

Good evening Chairman Weinstein and members of the County Council:

My name is China Williams and I live at 3425 Huntsmans Run, Ellicott City. I urge you to amend CB-60 in the following ways:

\* No industrial/commercial mulching or composting on Howard County farmland. These facilities belong on M1/M2 with appropriate health and safety controls.

The sponsors of this bill have orchestrated a sophisticated public relations campaign to deceive, divide, dismiss, and confuse voters. We have been told that this bill is a zoning bill to make farming easier and more economical.

This is not a farm bill. This bill is about solid waste and allowing mini-Alpha Ridge dumps on farmland without health and safety protections. It turns farmland into dumping sites for wood waste and compost, including animal blood and guts. And there are NO requirements to reduce health and safety hazards. Forget the niche market of farm-to-table, Howard County is pioneering the new frontier of dump-to-farm.

Mulching and composting on a commercial scale poison our wells and our air. Science knows this to be true. Mulching is a well-known fire hazard. Mulching and composting rely on truck traffic not compatible with our country lanes. This bill is rotten and the sponsors know it.

We are told that none of this is a problem because there are setbacks and this is small scale. Up to five acres of mulching and five acres of composting within 200 ft of the property line and 500 ft of a school – is NOT small scale.

There is no scientific research supporting the claim that small-scale activity eliminates the health and safety risks. But the sponsors of this bill deny the science, saying that Howard County is not like other places and that our farmers are good stewards of the land. Good intentions are NO replacement for health and safety protections.

This bill is so rotten that the sponsors exploited a wedge issue – farmers versus newcomers. Growing the agricultural economy does not mean poisoning everyone. And the west doesn't have to decide between health and safety OR prosperous farms.

The bill does state that facilities should NOT be a nuisance to the neighbors. But without enforcement, this statement is merely a polite suggestion.

In closing please review the table that I have included with my testimony. It explains what the bill is about and is the responsible way to educate voters. The DPZ fact sheet was a piece of propaganda and I object to county resources being used to lobby for private industry.

When you vote on CB-60, remember by children's names -- Felix and Phoebe. They drink and bathe in water directly from our well.

CB-60

Facility Classification	New/Existing Legislation	Conditions	Zoning	Site Guidelines
Emergency NWWR (storm debris processing)	New	Accessory use	RC, RR, ALPP (Howard Co Ag Preserve)	<ul style="list-style-type: none"> <li>• frontage requirements</li> <li>• DPZ permitting request</li> <li>• materials <b>on site</b> max use 1 acre for 90 days</li> <li>• MDE permit, enviro plans</li> </ul>
Composting	New	Accessory use  Tier 1 & 2	RC, RR, ALPP	<ul style="list-style-type: none"> <li>• max 3 acres</li> <li>• required enviro plans &amp; assessments</li> <li>• on-site retail by farming and personal vehicles (not commercial)</li> <li>• shipped out with trees</li> <li>• MDE permit</li> </ul>
	New	Matter of Right	M1 – Tier 1 & 2  M2 - Tier 2 large  M2/Solid Waste	<ul style="list-style-type: none"> <li>• min lot size 10 acres, 1 in M-1</li> <li>• max use 5 acres or 10% (whichever is less),</li> <li>• 200 ft property line, 200 feet water, 500 ft schools* subject to hearing board exemptions</li> <li>• 7am-6pm operation hrs</li> <li>• on-site retail by hearing board</li> <li>• road-bearing review by hearing board</li> </ul>
	New	Conditional use	RR & RC – Tier 1 & 2- small & large  M1 – Tier 2 large	<ul style="list-style-type: none"> <li>• min lot 10 acres RR &amp; RC, 1 acre M1</li> <li>• max use area in RR &amp; RC is 5 acres, 10% of whichever is less</li> <li>• MDE permits/enviro plans</li> <li>• Setbacks 200 ft from property line, 200 ft from water, 500 ft from schools * subject to hearing authority exemptions</li> <li>• screening</li> <li>• on-site retail</li> </ul>
NWWR	New	Conditional use	Tree farm-ALPP easement  M1  RR & RC	<ul style="list-style-type: none"> <li>• Retail sales</li> <li>• arterial highway collector or hearing authority exemption</li> <li>• max 15% for tree farm and max 2 acres for mulching</li> </ul>

	New	Conditional use	RR & RC	<ul style="list-style-type: none"> <li>• min lot size 10 acres</li> <li>• max use area 5 acres or 10% of property &lt;</li> <li>• 200 feet from property line, 200 feet from waterways, 500 feet from schools</li> <li>• MDE permits, enviro plans</li> <li>• arterial road access subject to hearing authority review/exemption</li> <li>• screening</li> <li>• on-site retail *</li> <li>• road capacity* * by hearing authority approval</li> </ul>
	New	Matter of Right	M1	
Mulch manufacture	New	Conditional use	RC, RR & M1	<ul style="list-style-type: none"> <li>• 300 feet from property lines</li> <li>• retail sales hours by hearing authority approval</li> <li>• min lot size 10 acres</li> <li>• arterial/collector road unless exempt by hearing authority</li> </ul>
Yard waste composting (includes NWW)		Conditional use	RC, RR, M1	<ul style="list-style-type: none"> <li>• 300 ft from neighbors</li> <li>• 100 feet from waterway</li> <li>• 100 feet from public road</li> <li>• hours 7am-6pm</li> <li>• on-site retail by Hearing Authority</li> <li>• road load subject to review</li> </ul>

**Definitions:**

Accessory - activity is secondary, incidental and subordinate to principal use of land

Conditional – activities that support the primary purpose or economic viability of the land

Composting Tier 1 – yard trimmings

Composting Tier 2 – food scraps

    small – less than or equal to 10,000 cubic yards/year

    large – more than 10,000 cy/year

Natural Wood Waste Recycling Facility – MDE permitted facility to turn wood debris into mulch

Yard Waste Composting Facility: A facility at which yard waste and natural wood waste is received and processed to produce compost for off-site use.

There are several types of recycling and composting facilities. Facilities that

- 1) receive materials from off-site for on-site use only
- 2) receive materials from off-site for on-site and off-site
- 3) receive materials from off-site for off-site only

# Testimony of Theodore F. Mariani

## RE CB 60 2017 NWWR and Composting

### 11 September 2017

I am Ted Mariani president of CCWHC and I reside at 16449 Ed Warfield Road , Woodbine Md.

Let me begin by thanking the Council, the Exec and DPZ for the great effort they have made in addressing this environmentally sensitive matter that affects so many Howard County residents in both the West and the East .

Having participated in over 30 work sessions as a member of the Task Force and the smaller working group I am well aware of the earnest effort that has been made to reconcile the need for responsible composting and mulch production with the protection of the residential environment. In that light I speak tonight in favor of CB 60 with the caveat that it should not go forward without addressing some critical text amendments .

It is reassuring that over the past few weeks the sponsors of the bill have been engaged in crafting a series of significant amendments that if included in the final version of the bill should address the concerns that have been expressed by the Howard County community.

In the past I have transmitted to you several memos and emails that deal with specific concerns about the current text of CB 60 including recommendations for modifications to improve the regulations and strengthen enforcement provisions to better monitor and control the allowed activities under the Bill. Also , attached to this email are several memos that go into detail on several of the key issues. I will not reiterate these in detail but will summarize those recommendations.

- 1) Establish a strict, enforceable limit on Mulch production on ALPP properties :

Limit NWWR and composting on ALPP and MALPF sites to bone fide tree farms

Allow 1 acre of mulch production area for up to 15 acres of tree plantings and an additional 1/2 acre for anything beyond 15 acres.



A 1 acre compost production area would be allowed for any farm with a planting area up to 15 acres. If the planted area exceeds 15 acres an additional 1/2 acre compost area would be allowed. Limit the export of mulch to that which is shipped with trees from the farm.

No mulch can be sold at wholesale to vendors or other farmers. Excess mulch sold at retail at the farm cannot exceed 5% of total production and can only be transported off site in two axle 10,000 lb. GVW (non commercial) pick up trucks or farm vehicles. Combined area of NWWR and Composting shall not exceed 3 acres

- 2) Neither NWWR or Composting shall be allowed on preservation parcels embedded in cluster subdivisions.
- 3) MALPF easements shall have the same restrictions as imposed on ALPP sites
- 4) If allowed on RR and RC sites, combined area of NWWR and Composting cannot exceed 5 acres or 5% of site whichever is less. (There is a strong case that either 5 acres of mulch production or 5 acres of composting or a 5 acre combination of the two is not an accessory use and should not be allowed at all in the RR and RC zones. See comments and notes that follow)
- 5) Strict and enforceable rules must be enacted to assure compliance with the regulations. Our recommendation is that fines be imposed beginning seven days after the issuance of a citation if the violation has not been abated and shall accrue at the rate of \$1000 per day for the first 30 days of the violation and escalate to \$2000 per day for the next 30 days and \$3000 per day for every day beyond 60 days.
- 6) Any NWWR or Composting facility must be a minimum of 1000 feet from a school building.
- 7) NWWR facilities in the M-1 and M-2 zones that are within 500 feet of residential development or 1000 feet of a school must be enclosed or equipped with latest technology to control spores and particulate leaving the site.
- 8) The Hearing Examiner's allowance to reduce setbacks shall be limited to a 20 % reduction and no reduction for setbacks from homes or schools.

## Comments

In addition there are several key issues that you should consider in your further deliberations.

First- Mulch production by County regulations is considered an accessory use. As such it must be incidental to the primary use and subordinate in area, intensity, and purpose to the principal use. At what point does the production of Compost and Mulch cease to be an accessory subordinate use and become a primary use on a farm The one clear measure would be the market value of the products from the farm. In the case of Mulch production , a 2 acre facility producing 32, 000 CY of mulch can with the addition of tipping fees with generate over \$640,000 dollars in revenue. .

Further In regard to farms that are not tree farms the most optimistic assumptions for yield and price for corn production would yield about \$800 per acre. Thus to be deemed the principal use on a farm which supports a two acre mulch operation the farm would have to harvest over 800 acres of corn. There is not a single farm in Howard County even approaching 800 acres.

When one considers the potential for a 5 acre mulch facility on RC and RR sites producing 80,000 CY of mulch the comparisons are even more bizarre . Mulch production of 80,000 CY would be worth 1,6 Million dollars which is equivalent to 2000 acres of harvested corn.

In consideration of Compost production as an accessory use one must take into account the relative value of the product and how it is utilized. Compost is typically applied at a rate of 10 to 20 CY ( cubic yards) per acre on grain crop land. A five acre production site can over the course of the year produce 60,000 Cy's enough to treat 3,000 acres of crop land.

There is no farm in Howard county that has 3,000 acres in crops. Further the question of principal versus subordinate use must be considered. Since compost has a wholesale value of \$18 per CY a 5 acre facility could produce 60,000 CY's valued at \$1,080,000 dollars . When tipping fees are added the total revenue could exceed \$1.6 Million dollars. A 50 acre farm (the size of a farm that would allow a 5 acre mulch or compost facility) would only be capable of generating about \$ 40,000 even if every acre of the farm were planted in corn and harvested. By any rational measure a five acre production facility on a 50 acre farm is not a subordinate use. In fact to be a subordinate use the 5 acre facility would have to be situated on a farm of over 2000 acres.

Second- The County issued tax exempt bonds that were utilized to purchase development rights under the ALPP program. The contract for purchase of the owners development rights included language that extinguished the right to ever use the farm for commercial or industrial purposes This agreement was further codified in a perpetual easement that runs with the land. So even if the tax issue were to terminate with the pay out of the bond ( which I believe would not be a correct interpretation) the easement covenant would still be in effect. I am well aware of the intent of the contract and the easement since I signed such documents when I relinquished these rights on our 185 acre farm. It can be argued that any sale of mulch to the public market constitutes a commercial venture and would thus be in violation of the easement covenant and the clear intent of the legislation which was to keep the land solely in agricultural use forever. You have seen the signs posted on Ag Pres farms that proclaim " Farm Land Forever"

One of the distinct features of the County program vs the State program was the perpetual easement. The state program had a provision that allowed a farmer to opt out after 25 years if he could prove that farming was no longer viable. Not so with the County , the easement is in perpetuity.

Underlying the entire issue is the clear intent of the Ag Program and the basis on which it was enacted . That is; to preserve farm land in perpetuity without ever allowing commercial or industrial use . Large scale production of mulch or compost beyond the needs of the farm covered by the ALPP easement is a violation of the underlying rationale and justification for the program.

Third- You have heard the complaints of residents about the severe impact of mulch production that has been in violation of the regulations and which has continued due to a weak enforcement protocol.

