)). The Department's definition of active compost defines a temperature of 122

degrees Fahrenheit as an indicator of active compost. The feed quality of almond hull and shell begins to fall drastically once they reach 95 degrees Fahrenheit or higher. At that temperature or higher they become increasingly unpalatable to animals due to discoloration and very basically, free fatty acids and carbohydrates with caloric value begin to degrade resulting in less energy value in the feed. And finally, the biggest safety risk at a facility where almond processing by-products are stored is fire. We have economic and worker health and safety reasons to not allow conditions that are conducive to composting, because self-heating conditions pose a much more significant issue at our facilities, fire. See Figure 8 for a visual of an almond hull fire. We address that risk by implementing the same moisture management practices that prevent active composting of organic material, which from the field to storage is primarily moisture content management.

Figure 8: Almond Hull Fire

As mentioned above, almond processing by-products are segregated and stored, typically in piles. If handled properly, storage can extend for months to years. While it is possible that under some conditions some almond processing by-product could meet the definition of compostable material, it is completely counter-intuitive economically to allow almond processing by-products to actively compost – which would alter their "essential character" and drastically damage their value and returns as animal feed, animal bedding, biomass feedstock or future biofuel feedstock.

In California, CDFA's Feed Inspection Program regulates all aspects of the manufacture, handling and distribution of animal feed. Their law and regulation are found in the Food and Agriculture Code, Chapter 6, Sections 14901 et seq. and 3CCR Section 2675 et seq. Every business, location and/or site involved with the manufacture, distribution, sale, or

storage of animal feed is required to be licensed. CDFA also requires commercial feed licenses at agricultural and food processing facilities, commercial food facilities and retail markets to be licensed if they divert their by-products or food material to directly to animal feed; they are not required to be licensed if the diversion goes to a facility with a commercial feed license. They also maintain a list of approved feed terms and definitions and standards derived from hundreds of agricultural and food processing by-products and food material.

Recommendation. AHPA recommends that the Department: 1. Define almond hulling, shelling and processing, for purposes of an exclusion, as an activity where an on-farm or off-site facility receives almonds from the field, removes and separates the hulls, shells, and kernels from one another and stores and distributes them for beneficial uses that include but are not limited to animal feed, animal bedding, biomass feedstock, and biofuel feedstock; and, 2. Since almond hull; hull and shell; and, shell when accumulated under normal industry storage conditions do not "actively compost" that the Department exclude almond hulling and processing facilities from compostable handling operations and facility regulation when they: a. Hold a CDFA Feed License and handle or store almond processing by-product for the purposes of manufacture and/or distribution of animal feed; or, b. Handle or store almond processing by-product for purposes of manufacturing and/or distribution of materials that includes but are not limited to animal bedding, biomass feedstock or biofuel feedstock.

2. **Section 17852(a)(5). Agricultural Material.** There are possible situations where damaged almond processing by-products are handled or stored with the intent to go to composting or land application. For example, CDFA's feed regulation at 3CCR Section 2760 deems almond hulls and shells as "damaged" feed if it they have been "…affected by smoke, heat, water, mold or contamination by any foreign substance to such an extent as to affect the nutritive value, therapeutic value, palatability, or wholesomeness of the feed."

   We are concerned that the new definition of agricultural material may be interpreted to not include almond processing by-products destined for composting or land application – solely because they are the result of "processing." In the ISOR the Department indicates that the definition of agricultural material was amended to remove processing by-products from the agricultural material definition to reduce the "..likelihood of odorous materials, such as food processing waste being composted at agricultural material composting operations, which will protect the public health and safety and the environment." It appears that the Department has determined, but for "grape pomace" that agricultural processing by-products by their nature are "odorous"

