

August 19, 2009



**Stakeholder Workshops and White Papers on Strategic Directive 8.3:  
Anaerobic Digestion, Food Waste Composting Regulations and  
Alternative Daily Cover**

August 19, 2009

Margo Reid Brown, Chairman  
California Integrated Waste Management Board  
1001 I Street, CalEPA Building  
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Dear Ms. Brown,

This letter provides comments by the Association of Compost Producers on CIWMB Stakeholder Workshop on Strategic Directive 8.3, July 28, 2009 (in Sacramento, CA) and August 13, 2009 (in Riverside, CA), and the three associated papers reviewed and discussed during those workshops:

- Guidance Document On How Anaerobic Digestion Fits Current Board Regulatory Structure
- Food Waste Composting Regulations - Draft White Paper (for discussion only) June 29, 2009
- Alternative Daily Cover - Draft White Paper (for discussion only) June 29, 2009

**ACP's Big Picture Perspective – Context Setting**

As described in more detail in ACP's "**Roadmap for the Development of Compostable Bioproducts in California**" that the Waste Board received prior to the Boards "Organics Summit, October 11, 2007, "we envision a sustainable California that integrates all the critical resources required for robust and abundant life and livelihood. This includes *fully renewable and resource efficient*:

- Water Resource and Watershed Quality Management
- Energy Self Sufficiency
- Fertile Productive Soils
- Lush Landscapes
- Robust Agricultural Economy
- Sustainable Resource Utilization
- GHG emissions reduction

Recycled organics, both composted and woody residuals, play a key role in achieving each of these sustainable resource scenarios. Also, in any given locale, management of organics requires a balanced, multi-faceted and integrated approach. The best management approach must be selected based on the characteristics of the organic material itself (carbon content, nutrient value, moisture content, BTU value and contaminant levels, for example), as well as external factors such as location of origin, cost, existing vs. future infrastructure, tipping fees, overall environmental impacts, and marketing strategies and channels.

We believe that any organics policy and regulations, be they technology specific (e.g. anaerobic or aerobic digestion, composting, alternative daily cover at landfills, etc.) or resource specific (e.g. biosolids, manure, food residuals, green residuals) like all organics management decisions for California, requires this fully integrated, yet locally focused, approach. As such, the best management approach *must be selected for each locale* (jurisdiction) based on the characteristics of the organic materials needing recycling, but yet be guided and regulated through a consistent set of measurement definitions, sampling protocols and performance based results for the triple bottom lines of environmental impacts, social equity and financial wealth enhancement for both public and private enterprises, as well as the entire community, airshed and watershed as a whole.

We understand that such a robust organics management system does not currently exist, yet is the intention of the Waste Boards strategic objectives in general, and Strategic Directive 8.3 (*Conduct continuing review and revision of the CIWMB's regulations to ensure that they are grounded in the best available science, address changing market conditions, and take advantage of developing technologies.*) in particular to this letter. In this letter we outline both general and specific options to each of the draft papers, as well as attention to the specific options proposed under each issue. The Waste Board can then use our comments (including proposed definitions tables) as a bridge to continue integrating industry concerns with environmental protection, focusing California on an ever renewing and enhanced financial, environmental and socially equitable path of sustainable organics management.

### **Guidance Document On How Anaerobic Digestion Fits Current Board Regulatory Structure**

We applaud the Waste Board's effort to provide new guidance as to how anaerobic digestion (AD) will fit into the Board's regulatory structure. We agree, especially as food waste is being brought into the recycled organics processing stream via compost facility and market expansion, and that anaerobic, as well as aerobic, digestion will likely play a bigger part in this process moving forward. As the Waste Board develops specific regulations for this, it looks as if the "The 3 Part Test" will be sufficient to determine whether an entity can, or will, qualify for an exclusion under the regulations.