DPZ has suggested that this failure could be addressed in the future rewrite of the Zoning and Development regulations. Unfortunately this process will take at a minimum 2 years . Violations have been ongoing for 5 years, persist today and could be exacerbated with the advent of these new regulations. It is incumbent on the Council to address this issue now, well before these new regulations are in place.

Fourth- The matter of a waiver provision to exempt certain ongoing activities was raised in the 10 July briefing. This matter was discussed in our small working group sessions and generally supported by the resident's representatives. The concept has merit and if text language can be crafted to allow the continuation of current activities that have a clear record with a history of no complaints, have ready access to major arterials or the inter state system and have little or no impact on adjacent properties , this might be possible. However the development of a rationale and supporting text will take time and should definitely involve input from the affected communities.

Finally - In light of the complexity of these outstanding issues I believe that the Council needs more time for its thoughtful consideration and refinement of the final text of the Bill. I applaud the Council's recognition of this fact and trust that you will respond in a meaningful way to the concerns that have been expressed by your constituents. I also heartily endorse Dr. Balls recommendation that representatives of the resident groups have a voice in drafting the text amendments that will be considered by the Council.

We stand ready to assist your serious efforts to bring this, at times, contentious matter to a successful and harmonious conclusion.

Re the definition of mulch production as a commercial and industrial process, a state court in Pennsylvania ruled that such an operation located in a rural residential zone in Montgomery County Pa. was in fact a commercial/industrial use and thus prohibited in the zone. Applying this logic a facility located in Howard County on an RR or RC site producing

large quantities of mulch or compost for sale would be deemed non conforming. Thus the entire matter of large scale ( over one acre of production area) is brought into question. Where do you draw the line? A one acre facility might readily qualify as an on the farm for the farm use. Anything beyond that could be considered excessive for the specific farm's use especially if the site were a modest sized ( less than 100 acre) farm.

Leslie Collier Englehart  
5200 Kalmia Dr.  
Dayton, MD 21036

I have lived in Dayton for 36 years. I chose to live and raise my family here because I wanted clean water and clean air for them. I wanted them to know the peace of the countryside and to value this planet, you know, the one where all living things need clean air and. <sup>you work.</sup> We have done our best to live lightly upon the earth, growing much of our own food, raising our chickens for eggs, minding our bee hives, planting trees. I buy our meat, Christmas trees, and pumpkins, and whatever produce I don't grow from our neighbors at TLV Farm. And, despite high property taxes, we plan to stay here in our retirement rather than migrate south . This is our home and we love it .

But greed has reared its ugly head and now certain of our super rich neighbors want to be super-super rich at the expense of our health, our peace, and possibly even our lives and the lives of our children.

I think certain questions have to be considered:



- 1) Are these developers' profits and tax savings more important than their neighbors' peace, property values, health, and even their lives?
  
- 2) When a child is killed trying to catch a school bus on Greenbridge Rd., (as has happened in this same situation in Virginia) or when children in the area become ill from breathing the particulates from an industrial operation, or when seniors who came here decades ago for the beauty and peace of the outdoors can no longer enjoy their gardens because being outdoors makes them sick, will those profiting from this business and the lower taxes from doing it on farmland step up and take moral and financial responsibility? I somehow doubt it.

Members of the County Council, please don't delude yourselves that the protections of CB-60 are sufficient. Where there are loopholes to doing the right thing, the greedy will find them and exploit us all for their gain.





I call for amendments to this bill to close those loopholes. I call for total transparency from the County Council on any changes to those amendments. I call on my neighbors to support our county farmers by buying their meat and other produce. I call on my neighbors to stop using mulch. It is not a necessity, it is only a fashion. Preserve the farmland and preserve all of our health and safety.

For clarity to all, as we oppose the current zoning language in CB 60 given the many obvious loopholes it creates, our **Amendment 1 by default absolutely prohibits the following on all RR and RC parcels:**

- 1. No commercial sale of mulch or compost product**
- 2. No three axle or tractor-trailer trucks on/off the farm with mulch or compost product**
- 3. No industrial grade tub grinders, normally used to support typical industrial mulching facilities**
- 4. No mulching on Howard County ag preserve or State of MD ag preserve farmland**
- 5. No retail sales of mulch or compost product onsite**



Testimony Against Bill CB 60  
 Brenda Stewart V.M.D.  
 County Council Meeting July 17, 2017

ENFORCEMENT AND PENALTIES of CB 60

Point 1: This Bill has some unclear and missing restrictions in its present form. If it were to pass without amendments or a re-write it would be very difficult to set up penalties for non compliance.

Point 2: The County does not have the authority to regulate activities on State Agricultural properties under MALFP. The state has its own controls for State Ag. properties and in the past they rarely ever enforce these regulations let alone put penalties on property owners. However these same State Ag properties also exist in Howard County and permit larger mulching and composting industrialization than Howard County's Agricultural Land properties (ALPP) would allow under CB60. So that setting up an operation under the state program would allow for larger industrial scale mulching and composting on farmland in western Howard County. I suggest the County try to find a way to prevent this first from happening before passage of CB60.

Point 3: If CB 60 were to pass, it is obvious that the County does not have the staff capability to monitor (inspect) the agricultural land being used for mulching and composting on a regular or occasional "drop in" inspection. An inspector with the job of visiting mulching and composting farms should be appointed as a job and inspection should be done at least yearly without notice.

Point 5: A more vigorous plan of enforcement of the regulations under this Bill must be included when complaints from residents are justifiable. In the past violations of composting and mulching operations on farm land have continued for months without any serious consequences and penalties to the perpetrators. of the property. Adjacent homeowners and residents have suffered without much recourse with repeated complaints to the Count.

Point 5. Non compliance to the regulations of mulching and composting after an inspection of the property should bring about penalties starting with the day of inspection. Penalties should increase weekly or a mandated closure of the facility should be done until compliance is acceptable by inspection.

Point 6: A list of penalties should be drawn up to go along with this Bill before seeking passage.

Point 7: If large trucks are being used to haul compost and mulch, they should be a particular maximal described size. The Department of Public Works (DPW) should also regulate the site distances needed for exiting and entering the facility and acceleration and deceleration lanes should be considered on two lane roads. Maps of the driveway should be drawn up and given to the DPW and they can weigh in on the safety issues and invoke safety measures that help to prevent accidents and provide protection for school buses, residential traffic and daily commuter traffic using the same two lane roads.

Point 8: Issues on serious health concerns and environmental concerns from the adjacent residential communities and farms should be a priority before permitting large scale mulching and composting on western Howard County farm land. These health factors should be seriously considered and may be serious enough to enforce prohibition of this Bill. Perhaps manufacturing areas like M1 and M2 should be the only ones permitted to handle industrial scale mulching and composting. The Department of Health should weigh in and give their expert advise on respiratory problems before considering passage of this Bill.

Point 9: Residential home owners now make up the majority of home owners in western Howard County. Non enforcement of the rules with large scale mulching and composting operations in what was once a peaceful attractive rural area could be the basis for a class action suit against the County by the homeowners especially with decreases to their property values.

Respectfully submitted

Brenda Stewart V.M.D. [drsibstewart@AOL.com](mailto:drsibstewart@AOL.com)  
 2752 Daisy Road  
 Woodbine, MD 21797-8124

410 242-2271

September 11, 2017

Dear Council Members,

Land dedicated to the preservation of agriculture is clearly a benefit to the community. Our state and counties recognize this by giving farmers tax breaks and subsidies. These tax breaks and subsidies come with the condition that property owners use farm-zoned land for activities that require the support of said gifts from the community.

Does trucking materials in and out to produce industrial or landscape mulch require our assistance to turn a profit? Does the trucking and production of industrial and landscape mulch contribute to the value of our communities the way farming does?

**I would argue that mulch or compost production for retail sale does not benefit the community and therefore does not deserve the subsidies and tax breaks of traditional farming.**

Mulch production is highly profitable (which may be the reason there is controversy over this issue) therefore it does not need community assistance to survive. Mulch production is damaging to the community, by reducing air quality and causing excessive wear on county roads. Mulch production must be taxed in a way that reflects the real costs to taxpayer funded roads and community air quality. Using low-tax properties designated for agriculture for this industrial process is clearly an attempt to manipulate the system and take advantage of loopholes.

**Please, amend CB60 to prevent greedy corporations or individuals from taking advantage of tax loopholes at great cost to the value and safety of our communities.**

Thank you for protecting our roads, our air quality and our safety,

Kevin Montgomery

A handwritten signature in black ink, appearing to read 'Kevin Montgomery', with a large, sweeping flourish underneath.

Mr. Kevin Montgomery  
4975 Morning Star Dr  
Dayton, MD 21036-1110

Sept. 11, 2017

Dear Council Members,

Thank you for your service to our community.

We LOVE farmers! We've lived in Dayton for many years and we've supported several local farmers through CSA, through meat, produce, and Christmas tree purchases, and through agri-tourism. We are grateful for the hard work of farmers and we want them to succeed.

However, as long-time residents of Dayton we are alarmed to hear that a farmland parcel in Dayton could be used for industrial mulching and composting by someone who doesn't care about our community's health and safety.

We assume you know the serious medical consequences of living close by or in the wind drift zone of industrial mulching and composting—both for people and animals. Years ago we chose to live in Dayton for health reasons—particularly for cleaner air.

**Please, amend the current CB 60 language loopholes** to prevent “fake” farmers from doing industrial mulching and composting as their major source of income with their UNLIMITED trucking in and out wood waste and compost materials and the sales thereof. These “fake” farmers could easily take advantage of the generous tax and zoning regulations written for authentic farmers. **Authentic farmers should not be trucking in or out compost materials and wood waste for profit.**

Here are two major questions:

1. How will the Council PROTECT our children and grandchildren's health and safety from contaminated air and dangerous truck traffic—both on Howard County and on state-owned ag-preserved farms? Health and safety of a community MUST come first.
2. How will the Council enforce infractions in a way that actually deters a greedy entrepreneur (e.g., an escalation of serious fines and actions for repeated violations)? **Current CB60 loopholes MUST be closed so the issue doesn't balloon out of control with negative consequences to the welfare of our county.**

Thank you for protecting the future of Dayton and Howard County,



Carol Montgomery  
4975 Morning Star Dr.  
Dayton, MD 21036

In 2014, I presented information regarding groundwater contamination caused by organic waste facilities, which include mulching and composting to the County Council. I am back with the same concern because I feel like the groundwater issue has not been considered and the Council is not looking into it or believes it to be a real problem.

Two investigation reports have been provided from the State of NY. The first was completed in 2013, the Suffolk County Department of Health Services understood the danger of these facilities and followed up by performing investigations at eleven separate organic waste sites and analyzed 233 groundwater samples. The study was completed in 2016 and is very conclusive. It identified organic waste sites caused significant groundwater contamination specifically Manganese.

I will now read part of the conclusion statement: ***“Vegetative Organic Waste Management operations can have significant adverse impacts on groundwater.”***

Due to this study, the Health Department wants to change the State regulations governing these facilities. Here is one recommendation from report: ***“Solid Waste Management Regulations governing these facilities should be revised to protect against impacts to groundwater and surface water quality. Until this is accomplished, prior to the issuance of any new permits/registrations, the State should evaluate, and take measures to ensure that any potential impacts to public/private wells located hydraulically downgradient of these facilities are mitigated.”*** What they are saying is, don't allow new facilities to operate until we can figure out how to protect the residents drinking groundwater.

The different permeability of NY and MD was brought up last week as being a reason this groundwater issue will not occur here. That conclusion is incorrect. The majority of MD soils are absolutely permeable enough to allow this issue to occur. In fact, fractured bedrock aquifers that we have in Howard County are more permeable and would be more of an issue due to their complex structure.

Regardless if you believe the permeability will not allow contamination here in MD, what we should be thinking is “WOW” we have evidence that shows a clear cause and effect. Suffolk County Health Department has identified organic waste sites can cause groundwater contamination. Let' acknowledge the problem.

What is the right size for these facilities? Zero, in groundwater use areas.

I also want to refute that a 2-acre mulch manufacturing facility considered small by some is not an industrial operation. If the facility requires a permit then it is considered an industrial operation period. Site 11 from the 2016 study identified groundwater contamination over 13 times the drinking water standard from a 2-acre mulch only facility that operated for just one year.

Reconsider CB-60 by amending it to eliminate these facilities in groundwater use areas to protect our health and the natural resource.