and have high likelihood to cause public nuisances and pose a risk to the public health and the environment thus they shouldn't be composted, stored, or land applied as agricultural materials. Almond processing by-products should be included in the agricultural material definition for several reasons. First, they are very dry, solid materials that are not known to be "odorous." Second, they carry similar characteristics and composting handling affinities as the materials specifically called out in the proposed defining, e.g. orchard and vineyard prunings, grape pomace, and crop residues. And third, that after hulling, shelling and processing, the non-human food components of the almond fruit - hull, shell and cull nuts are not processed any further other than segregation and storage. The essential character of the hull, shell and cull nut are not altered – with the exception of moisture content - from when it was harvested in the field. Our conclusion is that almond processing by-product should be considered an agricultural material when not handled or stored as an excluded material, e.g. animal feed, animal bedding, biomass feedstock or biofuel feedstock. We do not believe almond processing by-product by itself should be categorized as any of the other defined regulated materials, e.g. food, vegetative food, green, mixed, yard trimmings or wood waste.

Recommendation. AHPA recommends that the Department, for the purposes of uniform application of the agricultural material definition, define almond processing by-product specifically as an "agricultural material" when the almond processing by-products are not being handled or stored as an excluded material (e.g. animal feed, animal bedding, biomass feedstock or biofuel feedstock).

3. **Section 17852(a)(15)(A). Disposal of Compostable Material.** Again, we reiterate our conclusion that almond processing by-products with ultimate use as animal feed, animal bedding, biomass feedstock or biofuel feedstock should not be regulated as a compostable material. Storage of almond processing by-products at a facility or site where they are handled in the manufacture and distribution of animal feed, animal bedding, biomass feedstock or biofuel feedstock should not be held to any of Section 17852(a)(15)'s volume and time based storage restrictions. If the almond processing by-product is considered an "agricultural material" and doesn't meet the exclusion found in Section 17855(a)(5)(J) and it is destined for composting and/or land application then we would agree that the material should be stored in a manner to prevent nuisances and protect public health and the environment.

   Recommendation. AHPA recommends that the Department: 1. Define almond hulling, shelling and processing, for purposes of an exclusion, as an activity where an on-farm or off-site facility receives almonds from the field, removes and separates the hulls, shells,

and kernels from one another and stores and distributes them for beneficial uses that include but are not limited to animal feed, animal bedding, biomass feedstock, and biofuel feedstock; and, 2. Since almond hull; hull and shell; and, shell when accumulated under normal industry storage conditions do not "actively compost" that the Department exclude almond hulling and processing facilities from compostable handling operations and facility regulation when they: a. Hold a CDFA Feed License and handle or store almond processing by-product for the purposes of manufacture and/or distribution of animal feed; or, b. Handle or store almond processing by-product for purposes of manufacturing and/or distribution of materials that includes but are not limited to animal bedding, biomass feedstock or biofuel feedstock.

AHPA also recommends for the purposes of the appropriate application of the requirements of Section 17852(a)(15)(A) that the Department define almond processing by-product as "agricultural material" when the almond processing by-products are not being stored or stockpiled as an excluded material (e.g. animal feed, animal bedding, biomass feedstock or biofuel feedstock).

4. **Section 17852(a)(24.5). Land Application.** We are concerned with the lack of land application options this subdivision contains especially with the proposed striking of Section 17855(a)(9) that excluded applications of compostable materials for purposes including but not limited to slope stabilization, weed suppression, and similar uses and uses compliant with CDFA fertilizer law and regulation. The proposed Section 17852(a)(24.5)(A)&(B) shoe horns land applications of compostable materials into two narrow paths. The first path addresses application on any land of compostable materials which seem to carry significant environmental and agronomic challenges, e.g. digestate, woody waste, mulch, and green material since they're required to meet physical contaminant, heavy metal and pathogen standards and are limited to one annual application at a maximum average depth of 12". This subdivision appears to be addressing the issues covered in the Department's white paper entitled: "Agricultural Land Application of Compostable Material." The second path addresses the application of compostable materials on land zoned for agricultural use with a physical contaminant standard and a requirement to obtain a CDFA determination of regulatory compliance and agronomic use before a land application can be made. While a physical contaminant standard is understandable, we are concerned about the regulatory burden (cost and timeliness) of requiring determinations from CDFA before a land application can occur. The white paper mentioned above paints a less than collaborative attitude from CDFA in regards to their involvement with refereeing land applications of compostable materials either by determining regulatory compliance and/or agronomic application.