However, as the Waste Board engages in further defining its new role to regulate AD facilities, along with the Air Boards and Water Boards, we have a few basic recommendations to help guide the clarification and development of any new regulations and rules:

- **Consistent Organics Residuals Definitions:** Make sure that all the definitions used by the Waste Board, Air Board and Water Board for the various types of organics residuals are the same, i.e. in harmony across all agencies and programs. In this way, all regulations will apply to the renewable carbon and nutrient material in a consistent

fashion, and not add undue costs to the industry to perform different criteria tests based solely on divergent or misaligned material definitions. A proposal of such a scheme is offered in this letter in the “Food Waste” section, below. This also includes manure in the feedstock regulatory mix, even though manure is not generally regarded as a waste, but as an “Agricultural Material.”

- **Clear Relationship to LCA and GHG Initiatives:** Ensure that all the 6 priority areas in this paper relate to the results and recommendations arising out of both the Waste Board’s Organics Life Cycle Assessment work, recently completed, as well as any GHG offset protocols arising out of the AB 32, Climate Registry protocols work, including by not limited to, the work of the Waste Boards climate action team, as well as specific protocols, including by not limited to, the issues of:
  - Local Government Protocol
  - Anaerobic Digestion Protocol
  - Compost Method Offset Protocol
  - Compost Utilization Protocol
  - Climate Change Attenuation Protocols involving organics reuse
- **Base Year Waste Inventories:** Ensure for this and all GHG/Climate change issues related to organics, that a common base year inventory is used and is made transparent in both the regulations as well as in all subsequent protocols.

**Food Waste Composting Regulations - Draft White Paper (for discussion only) June 29, 2009**

In our opinion, the Food Waste Composting Regulations provide the area of greatest concern, and best opportunity to further refine organics management and composting regulations in our State. This can largely be a result of further refinements of the definitions of “organic residuals” in general. In this section, we respond to each issue in turn, and refer to specific options outlined in the paper under each issue. We do not repeat the options here, for the sake of brevity.

***1. Requiring a full Compostable Materials Handling Facility Permit to compost food material may be too stringent***

We believe that the Waste Board needs to take the lead in speciating green material-to-food material (i.e. providing categorical, operational definitions). This can be based on its important constituents that will lead to putrescibility issues in the material. Putrescibility is a very predictable outcome of organic material depending on a few key constituents. These are based on the type and amounts of:

- carbon (microbial food),
- nutrients (additional co-factors for microbial growth),
- water (essential for microbial growth).

In addition, there are other compounds in green material that are either compatible or incompatible with a quality compost operation and products. For the permitting of various types of facilities that remanufacture these waste streams into beneficial products, we provide the following definition tables. These provide for speciation of the material, as well as priorities as to the regulation tier of the facility, i.e. permit, notification, or exclusion.

**Regulate Based on the *Composition* of the Organic Resource** (NOT merely the “source”, or some more gross classification, e.g. the terms “green waste” or “food waste” are too gross, not operationally defined, to be useful for more precise materials management and, therefore, regulatory and legal language).

Source	Compounds	Relative Amounts	Label (in regulations?)
Biosolids – Class B	Carbon (OM) Nutrients (N, P&K) Water (H <sub>2</sub> O) Other - compatible Other - incompatible	High Medium-high Medium-high High Low	Biosolids
Livestock Manure	Carbon (OM) Nutrients (N, P&K) Water (H <sub>2</sub> O) Other - compatible Other - incompatible	High High Medium-high High Low	Manure
Food – plant only	Carbon (OM) Nutrients (N, P&K) Water (H <sub>2</sub> O) Other - compatible Other - incompatible	High Low Low to High Medium Low to high	Clean Green  Wet Green  Dirty Green
Food – animal only	Carbon (OM) Nutrients (N, P&K) Water (H <sub>2</sub> O) Other - compatible Other - incompatible	High High High Low to High Low to High	Animal Organics
Food – Mixed	Carbon (OM) Nutrients (N, P&K) Water (H <sub>2</sub> O) Other - compatible Other - incompatible	Depends on ratios of the above	Depends on ratios of the above
Landscape - woody	Carbon (OM) Nutrients (N, P&K) Water (H <sub>2</sub> O) Other - compatible Other - incompatible	High Low Low Low to High Low to high	Woody material
Landscape – leafy green	Carbon (OM) Nutrients (N, P&K) Water (H <sub>2</sub> O) Other - compatible Other - incompatible	High Medium to high Medium to high Low to high Low to high	Leafy Green
Mixed Organics	Carbon (OM) Nutrients (N, P&K) Water (H <sub>2</sub> O) Other - compatible Other - incompatible	Variable Variable Variable Variable Variable	Treat as highest containing material from above names, compounded