Howard County Council, On behalf of the Ho. Co. Farm Bureau Board, I would like to thank the Dept. Planning & Zoning, you the Council members and the members of the Mulch Task Force, for all the time and energy you all have put into constructing CB-60. It is not all that we had hoped it would be, but it is something we can work with on our farms. We would like to see the Ag Land Preservation Parcels treated the same as the other parcels in the RR and the RC districts, after all we are the future of agriculture, we promised to not sell our development rights and nothing more. We need to know that the county is behind us, even though we may be the minority in numbers we are mighty on impact, with the average farm selling over \$108,000 in sales each year. We also spend over \$105,000 each year, on production cost. Think about that.

I would like to take this opportunity to defend the American Farmers, as well as the Ho. Co. Farmers. We have endured hardships that most people would not even begin to understand. We have been unjustifiably mistrusted, we have been misrepresented and pushed around by the majority for so long, it has become a way of life for us. Most of us quietly go about our days working hard, honestly and diligently, making sure that no one is injured and making sure the public is not put at risk in any way. We travel on roads in our neighborhoods with our machinery and products, that used to be empty, and now are full of cars, and bicycles, that have impatient, disrespectful drivers and peddlers, that just want us out of the way.



The 318 Howard Co. Farmers have had to diversify their businesses, to maintain their business plans, so we can afford to pay the constantly rising cost of taxes, fuel, insurance, machinery and buildings. As well as to hire some extra labor that we need, to get us to the end of a day, that starts at daybreak and ends well after dark. From our farms that feed us to the nurseries, greenhouses and landscaping operations that beautify our communities, Howard Co. has always championed our rural roots. We continue to lead the way with rapidly growing women-owned or operated farms, a thriving horse farm population and common-sense strategies to support our suburban neighborhoods and our rural lifestyle.

One of the most disheartening things is when the so-called experts are not telling the whole story. Like the fact that there are 160 homes built on the old Hayland Farms, Alfred Bassler's stump dump, it has been tested and no toxins are present. Those of us in Ag Preservation do pay property taxes and I have a copy of my tax bill to "document it". The story about how sick everyone is that is down wind of Eric Bonner's farm is a misconception. Does anyone think maybe the decades of illegal car painting in his neighbor's barn, without proper filtration, might actually be the reason so many are supposedly getting sick, and not the small "Mulch Yard"? You have to wonder why the DRPS would join up with a neighbor like that, if he would do

that to people and then blame others, what else is he capable of? Then there's Bob Orndorff, my father harvested corn for Bob's grandfather, Bob, a farmer at heart, is now a business man, the zoning was changed next door to his business, so he was looking for other opportunities, he did everything by the book and everyone in the DRPS talks like he is some kind of criminal or something, I don't think so. The Brendel Brother's, they have been adding to the county's economy with paying taxes and employing many employees for years, how long until some lie is told about them, just so their small "Mulch Yard" is shutdown. Well I'm here to say. The American Farmer and the Ho. Co. Farmer's will continue to survive even against all odds, because we have the will, the stamina and the integrity to do our best against all who may put challenges in front of us, whether fair or not, we will survive, because we are Ho. Co. Farmers, who are American Farmers.

Respectfully, Howie Feaga

President of the Howard County Farm Bureau for 10 years now, with over 1400 total members in Howard County.

Thank You !!!!

Department of Finance  
 Property Tax Division  
 3430 Court House Drive  
 Ellicott City, MD 21043  
 (410) 313-2062



**State and County  
 Real Property Tax Bill**

Levy Period	Customer	Parcel	Year	Cycle	Status	Bill No.	Bill Date
07/01/2017 -06/30/2018	28612	03-284883	2017	FY	PRINCIPAL	2543943	07/01/17

FEAGA WILLIAM HAROLD  
 3807 WALT ANN DR  
 ELLICOTT CITY, MD 21042-1235

Property Description

100.212 A  
 3807 WALT ANN DRIVE

Charge Description	Assessment	Rate Per \$100	Amount
COUNTY TAX	633,500	1.014000	6,423.69
NET COUNTY TAX			6,423.69
STATE PROPERTY TAX	633,500	.112000	709.52
NET STATE TAX			709.52
FIRE TAX - METRO	633,500	.176000	1,114.96
NET FIRE TAX			1,114.96
STATE BAY RESTOR FEE			120.00
WATERSHED PROTECTION			90.00
TRASH FEE			210.00
AGRICULTURE CREDIT			-293.55
<b>Total Tax</b>			<b>8,374.62</b>
<b>Homeowner Credit</b>			<b>0.00</b>
<b>Interest and Penalties</b>			
<b>Prior Payments</b>			
			<b>8,374.62</b>

Breakdown of County Tax

Education	61.82 % or	3971.13
Public Safety	11.61 % or	745.79
Public Works	6.11 % or	392.49
General Gov't	2.49 % or	159.95
All Others	17.97 % or	1154.34
<b>Total</b>		<b>6,423.69</b>

County rate of 1.014  
 is more than constant yield  
 rate of 0.9910 by 0.0230

Good Evening. My name is Ricky Bauer and I live at 13817 Howard Road in Dayton. I am the chair of the Howard County Agricultural Land Preservation Board. We, the board, endorse most of the conditions contained within CB60, and feel they go a long way in addressing the needs for Natural Wood Waste Recycling Facilities and Composting Facilities. We also support the section of the bill addressing needs in case of emergencies caused by natural disasters, but do have some concerns on how this will be administered. We feel that should there ever be a natural disaster to deal with, meeting the requirements for a Natural Wood Waste Recycling Facility within the allowable time frame would be unreasonable. In such instances, there needs to be some sort of expedited review/approval process to make this acceptable. With consideration to making a change to that part of the regulation, we ask the county council to please vote “yes” for CB60.

On a personal note – I would like to remind everyone that according to Section 104 of the Howard County Code – “The purpose of the rural conservation district is to conserve farmland and to encourage agricultural activities, thereby helping to ensure that commercial agriculture will continue.” Anyone that has entered into the Agricultural Land Preservation Program ONLY sold their development rights, and nothing else, so why are they not being treated the same as other farmland in the RC (rural conservation district)? I feel this is truly unfair and takes away prospective opportunities for the next generation of farmers, who want to try farming in Howard County, after all, they are our future.

Thank you.

Good evening. My name is Leslie Bauer. I live at 13815 Howard Road in Dayton. I am here tonight to show my support for CB-60. I would request one amendment to the bill. I believe that Ag preserved ground should be treated the same as ground in the RC & RR, and under this bill, should have the same rights as RC & RR properties without additional restrictions/limitations. When we entered the Howard County Agricultural Land Preservation Program in 1990, we only sold our development rights, no other rights. I do not understand why now the county feels the need to put additional limitations on our land.

We have made the commitment to "keep it farm", however, just like many other industries, the face of agriculture has changed over the past 25 years. We are no longer just 'plows and cows', but so much more. As agriculture changes, we need to be able to change with the times, to try new agricultural endeavors, to continue to be a viable and profitable operation.

Please tell me how many people in this room have taken pay cuts in the past 5 years? How many have taken 50% pay cuts? That is exactly what happened to my family five years ago when the price of corn dropped from \$8/bu to \$4/bu - and has stayed in the \$4 range since. Or last summer when wheat prices were the lowest in actual value since the civil war. While grain prices are low, our costs and expenses have continued to go up - meaning that a lot of times the price we are receiving for our grain is less than the costs to produce that grain. Or let's talk meat and produce. Did you know that farmers receive only 15.6 cents of every food dollar that consumers spend? (Source: The US Department of Agriculture Economic Research Service)

The National Farmers Union reports that farmers are currently facing the most severe economic downturn since the 1980s farm crisis. Median net farm income is forecasted to be half of what it was four

years ago. When faced with situations like this, we, as farmers, are forced to find alternative forms of income.

Or this year, while we continue to struggle with grain prices, Mother Nature wants to play her hand, and we are facing early drought stages. As I look out on our cornfields daily, the stalks appear to have grown much higher than I have seen in other drought years. However it is now getting ready to set ears and is in desperate need of rain to make healthy full ears. I worry that it will also be too dry for our soybean crop. I wonder how without a decent corn and soybean harvest this fall, we will make ends meet for the next year. Again, when faced with challenges beyond our control, it would be nice to have the right for other conditional uses to help the farm make it through the lean times.

When you consider some of the facts I have just shared, why would a good business person want to continue farming? While we have made the commitment to preserve our land, how can we convince the next generation to enter this profession? The current economic circumstances in this country, coupled with the policies of this county, threaten the next generation of agriculture. If we want to encourage our youth to enter this vast industry that produces food, fiber, feed and fuel for our country, we need to have the ability to explore alternative forms of agriculture through conditional uses.

Please consider making appropriate amendments to CB-60. Farmers face enough challenges, we should not be penalized because we thought we were doing the right thing when we made the choice to preserve our farmland. Please treat agriculturally preserved land the same as any other property in the RC & RR.

Thank you.

Leslie Bauer

Rural Rhythm Farm

[Labauer5@verizon.net](mailto:Labauer5@verizon.net)

443-812-1662





**National  
Farmers  
Union**

Visit [nfu.org](http://nfu.org) to learn more  
**UNITED TO GROW FAMILY AGRICULTURE**

# The Farmer's Share

Did you know that farmers and ranchers receive only 15.6\* cents of every food dollar that consumers spend? According to the USDA, off farm costs including marketing, processing, wholesaling, distribution and retailing account for more than 80 cents of every food dollar spent in the United States.

## Bacon

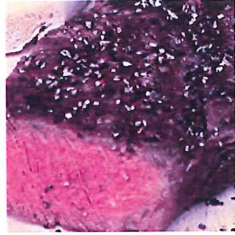
1 lb.



Retail: \$5.36  
Farmer: \$0.73

## Top Sirloin Steak

1 lb.



Retail: \$8.99  
Farmer: \$2.19

## Bread

2 lbs.



Retail: \$2.99  
Farmer: \$0.10

## Fresh Carrots

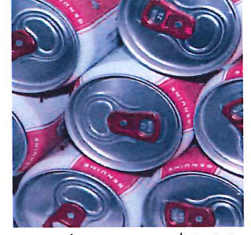
5 lbs.



Retail: \$3.99  
Farmer: \$1.39

## Beer

6-pack cans



Retail: \$8.99  
Farmer: \$0.05

## Cereal

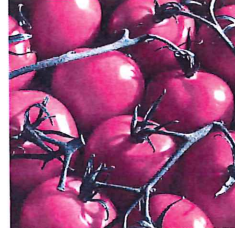
18 oz. box



Retail: \$4.79  
Farmer: \$0.05

## Tomatoes

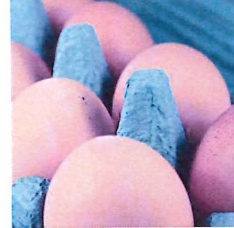
1 lb.



Retail: \$3.99  
Farmer: \$0.42

## Eggs

1 dozen



Retail: \$1.39  
Farmer: \$0.62

## Flour

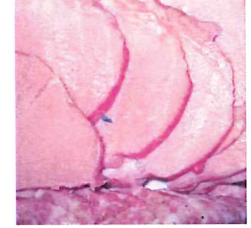
King Arthur, 5 lbs.



Retail: \$6.29  
Farmer: \$0.34

## Boneless Ham

1 lb.



Retail: \$3.99  
Farmer: \$0.73

## Lettuce

1 lb.



Retail: \$1.69  
Farmer: \$0.26

## Milk

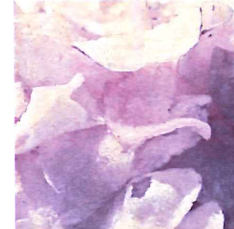
1 gallon, fat free



Retail: \$4.49  
Farmer: \$1.44

## Potato Chips

Lays Classic, 8 oz.



Retail: \$3.29  
Farmer: \$0.17

## Fresh Potatoes

Russet, 5 lbs.



Retail: \$3.99  
Farmer: \$0.42

## Soda

2 liters



Retail: \$1.20  
Farmer: \$0.06

Farmer's share derived from USDA, NASS "Agricultural Prices," 2017 | Prices based on June 2017 data.