Recommendation. AHPA recommends that the Department either allow or exclude land application of almond processing by-products that are defined as an agricultural material for purposes excluded in the current Section 17855(a)(9) when: 1. The material does not contain physical contaminants of more than 0.1% by volume of physical contaminants greater than 4 mm; and, 2. Prior to application, CDFA's Fertilizer Inspection Program has reviewed and approved a fertilizer label for the product being applied. At a minimum the label should comply with the requirements of a packaged soil amendment.

5. **Section 17855(a)(5)(J). Excluded Activities.** In the current regulatory environment some regulators have determined that almond by-products being handled and stored for use as animal feed are excluded from regulation because they are being handled to preclude the material from reaching 122 degrees Fahrenheit or above. While we disagree with that determination as it implies animal feed is a compostable material – it does raise an issue with almond processing by-products being stored in the Sacramento and San Joaquin Valley during the summer where ambient air temperatures alone may cause a stored material to reach 122 degrees Fahrenheit and above. We have not heard of a LEA denying a Section 17855(a)(5)(J) exclusion, but the lack of specificity of other determining factors besides a temperature threshold remains a concern. We have developed significant expertise in the handling and short and long storage of almond processing by-products for use as animal feed. Our experience is that a single reading of 122 degrees Fahrenheit does not signal active composting in an almond processing by-products pile. For example, first what is the moisture content of the stored material? Was it a surface or internal reading? Is the temperature consistent and uniform throughout the pile? What is the peak temperature? Was there a diurnal temperature swing? What temperature change (ambient air and pile) has been observed during the last 48-72 hours? The concern for almond processing by-product is that a single temperature reading alone could potentially be used to determine almond by-products are actively composting when in fact they are not. As mentioned previously it is completely counter-intuitive economically to allow almond processing by-products to actively compost – which would alter their "essential character" and drastically damage their value and returns as animal feed, animal bedding, biomass feedstock or future biofuel feedstock. It also doesn't make much sense to be regulated under a composting regulation when the goal of our facilities is to store our materials under conditions that will NOT allow composting to occur and that are primary end use of those materials is animal feed, animal bedding, biomass feedstock or biofuel feedstock – not compost or storage on its way to land application.

Recommendation. AHPA recommends that the Department: 1. Define almond hulling, shelling and processing, for the purposes of an exclusion, as an activity where an on-farm or off-site facility receives almonds from the field, removes and separates the hulls, shells, and kernels from one another and stores and distributes them for beneficial uses that include but are not limited to animal feed, animal bedding, biomass feedstock, and biofuel feedstock; and, 2. Since almond hull; hull and shell; and, shell when accumulated under normal industry storage conditions do not "actively compost" that the Department exclude almond hulling and processing facilities from compostable handling operations and facility regulation when they: a. Hold a CDFA Feed License and handle or store almond processing by-product for the purposes of manufacture and/or distribution of animal feed; or, b. Handle or store almond processing by-product for purposes of manufacturing and/or distribution of materials that includes but are not limited to animal bedding, biomass feedstock or biofuel feedstock.

For almond processing by-product that doesn't fall into either 1. or 2. we would recommend that the Department amend Section 17855(a)(9) to add language that allows the LEA, in consultation with the Department the ability to consider other temperature and/or moisture measurements along with the 122 degrees Fahrenheit threshold when determining if low moisture content compostable materials qualify for the exclusion.

We appreciate the opportunity to comment on the proposed regulation. If the Department requires any additional information or has questions regarding almond hulling, shelling and processing please don't hesitate to get in touch with me at (209) 599-5800 or kcovello@ahpa.net.

Sincerely,

Kelly Covello, President

Cc: Rick Jensen, Director, Division of Inspection Services, CDFA.
Amado Ba, Chief, Feed, Fertilizer and Livestock Drugs Regulatory Services, CDFA
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