**Legend (Compound Type):**

**Carbon (OM)** = Compostable organic matter (OM), measured as % dry weight (i.e. the mass that burns off in a laboratory test), four general classes of organic matter found in compostable materials that are less, to more available to decomposition, i.e. “putrescible,” are:

- lignin (less available),
- cellulose,
- fats (oils), waxes, proteins,
- sugars (most available)).

Non available carbon, like plastic, that is not biodegradable, is in the “Other incompatible” category.

**Nutrients (N, P&K)** = Nitrogen is the most important nutrient for microorganisms besides a carbon source, of course (and N is also a major constituent of all protein molecules), and along with water and oils & sugars, are the main constituents that will render a “compostable material” as “putrescible” (liable to become putrid; putrid = in a state of foul decay or decomposition, as animal or vegetable matter; rotten)

**Water (H<sub>2</sub>O)** = found in high amounts in food waste. Without water, organic material is not putrescible, from a biology perspective. Dry material is considered “desiccated” and, while subject to fire (burning, combustion) is not biodegradable (metabolizable, readily compostable) *without sufficient water*.

**Other Compatible** = elements or compounds that are compatible with producing quality compost and building healthy soil, e.g. ionic metals in the right amounts, biodegradable compounds and organisms, etc.

**Other Incompatible** = elements and compounds that are not compatible with producing quality compost and building healthy soil, e.g. plastics, glass, metal objects, high non-nutrient salts, etc.

A full permit should be required of any facility that manages (whether composting is the technology, or not) the material in the following relative amounts of compounds in the “pure” (homogeneous) or “mixed organic waste” material:

**Recommended Amounts and Recommended Regulatory Tier of Organic Material**

<b>Compounds</b>	<b>Relative Amounts Word</b>	<b>Actual Measurement Range*</b>	<b>Recommended Organics Management Facility Regulatory Tier**</b>
Carbon (OM)	High	>50% d.w.	Permitted (if N and/or water high, otherwise notification)
	Medium	20-50%	Notification
	Low	<20%	Excluded
Nutrients (N, P&K)	High	>5%	Permitted
	Medium	>1, <5%	Permitted
	Low	<1%	Notification
Water (H <sub>2</sub> O)	High	>50% by weight.	Permitted
	Medium	10-50%	Notification
	Low	<10%	Notification
Other - compatible	High	>10%	Permitted
	Medium	>1, <10%	Notification
	Low	<1%	Notification
Other - incompatible	High	>10%	Permitted
	Medium	>1, <10%	Notification
	Low	<1%	Excluded

\* These numbers are subject to further scrutiny by a panel of industry experts (especially compost testing laboratory scientists).

\*\* Based on the three tier system of:

- 1) Excluded from composting regulations (subject to requirements for a transfer station, Title 14, Ch3, Art6),
- 2) Notification (Enforcement Agency Notification §17856,
- 3) Full Permitted (Compostable Materials Handling Facility Permit, §17857.1(b) and §21450).

This system can (and likely should) be articulated further by comparing groups of compounds that render compostable organics “putrescible.”

Lastly, since most organic material contains various combinations of the above carbon, nitrogen, aqueous and other compounds, it makes sense to prioritize the compounds commensurate with the tiered permitting process. This is shown in the following table:

**Compostable Material Classification & Permitting Level**

Last Update: 8/18/2009

- A. Kind of like "rock, paper, scissors" need to set permitting priorities based on the contribution of the material to putresibility... which is in this table
- B. Relative to permitting, priority is: nutrients trump water, water trumps carbon, and compatibles, and "trash" (incompatibles) can trump everything, depending on substance