Retail prices based on Safeway (SE) brand except where noted. | \*Figure according to U.S. Department of Agriculture Economic Research Service

June 29, 2017



/nationalfarmersunion



@NFUDC



/nationalfarmersunion



[nfu.org/topics/blog](http://nfu.org/topics/blog)



National Farmers Union | 20 F Street NW, Suite 300 | Washington, DC 20001  
P: (202) 554-1600 | F: (202) 554-1654 | [www.NFU.org](http://www.NFU.org) | [info@nfudc.org](mailto:info@nfudc.org)





**County Council of Howard County, Maryland**  
**County Bill 60-2017 – Zoning Regulation Amendment 180**

**Position: Support**

*Sept. 11th* **July 17th, 2017**

Written Testimony by Linda Bilsens

Project Manager, Composting for Community Project  
Institute for Local Self-Reliance, lbilsens@ilsr.org

The Institute for Local Self-Reliance (ILSR) urges a favorable vote on **Howard County Bill 60-2017 – Zoning Regulation Amendment (ZRA) 180**. ZRA 180 proposes regulation changes that both recognize the importance of farming to the County and avoids undue burdens on farmers as they conduct agricultural activities, such as mulching and composting. At the same time, ZRA 180 adequately addresses potential concerns regarding industrial-scale composting and mulching by aligning with Maryland Department of the Environment's (MDE) extensive and recently revised composting regulations. We also echo the sentiment of the PlanHoward 2030 update of the County Plan, that "Howard County farmers should be able to utilize innovative farming practices so they too can adapt to the evolving market" and that "enhancing their ability to farm efficiently is critical to the growth of Howard County and its ability to maintain a diverse economy." We contend that composting and mulching are both essential agricultural activities, providing mechanisms for sustainable agricultural practices and opportunities to adapt to evolving markets.

The discussion playing out here in Howard County centers on a complex issue. We all produce wastes that need to be managed. The fact is that organic wastes, such as food scraps, uneaten food, yard waste and other compostable items make up roughly half of what an average household throws away. MDE studies from Anne Arundel, Howard, and Montgomery Counties have shown that food scraps are among the top disposed items, by weight, in residential waste. There are many problems with this. For one, why are we throwing away so much food?

On the environmental front, when sent to landfills and incinerators, organic material is proven to produce compounds that pollute air and water, while contributing to climate change via methane and other emissions. Methane is a greenhouse gas with a short-term global warming potential 84 times more potent than carbon dioxide. Landfills are the third largest source of methane emissions in the US, according to the EPA. In contrast, when converted into compost and added to soil, biodegradable materials store carbon, protecting the climate. If you're concerned about climate change and future food security, supporting the ability of farmers to enhance their soils with organic matter will become increasingly vital to an inhabitable and sustainable planet. Indeed, the new [MD Healthy Soils Program Act](#) (passed earlier this year) is promoting the widespread use of healthy soils practices among farmers in Maryland. Increasing soil organic matter is specifically named, along with the ability of soil to sequester carbon and reduce greenhouse gas emissions.

Healthy soil is an invaluable resource that provides countless economic and ecosystem benefits, particularly for agriculture, but realizing these benefits requires thoughtful soil stewardship to maintain its integrity and minimize losses to erosion and drought. It takes a thousand years for one inch of new topsoil to be created by geological processes, yet, in the US nearly a 1/3 of all cropland is eroding beyond soil tolerance levels, meaning the long-term productivity of the soil cannot be sustained. More locally, Central Maryland, including Howard County, has been under some level of drought for the first half of 2017. Both soil's erodibility and water-holding capacity are influenced by its particle size, texture, structure and the percentage of organic matter it contains. Compost improves all of these factors, and is the best source of organic matter available for producing healthy soils critical for farming, gardening, and green infrastructure. Because of their intimate knowledge of soils, farmers are perhaps the most appropriate stewards of the composting process.

Composting is a critical waste and nutrient management practice for any farm. The composters in Austria that I studied with in 2016, helped establish the thriving network of roughly 450 agricultural/municipal composting facilities that help nurture local soils and provide the country with one of the highest recycling rates in Europe. These farmer composters are entrusted with this task as experts on what will yield the highest quality final product, but also as a way to allow supplemental income to support their small, family farms. During the avian influenza outbreak of 2016, I partnered with the University of Maryland to train poultry farmers to compost any mortalities on their farms. Composting is a proven and widely-accepted practice for killing the virus as well as many other human pathogens, and keeping disease mortalities on-site acts as a quarantine.

The 2016 report from Suffolk County, NY, regarding potential impacts to Groundwater Quality from Compost and Vegetative Organic Waste Management Facilities. Though it underscores issues that require further investigation, the report has been widely criticized by environmental agencies, consultants, university professors and researchers, as well as by the mulching and composting industries. The sampling design of the study was flawed: there was no sampling done as a control to determine background levels of potential contaminants, and samples of the native soil or the composting feedstocks were not taken. Radon levels were not tested and other sites that are more likely to contribute to the types of contaminants measured were not investigated. Thousands of compost manufacturing sites operate well without the problems that this location experienced, even with large piles of compost sitting on the ground.

Dr. Velculescue's testimony – implying composting and mulching cause cancer and other health impacts – is misleading. While some of the studies he references deserve more thorough review, many were taken out of context. A few of the studies referenced are for solid waste composting facilities, that is facilities that take everything thrown out at the curb and composts off the organic portion, which is not what's being discussed in the context of ZRA 180. The CDC advisories for wood dust come primarily from the furniture-making and woodworking industries. Aspergillus is generally considered the fungal spore in composting that requires safety precaution. The concern is primarily for the workers involved in mixing and turning piles of decomposing organic material, and they should certainly be protected. All licensed operators in Maryland are taught about



aspergillus and best management practices. Studies show that the spores travel no farther than 800 feet or so downwind from their source.

That said, we recognize the concerns of the Howard County community regarding traffic safety, and potential impacts on water and air quality. These are real factors that need to be monitored and managed. It is for these reasons that ILSR promotes a distributed composting infrastructure, one that prioritizes and supports small-scale facilities like those on farms over large industrial sites, in order to produce the amazing soil amendment that is compost. We are also proponents of having well-trained operators at these sites to avoid potential problems and impacts. This is why we developed our Neighborhood Soil Rebuilders Composter Training Program, to raise the bar for standards of practice at all levels of composting. We support composting projects in dozens of community gardens, urban farms, schools and other community centers in both DC and Baltimore.

ILSR, along with numerous other experts and stakeholders, was part of the Maryland Composting Work Group that developed MDE's new composting regulations through a multi-year stakeholder process. The regulations that resulted from this process, the ones that ZRA 180 both incorporates and builds on, did not exist prior to 2015. Prior to their release, composting facilities generally fell through the regulatory cracks.

As outlined in the Department of Planning and Zoning's May 2017 Technical Staff Report, MDE's composting permits provide extensive regulation for many environmental considerations regarding existing and prospective composting facilities, such as groundwater discharges, feedstock types, pile heights, operation, maintenance and rehabilitation plans, soils management plans, grading, runoff control, storm water management, fire control, odors, noise, and dust, among others. In addition, the MDE on-farm composting regulations require that composting not be the primary farming activity, which they must prove by showing the percentage of income, employee time, and land space used for composting vs farming. The area dedicated to composting falls under 40,000 square feet (roughly 1 acre) unless the farm intends to apply to become a permitted composting facility. Furthermore, all farmers are required to comply with Nutrient Management Planning, Soil Conservation and Water Quality Planning, or Agricultural Waste Management System Planning requirements.

We applaud the Department of Planning and Zoning's effort to engage concerned citizens, as well as representatives of the Fire and Rescue Services, Howard Soil Conservation District, Environmental Health Department, Planning & Zoning Resource Conservation Division, Economic Development Authority, and the Office of Community Sustainability in the zoning regulation amendment process.

We further urge that the County continue this commendable stakeholder engagement process to provide both its farming community and the broader community ample opportunity for feedback as composters begin to implement these ZRA 180 amendments and the 2015 MDE composting regulation amendments. We agree that farms that do not trigger MDE compost facility regulation requirements, do not warrant county restrictions. While the Permit for Special Farm Uses and Conditional Uses proposed in ZRA 180 appear clearly defined, well thought out, and that they outline conditions that are adequate for minimizing any potential impacts, the enforcement of these regulations, must be paramount. The County should solicit the support of MDE to assure citizens that

any breaches will be addressed promptly. This includes the need for permits for certain power equipment that may be used, such as grinders, and any facility that is creating a nuisance or in any way endangering its neighbors.

Attached to my submitted written testimony, you will see infographics we released last year, that outline the environmental benefits of composting organic materials instead of landfilling or incinerating them. You will also see an infographic that illustrates the many benefits of compost to soils and our Hierarchy to Reduce Food Waste and Build Community.

**About the Institute for Local Self-Reliance (ILSR):** ILSR is a national nonprofit organization with offices in Washington, DC; Portland, ME; and Minneapolis. Since 1974 we have provided research and technical assistance on waste reduction, renewable energy, and other resource conservation issues to business, government, and citizens groups. We have worked in Maryland for decades to promote recycling-based businesses and jobs and prioritize waste reduction, reuse, and recycling over trash incineration and landfill disposal. Our staff includes compost experts who are licensed to operate commercial compost facilities in Maryland. ILSR's Composting for Community initiative is advancing composting as a key strategy to reduce trash, create jobs, and build healthy soils.



# Hierarchy to Reduce Food Waste and Grow Community







# COMPOST: Impacts More Than You Think

Composting is the aerobic decomposition of organic materials by microorganisms. It transforms raw materials—such as leaves, grass clippings, garden trimmings, food scraps, animal manure, and agricultural residues—into compost, a valuable earthy-smelling soil conditioner, teeming with life.

## One Person's Trash is...

...another's black gold.

Every year, U.S. landfills and trash incinerators receive **167 MILLION TONS** of garbage.

**> 50%** of typical municipal garbage set out at the curb is compostable.

Landfills and incinerators are dangerous. Every bag thrown out contributes to:



Pollution of surrounding soil, air, and water



Climate change



Health hazards to humans and animals



**21%** is food scraps alone

**15%** paper/paperboard

**8%** yard trimmings

**8%** wood waste

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To learn more, visit: [www.ilsr.org](http://www.ilsr.org)



# Composting Enhances Soil and Protects Watersheds

Healthy soils are essential for protecting watersheds. Compost is the best way to add organic matter—which is vital—to soils.

When added to soil, compost can filter out urban stormwater pollutants by an astounding **60-95%**



## IT'S ALL ABOUT THE SOIL

**COMPOST** improves biological, chemical, and physical characteristics of soil.

Protects against soil desertification and soil erosion

Enhances plant disease suppression

Increases resilience to floods and droughts

Increases soil fertility

Reduces need for chemicals

Converts nitrogen into a more stable and less mobile form and phosphorous into a less soluble form

Increases microbial activity

Improves water retention

Improves soil structure

Improves ability to store nutrients (such as cation exchange capacity)

Adds humus, keeping soil particles stuck together

Compost helps reduce stormwater runoff because it can hold **~5x its weight** in water.

Compost serves as a filter and sponge. It immobilizes and degrades pollutants, improving water quality.

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# Composting Protects the Climate

Food scraps in landfills generate methane, a greenhouse gas with a global warming potential 84x more potent than CO<sub>2</sub> in the short term.

Incinerators also emit climate pollutants

...but when converted into compost and applied to the land, compost sequesters carbon.

One research project found that ½ inch of compost applied to rangeland sequestered the equivalent of **1 metric ton of CO<sub>2</sub>e/hectare over three years.**

This level of sequestration on half of California's rangeland would offset **42 million metric tons of CO<sub>2</sub>e**, which is equal to the annual greenhouse emissions from California's commercial and residential energy sectors.

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## Howard Soil Conservation District

14735 Frederick Road • Cooksville, MD 21723 • Phone 410-313-0680 • Fax 410-489-5674

[www.howardscd.org](http://www.howardscd.org)

July 17, 2017

The Honorable Jon Weinstein, Chair  
Howard County Council  
George Howard Building  
3430 Court House Drive  
Ellicott City, MD 21043

Re: Howard SCD Board of Supervisors support for Council Bill No. 60-2017 (ZRA 180)

Dear Honorable Chair Weinstein and Howard County Council:

The Howard Soil Conservation District Board of Supervisors would like to thank County Executive Kittleman and County Councilmembers Mary Kay Sigaty and Greg Fox for proposing Bill No. 60-2017 to address mulching and composting facilities in Howard County. The HSCD Board of Supervisors generally supports the proposed bill, but would like to work with the County Council to improve some aspects of the proposed legislation. In particular, we believe the size limitations outlined in the Bill are unnecessarily restrictive and not based on sound science or operational realities. We also question why mulch and compost are not just considered as an Accessory Use under the topic of "Value-added processing of agricultural products", as outlined in the current regulations. This would allow these operations in the RC and RR Districts as well as on County Preservation Easements, and would categorize them more appropriately as agricultural products.

Since 1945 the Howard Soil Conservation District has helped the citizens of Howard County to protect their soil, water, and other natural resources. The Howard SCD staff provide technical assistance to farmers and landowners interested in establishing conservation practices on their properties. We help plan, design, survey, and oversee construction of a wide array of best management practices which farmers implement to protect our local water resources and restore the Chesapeake Bay. Our agency also serves a vital role in protecting water quality by reviewing sediment and erosion control plans for construction sites.

One of our core partners in our efforts to improve water quality in the county and protect the Chesapeake Bay is the USDA Natural Resource Conservation Service (NRCS). NRCS has practice standards for hundreds of conservation practices we use to protect our natural resources. We have provided 2 of these practice standards along with our testimony so that you can see their importance and relevance to agricultural operations. The two practice standards pertain to mulching and composting facilities, NRCS practice code 484 and 317, respectively. The standards describe the use of these two components as agricultural conservation practices and reinforce the importance of both for the enhancement of natural resources.

\*Regarding mulching, here are a few purposes outlined for this practice – “conserve soil moisture, provide erosion control, suppress weed growth (which reduces the need for herbicides) facilitate the establishment of vegetative cover, and improve soil quality”.

\* The NRCS definition of a composting facility is – “a facility to process raw manure or other raw organic by-products into biologically stable organic matter.” And its purpose is - “To reduce the pollution potential of organic agricultural wastes to surface and ground water.

\*Both mulching and composting are valuable conservation practices and we don’t want to see farmer’s ability to implement these practices restricted.

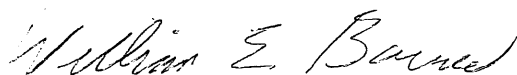
\* The EPA says “composting is nature’s way of recycling organic materials back into the soil in order for the cycle of life to continue.” And the County’s own website encourages us to recycle as much as possible – what better way is there to do that than through composting and mulching?

In order to keep agriculture viable and protect the rural landscapes and aesthetic values that residents cherish, we have to provide opportunities for farmers to be profitable. Some of the limits outlined in this bill could restrict farmers’ opportunities to remain profitable, and are contrary to the principles of economies of scale. Imagine if other business operations in Howard County were limited in this way. “Bring your business to Howard County, but once you become successful, or employ a certain number of people, or reach a certain size we want to put restrictions on you that will inhibit your profitability or cause you to go somewhere else”... It would be challenging to attract business with policies like that. Why is it always the farmers, the people who wake up before sunrise and toil all day to produce our food, fiber, etc. (and yes, sometimes mulch) that face the continuing regulatory battles that threaten their operations?

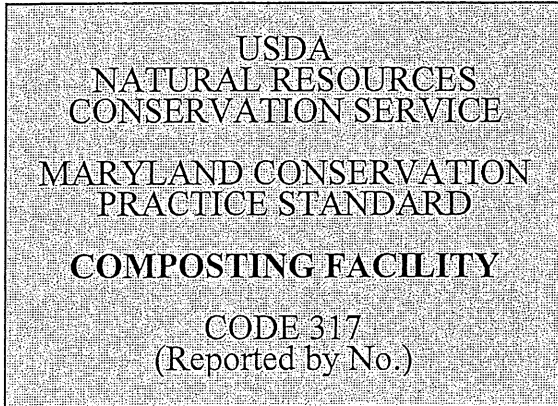
The Howard SCD has participated in the discussions surrounding mulching and composting and provided our technical advice throughout the process. We offer our continued support for these agricultural operations and are committed to providing technical guidance and conservation assistance to on-farm mulch and composting operations. The Howard SCD recognizes the need for agricultural operations to find viable alternative uses for a variety of byproducts that are a necessary part of food and fiber production. Many of our programs are designed to assist farmers in addressing their composting needs for manure, bedding, and other materials by turning them into valuable resources such as soil amendments. Rather than shipping these materials off to Virginia like we do with the County’s trash, isn’t it more responsible to work together to address some of our waste challenges here in our own County? Especially if it provides an opportunity for farmers to convert these materials into a valuable resource for improving soil health and productivity.

We thank the County Council for this opportunity to share our perspective on this issue, and we look forward to working with you to improve this legislation. Howard SCD will continue to offer our technical assistance and conservation expertise as this process moves forward.

Sincerely,



William E. Barnes  
Chairman, Board of Supervisors



### DEFINITION

A facility to process raw manure or other raw organic by-products into biologically stable organic material.

### PURPOSE

To reduce the pollution potential of organic agricultural wastes to surface and ground water.

### CONDITIONS WHERE PRACTICE APPLIES

This practice applies where:

1. Organic waste material is generated by agricultural production or processing;
2. A composting facility is a planned component of a waste management system;
3. The composting facility can be constructed, operated and maintained without polluting air or water resources;
4. There is a need to improve air quality by reducing emissions of odorous gases; and,
5. The facility is operated as a component of an agricultural management system.

### CONSIDERATIONS

#### Odor Reduction

Develop an initial compost mix with a carbon to nitrogen ratio of at least 30:1 to reduce most offensive odors.

Minimize odors and nitrogen loss by selecting carbonaceous material that, when blended with the nitrogenous material provides a balance of nutrients and porous texture for aeration.

A chemical neutralizing agent should be used if structural components do not provide adequate odor reduction

#### Location

Composting facilities should be located as near to the source of organic material as practical, with consideration given to:

1. The location of neighboring dwellings and how they will be affected by prevailing winds;
2. Location of ingress and egress so as not to interfere with traffic flow or utilities;
3. Location of the access for easy loading and unloading of compost.
4. The location, layout, and design of the facilities should be compatible with the surrounding landscape. Consider existing landforms and vegetation, along with land shaping and vegetative plantings to minimize any adverse impact on visual resources.

#### Orientation and Wind Protection

If possible, orient windrows north and south to maximize solar warming, particularly in the colder counties. For unroofed static piles or windrows, consider using windbreaks to prevent compost from blowing away, to help prevent drying out, and to help maintain a warmer compost temperature in colder climates.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the [Natural Resources Conservation Service - Maryland](#) or visit the [electronic Field Office Technical Guide \(eFOTG\)](#).

## CRITERIA

### Facility Siting

Locate the composting facility where movement of odors toward neighbors will be minimized. Buffer areas, vegetative screens, and landscaping can help minimize negative effects of odors and visual resources.

Locate the facility a minimum 2 feet above the high water table. Soils that have a rapid permeability (>6.0 inches/hour) in the upper 40 inches of the soil profile require a concrete pad, clay, or synthetic liner. The compost area and access must be kept free of standing water and rutting.

Locate the composting facility outside the 100-year, 24-hour floodplain when possible. If the only practical alternative is to locate the facility within the 100-year floodplain, design the facility to protect from inundation and damage from the 25-year, 24-hour flood event. Divert runoff from outside drainage areas and maintain positive drainage away from the facility.

Construction activity within the 100-year floodplain requires permits or authorizations from the Maryland Department of the Environment and/or the U.S. Army Corps of Engineers. Obtain all applicable permits and authorizations prior to start of construction.

The area surrounding the composting facility will be subject to a high traffic load during loading, mixing, and unloading. Design these areas to meet the requirements of the Maryland conservation practice standard for Heavy Use Area Protection, Code 561.

Contaminated runoff from any composting facility without a roof must be controlled. This may be accomplished with distribution over a Wastewater Treatment Strip (Maryland conservation practice standard, Code 635) or transfer to a storage facility or other approved treatment method.

Leachate should not occur from any composting facility. If leachate does occur, this means the mix is too wet. Make adjustments to the composting mix by adding dry matter to eliminate leachate. Address this issue in the operation and maintenance plan.

### Facility Type, Size, and Design

**Type** - Select the type of facility and composting method based on the availability of raw materials, the desired quality of the final compost, available equipment, manpower, management time, and available land.

Facility structural elements such as permanent bins, concrete walls and slabs, and roofs shall meet the requirements of Waste Storage Facility (MD-313).

**Size and Design** - Size all composting facilities in accordance with the Agricultural Waste Management Field Handbook, Part 651 Chapter 10, appropriate NRCS Design Worksheet(s), Extension Fact Sheet(s), or other methods as approved.

Dimension all structures to accommodate the equipment used for loading, unloading, and aeration.

**Materials** - Conform to the requirements of Maryland conservation practice standard for Waste Storage Structure, Code 313, for materials and structural design of composting facilities.

### Composting

**Compost Mix** - Develop a compost mix that encourages aerobic microbial decomposition and minimizes nuisance odors. The "mix" for this system must be managed closely for the C:N ratio, moisture, and temperature.

**Carbon-Nitrogen Ratio** - The initial compost mix should result in a (C:N) ratio between 25:1 and 40:1. Compost with a greater carbon to nitrogen ratio can be used if nitrogen immobilization is not a concern.

**Carbon Source** - Choose a carbon source compatible with the organic by-product being composted. A good carbon source will mix well with the organic matter, provide air space for aerobic decomposition, and enhance aeration. Therefore, a good carbon source also acts as a good bulking agent.

**Bulking Agents** - Bulking agents are ingredients used to improve the structure and porosity of a mix. Bulking agents are typically dry and vary

in particle size (e.g., straw and sawdust), but could be old finished compost.

Add bulking agents to the mix as necessary to enhance aeration. The bulking material may be the carbon source used in the mix or a non-biodegradable material. If a non-biodegradable bulking material is used, provisions must be made for its salvage at the end of the composting period.

**Moisture Content** - The moisture range during the composting period should range from 40 to 65 percent (wet basis). Moisture contents above 65 percent invite fly production, anaerobic decomposition, and objectionable odors. Water may need to be added during the turning process if the compost is below 40% moisture. In general, the compost is too wet if water can be squeezed out and too dry if the mix doesn't feel moist to the touch.

**Temperature Control** - Manage the compost mix to reach and maintain the internal temperature for the duration of the composting process to meet the management goals.

When the management goal is to reduce pathogens, the compost temperature must be maintained above 130°F for a minimum of 5 cumulative days during the composting process. Monitoring internal temperatures is a good indicator of pathogen kill. A temperature log of the temperature profiles should be maintained.

**Turning/Aeration** - The frequency of turning/aeration should be appropriate for the composting method used to attain the desired amount of moisture removal and temperature control while maintaining aerobic degradation. Turning and aeration are functions of the composting process chosen and should follow the requirements of that system.

**Pile Configuration** - Windrows and static piles should be triangular to parabolic in cross-section and rounded on top to shed rainfall. Align windrows and static piles to avoid accumulation of precipitation. Maintain positive drainage parallel to the windrows.

**Compost Period** - Continue the composting process long enough for the compost mix to reach the stability level where it can be safely

stored without undesirable odors. It shall also possess the desired characteristics for its use, such as lack of noxious odor, desired moisture content, level of decomposition of original components and texture. The compost period shall involve primary and secondary composting as required to achieve these characteristics.

Test the finished compost as appropriate to assure that the required stabilization has been reached.

**Use of Finished Compost** - Follow the requirements of the Maryland conservation practice standards for Nutrient Management, Code 590, and Waste Utilization, Code 633, for land application.

### **Federal, State, and Local Laws**

Adhere to all federal, state, and local laws, rules and regulations for composting and utilization of the compost. It is the responsibility of the producer to secure any permits necessary to install structures and for properly managing the facility on a daily basis.

### **Safety**

Incorporate safety and personal protection features and practices into the facility design and operation as appropriate, to minimize the occurrence of equipment hazards and biological agents during the composting process. These features may include warning signs, fences, ladders, ropes, bars, rails, and other safety devices to protect humans and livestock.

### SPECIFICATIONS

Plans and specifications for the composting facility shall be in keeping with this standard and describe the requirements for applying the practice to achieve its intended purpose.

All phases of construction shall comply with the appropriate standards and specifications for the work items including, but not restricted to:

The contractor should furnish a certification statement that he has constructed/assembled any non-NRCS designed structure in accordance with the requirements/specifications of the designer/manufacturer.

### OPERATION AND MAINTENANCE

Develop an operation and maintenance plan prior to design approval that is consistent with the purposes of the practice, its intended life, safety requirements, and the criteria for its operation.

Manage the compost piles for temperature, odors, moisture, and oxygen, as appropriate. Make adjustments throughout the composting period to insure proper composting processes.

Closely monitor temperatures above 165°F. Take action immediately to cool piles that have reached temperatures above 185°F.

The operation and maintenance plan shall state that composting is a biological process. It requires a combination of art and science for success. Hence, the operation may need to undergo some trial and error in the start-up of a new composting facility.