Compounds	Relative Amounts Word	Carbon (OM)			Nutrients (N, P&K)			Water (H2O)			Other - compatible			Other - incompatible		
		High	Medium	Low	High	Medium	Low	High	Medium	Low	High	Medium	Low	High	Medium	Low
Carbon (OM)	High	Permitted	-	-	Permitted	Permitted	Notification	Permitted	Permitted	Notification	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted
	Medium		Notification	-	Permitted	Permitted	Notification	Permitted	Notification	Notification	Notification	Notification	Notification	Notification	Notification	Notification
	Low			Excluded	Permitted	Permitted	Notification	Permitted	Notification	Notification	<b>Depends</b>	Notification	Notification	<b>Depends</b>	Notification	<b>Depends</b>
Nutrients (N, P&K)	High				Permitted	-	-	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted
	Medium					Permitted	-	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted
	Low						Notification	Permitted	Notification	Notification	<b>Depends</b>	Notification	Notification	<b>Depends</b>	Notification	Notification
Water (H <sub>2</sub> O)	High							Permitted	-	-	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted
	Medium								Notification	-	<b>Depends</b>	Notification	Notification	<b>Depends</b>	Notification	<b>Depends</b>
	Low									Notification	-	Notification	Notification	<b>Depends</b>	Notification	<b>Depends</b>
Other - compatible	High										Permitted	-	-	Permitted	<b>Depends</b>	Permitted
	Medium											Notification	-	<b>Depends</b>	Notification	<b>Depends</b>
	Low											Notification	-	<b>Depends</b>	Notification	<b>Depends</b>
Other - incompatible	High													Permitted	-	-
	Medium														Notification	-
	Low															Excluded

Please note that this is but one version of what this could look like, but our belief is that it's likely fairly accurate, and as said in the note at the top of the table:

- The priority is analogous to the children's game of "rock, paper, scissors" relative to nutrients, water and carbon. And would set permitting priorities based on the contribution of the material to putresibility... which is in this table.
- *Relative to permitting* (using the existing 3 tier system), our recommended priority, based on the compounds contribution to putresibility of the material, is:
  - nutrients are more important than water,
  - water (moisture) is more important than carbon, and
  - compatibles and "trash" (incompatibles) can be more important than these other three, *depending on the actual substance*. Compatibles and incompatibles are the composting quality "wild cards". That is, to the extent compatible and incompatible material affect both the compost operation (in terms of air, water and solids pollution generation) as well as the quality of the finished product, this creates increasing facility sophistication (investment, equipment and operational management) to not become a threat to health, safety and the environment.

Continuing with the other “Issues” in the Food Waste Composting Regulations White Paper, they are listed below with our recommendations now that we have articulated a new definitional scheme to define “Food Material to Green Material.”

***2. The current definition of food material is vague and leads to confusion related to the use of organic materials***

Our recommendation is to articulate the definitions based on the above recommendations.

***3. Food material contains a variety of contaminants that are not found in green material which impacts facility operations and product quality***

Again, change the definitions based on the above.

***4. The potential negative environmental impacts of composting food material have not been fully researched***

Continue Waste Board involvement in both research and training, ongoing, since we will never need to stop *learning and innovating*. Organics and composting, like every other industry, is on a path of continuous improvement. Since the Strategic Directives include Zero Waste and Extended Producer Responsibility, along with Sustainable Organics Management, it makes sense that the State should stay involved in working with industry to innovate, educate and harmonize all of these objectives for California citizens, the environment and economy.

***5. Current regulations may not comprehensively address compost safety issues***

Option 2, (“*Require finished compost to meet quality standards, such as the Seal of Testing Assurance Program*”), is not correct, since STA is not a quality standard program. We constantly, and consistently, urge the Waste Board to continue its participation and support in the formation of a “Compost Use Index,” which could (should?) be expanded to a “Processed Organics Use Index.”