The plan must include but is not limited to the following:

1. Objective of the landowner or operator and the operation requirements;
2. The mix proportions, moisture requirements, and materials used;
3. The sizing requirements;

4. The timing of the composting process including loading, unloading, and turning or aeration of the material;
5. Temperature monitoring requirements, including a temperature log;
6. What must be done to prevent leachate problems;
7. Biosecurity requirements;
8. Safety requirements;
9. If available, frequently encountered mistakes in composting and brief "fix it" scenarios or a reference to;
10. References of sources of information or a reference to where they can be found.

## SUPPORTING DATA AND DOCUMENTATION

### Field Data and Survey Notes

The following is a list of the minimum data needed:

1. System plan sketch;
2. Topographic survey of the site showing building locations, elevations at structure location and location of dwellings, wells, floodplains, etc.;
3. Soils exploration showing seasonal high water table;
4. Operator data used to size the facility and documentation of the landowners decisions.

### Design Data

Record on appropriate engineering paper. For guidance on the preparation of engineering plans see chapter 5 of the EFH, Part 650. The following is a list of the minimum required design data:

1. Comprehensive Nutrient Management Plan or Waste Management Plan including the Operation and Maintenance Plan;
2. Plan view including, location map, all system components, material and construction specifications;
3. Construction drawings, and component details;
4. Structure sizing computations;
5. Structure and component design and details;
6. Area grading plan;
7. Quantities estimate;
8. Job Class on plan;
9. Details of foundation drainage, when required;

10. Planting plan. This must meet the criteria, specifications, and documentation requirements of the Maryland conservation practice standard, Critical Area Planting, Code 342.

### Construction Check Data/As-built

Record on survey notepaper, SCS-ENG-28, or other appropriate engineering paper. Survey data will be plotted on plans in red. The following is a list of minimum data needed for As-Built:

1. Documentation of site visits on CPA-6. Include the date, who performed the inspection, specifics as to what was inspected, all alternatives discussed, and decisions made and by whom;
2. Actual dimensions of installed structure;
3. Verification of adequate foundation preparation;
4. Documentation of installation of foundation drainage;
5. Documentation of reinforcing steel and proper concrete installation, if applicable;
6. Condition of precast panels, if applicable;
7. Statement on seeding and fencing;
8. Final quantities and documentation for quantity changes, and materials certification;
9. Sign and date checknotes and plans by someone with appropriate approval authority. Include statement that practice meets or exceeds plans and NRCS practice standards.

REFERENCES

1. Arkansas Cooperative Extension Service. *Basic Operating Procedures*. University of Arkansas, 2201 Brookwood Drive, P.O. Box 391, Little Rock, Arkansas 72203. (501) 671-2000.
2. Arkansas Cooperative Extension Service. *Suggested Composter Size*. University of Arkansas, 2201 Brookwood Drive, P.O. Box 391, Little Rock, Arkansas 72203. (501) 671-2000.
3. Delaware Cooperative Extension Service, Delaware *Two-Stage Composter*; Construction Details, 1988.
4. USDA, Natural Resources Conservation Service. *Animal Waste Management Field Handbook*
5. USDA Natural Resources Conservation Service, *National Engineering Handbook*, Part 650
6. USDA, Natural Resources Conservation Service, *Maryland Field Office Technical Guide, Section IV, Standards and Specifications*;
7. USDA Natural Resources Conservation Service, *National Handbook of Conservation Practices*;



**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD  
MULCHING**

(Ac.)

**CODE 484**

**DEFINITION**

Applying plant residues or other suitable materials produced off site, to the land surface.

The mulch material shall be evenly applied and, if necessary, anchored to the soil. Tackifiers, emulsions, pinning, netting, crimping or other acceptable methods of anchoring will be used if needed to hold the mulch in place for specified periods.

**PURPOSE**

- Conserve soil moisture
- Reduce energy use associated with irrigation
- Moderate soil temperature
- Provide erosion control
- Suppress weed growth
- Facilitate the establishment of vegetative cover
- Improve soil quality
- Reduce airborne particulates

As a minimum, manufactured mulches shall be applied according to the manufacturer's specifications.

Mulching operations shall comply with federal, state, and/or local laws and regulations during the installation, operation, and maintenance of this practice.

Mulch material shall be relatively free of disease, pesticides, chemicals, noxious weed seeds, and other pests and pathogens.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to all lands where mulches are needed. This practice may be used alone or in combination with other practices.

**Additional Criteria to Conserve Soil Moisture and/or Reduce Energy Use Associated with Irrigation**

Mulch materials applied to the soil surface shall provide at least 60 percent surface cover to reduce potential evaporation.

**CRITERIA**

**General Criteria Applicable to All Purposes**

The selection of mulching materials will depend primarily on site conditions and the material's availability. Mulch materials shall consist of natural and/or artificial materials that are environmentally safe such as plant residue, wood bark or chips, gravel, plastic, fabric, rice hulls, or other equivalent materials of sufficient dimension (depth or thickness) and durability to achieve the intended purpose for the required time period.

**Additional Criteria to Moderate Soil Temperature**

Mulch materials shall be selected and applied to obtain 100 percent coverage over the area treated. The material shall be of a significant thickness to persist for the period required for the temperature modification.

Prior to mulching, the soil surface shall be prepared in order to achieve the desired purpose.

**Additional Criteria to Provide Erosion Control**

When mulching with cereal grain straw or grass hay, apply at a rate to achieve a minimum 70 percent ground cover. Mulch rate shall be determined using current erosion prediction technology to reach the soil erosion objective.

When mulching with wood products such as wood chips, bark, or shavings or other wood

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service State Office or visit the Field Office Technical Guide.

**NRCS, MD  
April 2012**

materials, apply a minimum 2-inch thickness.

When mulching with gravel or other inorganic material apply a minimum 2 inch thickness and shall consist of pieces 0.75 to 2 inches in diameter.

#### **Additional Criteria to Suppress Weed Growth**

The thickness of mulch will be determined by the size of the plant being mulched. Mulches shall be kept clear of the stems of plants where disease is likely to occur. Mulches applied around growing plants or prior to weed seedling development shall have 100 percent ground cover. Thickness of the mulch shall be adequate to prevent emergence of targeted weeds. Plastic mulches may be used.

#### **Additional Criteria to Establish Vegetative Cover**

Mulch shall be applied at a rate that achieves a minimum of 70 percent ground cover to provide protection from erosion and runoff and yet allow adequate light and air penetration to the seedbed to ensure proper germination and emergence.

#### **Additional Criteria to Improve Soil Quality**

Apply mulch materials with a carbon to nitrogen ratio (C:N) less than 30 to 1 so that soil nitrogen is not immobilized by soil biota. Do not apply mulch with C:N less than 20:1 to an area of designed flow in watercourses.

Use the Soil Conditioning Index to assess soil quality impacts and to determine the type and rate of the mulching material.

#### **Additional Criteria to Reduce Airborne Particulate Matter from Wind Erosion**

Mulch rate shall be determined using current wind erosion prediction technology to reach the soil erosion (movement of particulates offsite) objective.

### **CONSIDERATIONS**

Evaluate the effects of mulching on evaporation, infiltration, and runoff. Mulch material may affect microbial activity in the soil surface, increase infiltration, and decrease runoff, erosion, and evaporation. The temperature of the surface runoff may also be lowered.

Mulch material used to conserve soil moisture should be applied prior to moisture loss. Prior to mulching, ensure soil under shallow rooted

crops is moist, as these crops require a constant supply of moisture.

Mulch materials with a high water holding capacity and/or high impermeability to water droplets may adversely affect the water needs of plants.

Fine textured mulches (e.g. rice hulls) which allow less oxygen penetration than coarser materials should be no thicker than 2 inches.

Organic materials with C:N ratios of less than 20:1 will release nitrate-nitrogen which could cause water quality impairments.

Mulching may also provide habitat for beneficial insect and provide pest suppression.

Clear and infra-red transmissible (IRT) plastics have the greatest warming potential. They are transparent to incoming radiation and trap the longer wavelengths radiating from the soil. Black mulches are limited to warming soils by conduction only and are less effective.

Clear mulches allow profuse weed growth and may negate the benefits of soil warming. Black mulches provide effective weed control. Wavelength selective (IRT) plastic provides the soil warming characteristics of clear mulch with the weed control ability of black mulch.

Low permeability mulches (e.g. Plastic) may increase concentrated flow and erosion on un-mulched areas.

Consider potential toxic allelopathic effects that mulch material may have on other organisms. Animal and plant pest species may be incompatible with the site.

Consider the potential for increased pathogenic activity within the applied mulch material.

Keep mulch 3 to 6 inches away from plant stems and crowns to prevent disease and pest problems. Additional weed control may be needed around the plant base area.

Deep mulch provides nesting habitat for ground-burrowing rodents that can chew extensively on tree trunks and/or tree roots. Light mulch applied after the first cold weather may prevent rodents from nesting.

Some mulch material may adversely affect aquatic environments through changes in water chemistry or as waterborne debris. Consider placing mulch in locations that minimizes these risks.

Consider potential effects of soil physical and chemical properties. Refer to soil survey data as a preliminary planning tool for assessment of areas. Consult the Web Soil Survey at: <http://websoilsurvey.nrcs.usda.gov/app/> to obtain Soil Properties and Qualities information.

#### PLANS AND SPECIFICATIONS

Specifications shall be prepared for each site and purpose and recorded using approved specification sheets, job sheets, technical notes, narrative statements in the conservation plan, or other acceptable documentation.

Documentation shall include:

- Purpose of the Mulch
- Type of mulch material used
- The percent cover and/or thickness of mulch material
- Timing of application
- Site preparation
- Listing of netting, tackifiers, or method of anchoring, and
- Operation and maintenance.

#### OPERATION AND MAINTENANCE

Mulched areas will be periodically inspected, and mulch shall be reinstalled or repaired as needed to accomplish the intended purpose.

Evaluate the effectiveness of the mulch (application, amount of cover provided, durability, etc.) and adjust the management or type of mulch to better meet the intended purpose(s).

Removal or incorporation of mulch materials shall be consistent with the intended purpose and site conditions.

Operation of equipment near and on the site shall not compromise the intended purpose of the mulch.

Prevent or repair any fire damage to the mulch material.

Properly collect and dispose of artificial mulch material after intended use.

Monitor and control undesirable weeds in mulched areas.

#### REFERENCES

Agriculture and Agri-Food Canada. 2000. Plastic mulches for commercial vegetable production. Canada-Saskatchewan Irrigation Diversification Centre. Outlook, Saskatchewan.

Renard, K.G., G.R. Foster, G.A. Weesies, D.K. McCool, and D.C. Yoder, Coordinators. 1997. Predicting soil erosion by water: A guide to conservation planning with the Revised Universal Soil Loss Equation (RUSLE). U.S. Department of Agriculture, Agriculture Handbook No. 703.

Shaffer, M.J., and W.E. Larson (ed.). 1987. NTRM, a soil-crop simulation model for nitrogen, tillage and crop residue management. USDA Conserv. Res. Rep. 34-1. USDA-ARS.

Toy, T.J., and G.R. Foster. (Ed.) 1998. Guidelines for the use of the Revised Universal Soil Loss Equation (RUSLE) Version 1.06 on mined lands, construction sites, and reclaimed lands. USDI, OSMR.

USDA, NRCS. 2011. National Agronomy Manual. 190-V, 4<sup>th</sup> Ed. Washington, D.C.