This question also brings up the much larger question of “compost” vs. “chip & grind material”, what some in the industry are calling “organic soil amendment.” The problem is that chip & grind material may or may not have been composted at a fully permitted compost facility (most likely not, although some “Notification” facilities do produce quality compost, most do not). However, a lot of this “organic soil amendment” material is competing in the marketplace against fully mature compost material. The “safety” issues may not be to human health, but more toward horticultural or agricultural plant/crop health, or “safety” issue, i.e. via noxious seed or disease transmission from immature, or partially composted organic materials. There is also the issue of spreading seeds from green material. *So how “safety” is defined in the context of overall watershed biological and crop health, should be taken into serious consideration in the “compost safety” category.* This is especially true since much of the material being used today has NOT been fully composted at a fully permitted compost facility.

We highly recommend that the Waste Board attend to this important definitional and regulatory issue. This was also a recommendation we made to the Waste Board in May 2009, within the context of the recently completed Agricultural Compost Specification and Use Index Project.

**Alternative Daily Cover - Draft White Paper (for discussion only) June 29, 2009**

Alternative Daily Cover (ADC) using organics instead of soil or other non-beneficial or environmentally beneficial materials has been a point of contention within the compost industry ever since it was initiated over 10 years ago, increasing “perceived” waste diversion from landfills. While we presented an exhaustive paper to the Waste Board on this subject last year, May 1, 2008 (titled: “ACP System Outline to Build Organics Mrkts 050108.doc”; and attached here for reference, or on the ACP web site, [www.healthsoil.org/ACP\\_Documents/](http://www.healthsoil.org/ACP_Documents/)), we nevertheless, provide feedback in this letter for immediate attention to the issues addressed in the White paper.

***1. The optimum amount, depth, and quality of Board-approved ADC have not been adequately researched***

As stated in the above referenced and attached letter, we recommend that the Waste board continue to develop and implement market development mechanisms (incentives, grants, resource policy, organic tipping fees, professional and industry specific education and outreach, etc.) to make building healthy soil with organics an ongoing priority in our state. We recommend not spending more resources focusing on the current organic ADC use except for the regulation guidelines outlined in the other Issues of the White Paper.

***2. It may be difficult to evaluate ADC compliance, and misuse of ADC can go undetected***

Option 1 (*Establish in regulation a refuse-to-ADC ratio at landfills...*) seems to make the most sense for controlling organic ADC use within landfills.

***3. ADC often contains materials (food waste, wallboard) that are not allowed in regulation***

We recommend adopting the definitions for “Food Material to Green Material” used for the food waste composting regulations and set what is acceptable for use as ADC (basically a combination of Options 1, 3 & 6, i.e. “*Redefine ADC types to account for material variance*”, “*CIWMB sponsors a study of additional ADC material types*” & “*CIWMB researches hydrogen sulfide generation in landfills that receive C&D materials*”, respectively), combined with appropriate follow-on regulatory guidance flowing from the results of these studies.

***4. The CIWMB’s site-demonstration project requirements for new ADC materials lack guidance which makes it difficult to test new ADC types, such as Material Recovery Facility and C&D fines***

ACP has no comment on this issue.

***5. The definition of Green Material in the compostable materials handling regulations is different than the ADC definition of Processed Green Material***

Do Option 2, (i.e. “*Make the definition of Processed Green Material in the ADC regulations the same as the Green Material definition in the compostable materials handling regulations*”), only use the proposed definitions that are in line with our recommendations about speciation, in the Food Waste section above.

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6. *The CIWMB's Strategic Directive 6.1 aims to reduce the amount of organics in the waste stream by 50% by 2020. Green waste ADC is considered diversion through recycling and not disposal which is a disincentive to keep green material out of the waste stream.*

We recommend the Waste Board pursue Option 2, (*Pursuant to Public Resources Code Section 41781.3, the CIWMB researches the economic impacts of green material ADC on the compost industry*). The research should take various representative examples that both use and not use ACP in local communities and organics markets. Option 3, will be also be useful for understanding the role of landfills as “bioreactors” within the local biorefinery community (i.e. renewable carbon production and reutilization in urban, suburban and rural landscapes, forests and farms).

The Waste Board is currently waiting for more information on Issues 7 & 8, therefore we have no additional comments on these as well.

Thank you for the opportunity to respond to your these timely Strategic Directive 8.3 issues, as well as your serious consideration of our recommendations.

Sincerely,



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