**Guide to Mulch Materials, Rates and Uses**

Mulch Materials	Quality Standards	Application Rates		Depth of Application	
		per 1,000 sq. ft.	per Acre		
Wood chips or shavings	Green or air dried. Free from objectionable coarse materials.	500-900 lbs.	6 tons	2" - 7"	Has about th application a less N/ton (1 Resistant to Decomposes
Wood Fiber Cellulose (Partly digested wood fibers)	Dyed green. No growth inhibiting factors. Air-dried 30% fibers 3.7 mm or longer.	30 lbs.	1500 lbs.		When applie critical areas Apply with h required. Pa Use only on and during o Curosol or er hold mulch o
Leaves	No plastic bags, or household debris.	375-700 lbs.	8-15 tons	3" - 6"	Must be spre delivery. Mus next growing be done with Incorporator with chisel pl should' ev state a. or
Cornstalks, shredded or chopped	Air-dried, shredded into 8" to 12" lengths	150-300 lbs.	4-6 tons		Effective for slow to deco mulch on crc blowing.
Grass clippings	Unbagged, free of debris; minimal odor	700-1400 lbs.	15-30 tons	1" - 2"	Obtain neces spread withir Incorporate v crop establis

**Guide to Mulch Materials, Rates and Uses**

Mulch Materials	Quality Standards	Application Rates		Depth of Application	
		per 1,000 sq. ft.	per Acre		
Filter Fabrics	Woven or Spun	Variable			
Straw or coconut fiber or combination	Photodegradable plastic net on one or two sides	most are 6.5 ft x 83.5 ft.	81 rolls		Designed to water flow in 60 sq. yds per
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A – 1-1/2"	9 cu. Yds.		3:	Excellent mulch around wood Use 2B when Frequently used better weed
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. (2-3 bales_	2 T (100-120 Bales)	Cover about 90% of surface	Use straw w/ for more than wind blowing the most coarse material. Bees germinating :
Peat Moss	Dried, compressed free of coarse	200-400 cu. ft.	1/2-1 T	2" - 4"	Most effective ornamentals unless kept v Excellent mulch
Jute Twisted Yarn	Undyed, unbleached plain weave Warp 78 ends/yd 60-90 lbs/roll	48" x 50 yds or 48"x 75 yds.			Use without ; as in manufa

Guide to Mulch Materials, Rates and Uses					
Mulch Materials	Quality Standards	Application Rates		Depth of Application	
		per 1,000 sq. ft.	per Acre		
Excelsior Wood Fiber Mats	Interlocking web of excelsior fibers with photodegradable plastic netting	48" x 100" 2 sided plastic 48" x 180" 1 sided plastic			Use without for seed estab per manufac Approx. 72 lb plastic on bo plastic for ce
Glass Fiber	1/4" thick, 7/16" diameter holes on 1" centers; 56 lb. rolls.	72" x 30 yds.			Use without with T bars a specification
Plastic	2-4 mils	Variable			Use black fo moisture cor control for sr

Mulch Anchoring Guide Specification Sheet		
Anchoring Method or Material	Kind Of Mulch To Be Anchored	How
<b>Mechanical</b>		
Asphalt spray emulsion	Compost, wood chips wood shaving, hay or straw	Apply with suitable s following rates: asph use 200 gal/ac, on le asphalt: (rapid, medi gallons per sq/yd.; 4
Wood cellulose fiber	Hay or straw	Apply with hydro see mulching. Use 750 ll Some products cont:
Pick chain	Hay or straw manure compost	Use on slopes steep slopes with suitable
Mulch anchoring tool or disk	Hay or straw, manure/mostly straw	Set in straight positio with suitable power e should be "tucked" in
<b>Chemical</b>	Hay or straw	Apply Terra Tack AF water or Aerospray7 manufacturer's instru during rain. A of ot temperature higher t

NRCS, MD

April 2012

**Mulch Anchoring Guide Specification Sheet**

Anchoring Method or Material	Kind Of Mulch To Be Anchored	How
<b>Manual</b>		
Peg and twine	Hay or straw	After mulching, divide approx. 1 sq.yd. Drive within 2" to 3" of soil surface by stretching crisscross pattern or around each peg with pegs flush with soil surface. Maintenance is plan
Mulch netting	Hay or straw	Staple the light-weight or plastic nettings to manufacturer's recommended biodegradable. Most for foot traffic.
Soil & Stones	Plastic	Plow a single furrow covered with plastic, into the furrow and place plastic. Use stones in other places as needed.
Cut-in	Hay or straw	Cut mulch into soil with spade. Make cuts in apart. Most successful soils.



## Sayers, Margery

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**From:** Plummer, David  
**Sent:** Wednesday, September 13, 2017 9:31 AM  
**To:** Sayers, Margery  
**Subject:** Howard SCD Testimony packet  
**Attachments:** NRCSMulchingStandardCode484.pdf

Good Morning Margery,

Thank you so much for letting me know that the Mulching Standard from the packet we submitted at the Public Hearing on Monday was not complete. As I dug around this morning looking for a copy of the Mulching Standard I realized that the one I provided the other night was an older version, and that NRCS has actually updated the standard. I have attached the **updated standard** and if possible I would appreciate it if you would include this version as part of our submission rather than the outdated version. This new version does not have the chart in question, so that will eliminate the confusion with the missing sections of the chart.

I will be out in the field the remainder of the day, but if you have questions about anything I will be back in tomorrow. Thanks again for following up with us on this! Regards - David

David C. Plummer, District Manager  
Howard Soil Conservation District  
14735 Frederick Road  
Cooksville, MD 21723  
410-313-0680; [www.howardscd.org](http://www.howardscd.org)

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**MULCHING**

(Ac.)

**CODE 484**

**DEFINITION**

Applying plant residues or other suitable materials produced off site, to the land surface.

**PURPOSE**

This practice supports one or more of the following purposes:

- Conserve soil moisture – Resource concern (INSUFFICIENT WATER – Inefficient moisture management).
- Reduce energy use associated with irrigation – Resource concern (INEFFICIENT ENERGY USE – Farming/ranching practices and field operations and INSUFFICIENT WATER – Inefficient moisture management).
- Provide erosion control – Resource concern (SOIL EROSION– Excessive bank erosion from streams shorelines or water conveyance channels, and/or SOIL EROSION – Concentrated flow erosion, and/or SOIL EROSION - Sheet, rill, & wind erosion).
- Facilitate the establishment of vegetative cover – Resource concern (DEGRADED PLANT CONDITION – Undesirable plant productivity and health).
- Improve soil health – Resource concern (SOIL QUALITY DEGRADATION – Organic matter depletion).
- Reduce airborne particulates – Resource concern (AIR QUALITY IMPACTS - Emissions of Particulate Matter - PM - and PM Precursors).

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to all lands where mulches are needed. This practice may be used alone or in combination with other practices.

**CRITERIA**

**General Criteria Applicable to All Purposes**

The selection of mulching materials will depend primarily on the purpose(s) for the mulch application site conditions and the material's availability. Mulch materials shall consist of natural and/or artificial materials that are of sufficient dimension (depth or thickness) and durability to achieve the intended purpose for the required time period.

Prior to mulching, the soil surface shall be prepared in order to achieve the desired purpose.

The mulch material shall be evenly applied and, if necessary, anchored to the soil. Tackifiers, emulsions, pinning, netting, crimping or other acceptable methods of anchoring will be used if needed to hold the mulch in place for specified periods.

In cases where excessive furrow erosion may occur due to concentrated flows from plastic mulches, appropriate measures will be taken to protect the furrows.

As a minimum, manufactured mulches shall be applied according to the manufacturer's specifications.

Mulch material needs to be of a quality to meet the intended purpose.

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#) or visit the [Field Office Technical Guide](#).

**NRCS-NHCP  
December 2013**

**Additional Criteria to Conserve Soil Moisture and/or Reduce Energy Use Associated with Irrigation**

Mulch materials applied to the soil surface shall provide at least 60 percent surface cover to reduce potential evaporation.

**Additional Criteria to Provide Erosion Control and to Reduce Airborne Particulates**

When mulching with cereal grain straw or grass hay, apply at a rate to achieve a minimum 70 percent ground cover. Mulch rate shall be determined using current erosion prediction technology to reach the soil conservation objective.

When mulching with wood products such as wood chips, bark, or shavings or other wood materials, apply a minimum 2-inch thickness comprised of particles that remain in place during heavy rainfall and or strong wind events.

When mulching with gravel or other inorganic material apply a minimum 2 inch thickness and shall consist of pieces 0.75 to 2 inches in diameter.

**Additional Criteria to Establish Vegetative Cover**

Mulch shall be applied at a rate that achieves a minimum of 70 percent ground cover to provide protection from erosion and runoff and yet allow adequate light and air penetration to the seedbed to ensure proper germination and emergence.

**Additional Criteria to Improve Soil Health**

Use plant-based mulching materials of suitable quantity and quality to add organic matter, provide food and shelter for soil biota, and protect the soil surface from raindrop impact and crusting, while allowing for adequate soil aeration.

Apply mulch materials with a carbon to nitrogen ratio (C:N) less than 30 to 1 so that soil nitrogen is not immobilized by soil biota. Do not apply mulch with C:N less than 20:1 to an area of designed flow in watercourses.

An evaluation of the system using the current approved soil conditioning index (SCI) procedure results in zero or higher.

**CONSIDERATIONS**

Evaluate the effects of mulching on evaporation, infiltration, and runoff. Mulch material may affect microbial activity in the soil surface, increase infiltration, and decrease runoff, erosion, and evaporation. The temperature of the surface runoff may also be lowered.

Mulch material used to conserve soil moisture should be applied prior to moisture loss. Prior to mulching, ensure soil under shallow rooted crops is moist, as these crops require a constant supply of moisture.

Mulch materials with a high water holding capacity and/or high impermeability to water droplets may adversely affect the water needs of plants.

Fine textured mulches (e.g. rice hulls) which allow less oxygen penetration than coarser materials should be no thicker than 2 inches.

Avoid excessively thick or tightly packed mulches that can result in soggy, anaerobic conditions at the soil surface during wet weather; or prevent rainfall or overhead irrigation from reaching the soil during times of moisture deficit

Organic materials with C:N ratios of less than 20:1 will release nitrate-nitrogen which could cause water quality impairments.

Finely-divided plant residues (e.g., sawdust) and those rich in soluble carbohydrates (e.g., fresh green-chopped sorghum-sudangrass, corn, or other grasses) that have a C:N ratio greater than 30 can tie up soil N and necessitate supplemental N applications on crops. Coarser materials such as grain straw and chipped brush usually do not reduce crop-available soil N levels unless and until they are incorporated into the soil by tillage or cultivation.

Mulching may also provide habitat for beneficial insect and provide pest suppression.

Use mulch of sufficient ground cover, and suitable thickness and texture to provide habitat for ground beetles, spiders, and other predators of weed seeds and crop pests. Select crops to be mulched, mulching materials, and rates of application that do not contribute to pest problems. Avoid excessively thick or tightly-packed mulches, which can interfere with the movement of ground beetles and other

beneficial organisms, and may increase the incidence of crop pests and diseases.

During the period when weed seed predation is desired and predators are most active, avoid pesticide applications or pesticide exposures that could adversely affect weed seed consumers.

Low permeability mulches (e.g. Plastic) may increase concentrated flow and erosion on un-mulched areas.

Light-reflecting mulches such as white or aluminized plastic film or bright straw can repel some pests.

Select mulching materials and methods that are compatible with the crop and site. Consider potential beneficial or detrimental effects of mulching materials on the biotic community surrounding the crop, including beneficial soil micro- and macro-organisms, as well as plant pathogens and plant pests. These effects are specific to site, mulch, and crop, and may include enhanced soil microbial activity, increased or reduced levels of crop diseases, and toxic (allelopathic) activity against the crop, weeds, or other beneficial or pest organisms.

Keep mulch 3 to 6 inches away from plant stems and crowns to prevent disease and pest problems. Additional weed control may be needed around the plant base area.

Deep mulch provides nesting habitat for ground-burrowing rodents that can chew extensively on tree trunks and/or tree roots. Light mulch applied after the first cold weather may prevent rodents from nesting.

Some mulch material may adversely affect aquatic environments through changes in water chemistry or as waterborne debris. Consider placing mulch in locations that minimizes these risks.

Consider potential effects of soil physical and chemical properties. Refer to soil survey data as a preliminary planning tool for assessment of areas. Consult the Web Soil Survey at: <http://websoilsurvey.nrcs.usda.gov/app/> to obtain Soil Properties and Qualities information.

For all organic or transitioning to organic operations, follow all National Organic Program (NOP) rules.

## PLANS AND SPECIFICATIONS

Specifications shall be prepared for each site and purpose and recorded in the approved implementation requirements documentation.

Documentation shall include:

- Purpose of the Mulch
- Type of mulch material used
- The percent cover and/or thickness of mulch material
- Timing of application
- Site preparation
- Listing of netting, tackifiers, or method of anchoring, and
- Operation and maintenance.

## OPERATION AND MAINTENANCE

Mulched areas will be periodically inspected, and mulch shall be reinstalled or repaired as needed to accomplish the intended purpose.

Evaluate the effectiveness of the mulch (application, amount of cover provided, durability, etc.) and adjust the management or type of mulch to better meet the intended purpose(s).

Removal or incorporation of mulch materials shall be consistent with the intended purpose and site conditions.

Operation of equipment near and on the site shall not compromise the intended purpose of the mulch.

Prevent or repair any fire damage to the mulch material.

Properly collect and dispose of artificial mulch material after intended use.

Monitor and control undesirable weeds in mulched areas.

## REFERENCES

- Agriculture and Agri-Food Canada. 2000. Plastic mulches for commercial vegetable production. Canada-Saskatchewan Irrigation Diversification Centre. Outlook, Saskatchewan.
- Renard, K.G., G.R. Foster, G.A. Weesies, D.K. McCool, and D.C. Yoder, Coordinators. 1997.

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USDA, NRCS. 2011. National Agronomy Manual. 190-V, 4<sup>th</sup> Ed. Washington, D.C

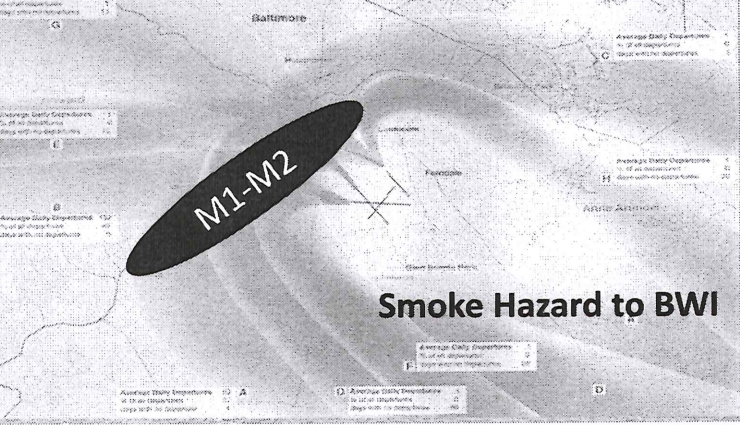


**Fire Code Height? Monitoring ?  
Fire Department Access To Water ?**

*Brent Loveless  
CB60 -  
2017*



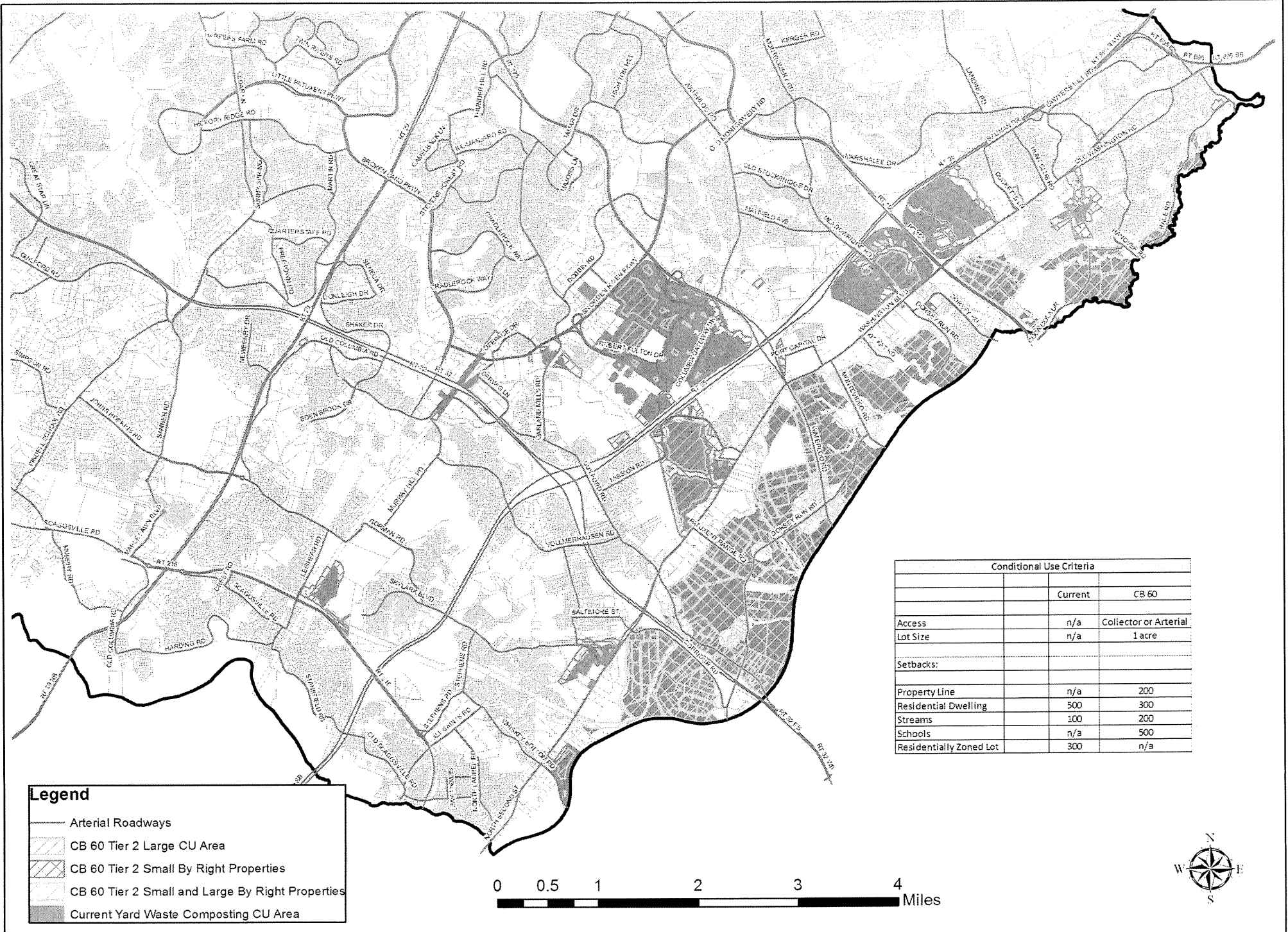
Exterior		Interior		Weight		Door Opening	
Length	Width	Length	Width	NET	GROSS	Width	Height
12.142 m	2.435 m	7'-6 15/32"	7'-9 5/16"	16,200 lb	18,380 lb	2.342 m	2.280 m
		12.032 m	2.352 m	10,480 kg	26,409 kg		
						<b>C.U.M</b>	<b>CU-FT</b>
						87.3	2.185
<b>Remark:</b>							







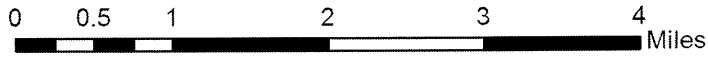
# CB 60 Composting Comparison in M1 and M2



Conditional Use Criteria		
	Current	CB 60
Access	n/a	Collector or Arterial
Lot Size	n/a	1 acre
Setbacks:		
Property Line	n/a	200
Residential Dwelling	500	300
Streams	100	200
Schools	n/a	500
Residentially Zoned Lot	300	n/a

**Legend**

- Arterial Roadways
- ▨ CB 60 Tier 2 Large CU Area
- ▩ CB 60 Tier 2 Small By Right Properties
- ⋯ CB 60 Tier 2 Small and Large By Right Properties
- Current Yard Waste Composting CU Area





# CB 60 NWWRF Comparison in M1 and M2





P.O. Box 100 Lisbon, MD 21765 410-489-5206 Fax 410-489-4316  
[levellandinc.com](http://levellandinc.com)

Howard County Council

All Council Members

Re: Written Testimony concerning ZRA 180

Dear Council Members,

Please consider the following written testimony regarding the proposed CB 60 (ZRA 180). This zoning amendment will have an effect not only my business, but also on the future of farming and business' that I hope to involve my children in someday. I have reviewed the document in full and have proposed some common-sense changes that are intended to make the ZRA more practical. As written, this amendment restricts future growth in this area to a level that will become detrimental to the county as more recycling and waste processing is needed.

Please use references for the line items in the document:

128.0-1: Permits for Special Farm Uses- Add possibilities for NWWRF and small tier I compost facilities. Size to be determined by existing site location and suitability for the activity. This would give farmers the ability to start a supplemental business as well as provide a needed service for their area. This option should be a streamlined way for a farmer to operate a small facility without the need for public input should the site location lend itself to it.

128.0-9: Compost Facility

A: The composting facility shall be sized appropriately for the selected location and limited only by the factors affecting the site such as: topography, road access, availability of water, ability of owner to manage the size and scale of the operation, etc.

C: *This is the most important part of the bill in my mind.* By stating "On site sales are limited to product pick up by farming vehicles, pick-up trucks or non-commercial vehicles", you are setting the precedence for the rest of our commodities such as cattle, grain and hay to eventually be subject to the same. Farm produced products should not be limited to less than standard legal load limits set by the state. Trying to transport commodities in small loads results in more trips, more traffic and a much less efficient operation thus negating the benefit of an alternative

endeavor. It has not been the county's responsibility to regulate load sizes for farming or other transport activities nor should it engage in it now. The term "commercial vehicle" is applied by the state to implement business responsibility, it has nothing to do with size. A pickup truck or car can be considered a commercial vehicle if it is registered to a company. Our facility in Lisbon has operated for almost 4 years with no complaints, violations or incidents of any kind buy our trucks or customers' trucks. Our loads per day can range from 0-25 per day and we are very proactive about keeping our impact on the surrounding area to a minimum.

#### 128.0-10: Emergency NWWRF

- I do not believe that this category is necessary, storm clean-up is similar to conventional land clearing in that it is sporadic and does not require all of the functions of a NWWRF. If deemed necessary, I propose a change to the name to Temporary Wood Waste Processing Area. Unlike a permitted NWWRF, this situation will not require material to be cured, turned or monitored and will have a very limited effect on the area around it. The material processed from storm clean-up is temporary by nature and does not lend itself to any MDE permitting. If this was the case every construction site would be required to get an MDE permit just to clear a site, very unnecessary.

#### Section 131.0 Conditional Uses

131.0.O.1A: May be located on ALLP property if it serves the purpose of the current farming operation or aids in the viability of the operation by providing a needed revenue stream. Consideration should also be given to the location and the need for such a facility in the area. The size of the facility can be proposed but will ultimately be approved by the examiner.

131.0.O.1C: In RC & RR, the max size of the facility should be determined by the ability of the owner to manage the size of the facility and the ability of the parcel to accept the activity. In other words, an arbitrary regulation of 5 acres may not fit every scenario. There may be a combination of owner and property that lends itself to a larger operation due to its location and distance from neighbors, etc. In this case, the county should give consideration to the benefit that the facility provides to the county as a whole with regards to waste recycling.

131.0.O.D4: A site plan depicting sediment and erosion control as well as water quality treatments should be submitted to and approved by the Howard Soil Conservation District.

It is a well-known fact that the state of Maryland is requiring counties to encourage more recycling in the future to ease the burden on individual larger municipal sites. With the appropriate Tier of material, this can provide a needed new income stream for farms. The changes I have proposed above would provide for the growth of operations should it become needed in the future. Keep in mind that composting does not necessarily mean that a farm will import large amounts of material for this process. On our farm, we have chosen to compost some of our waste materials to improve poor areas of soil.

Due to the constraints of time, I have limited my comments to just the document itself. Being the holder of MDE permits for both compost and natural wood waste, I am engaged in recycling every day and would welcome the opportunity to answer any questions that the council may have about our current or future operation.

***As a final point, I would like to note that only 2 members of the council have interacted with myself and my brother about this bill. Being two of a very few people that this bill will impact, I struggle to see how the remaining 3 members can cast an educated vote without speaking to us personally. We welcome your dialogue.***

Thank you for your consideration.

Justin Brendel, President (and 4<sup>th</sup> generation Howard County farmer and entrepreneur)

Zack Brendel, Vice President (and 4<sup>th</sup> generation Howard County farmer and entrepreneur)

Level Land, Inc.

Joseph Z. Brendel

2175 Woodbine rd.

In opening I would like to thank the county for taking a large amount of time to deal with this issue. I was on both the public Task for and the DPZ task group. Through all the information I received it is my understanding that with current state MDE Green Waste Initiative the alpha ridge facility will not be able to handle what is required to be recycled in the future. In fact the county has now encouraged us to start reporting our recycled volumes to help them meet there goals. This is done through the Work Green Howard program and is promoted to all business to start recycling more.

Level land Inc. set up a mulch and compost operation before this was an issue. The location was picked with traffic, water, and setbacks in mind. . Transporting the materials is done on the same commercial vehicles that transport other farm products. They are federally and state regulated for safe operation. We are permitted with the state and as of now have received little or no complaints from the public. In fact during my time co-chairing the Task for we received acceptance of the operation from the task for on both sides. Our Mulch and compost operation has been visited by county officials MDE and some members of the mulching task force. It is an example of how these operations can be completely functional if first a site by site analysis is given. The "harmful" mulch we produce is used on many houses in the county as well as playgrounds and schools. As for the "harmful" compost it is added to make soil blends to treat rain water from these same houses and run off from the highways. The compost is also used enhance soils to have beautiful green lawn in places like Dayton and Woodbine.

Traditional agriculture in Howard County is slowly trending away from what I knew as farming growing up here. With a massive decrease in farmland and a massive increase in residents. Farmers are looking for new ways to find an income steady income stream while working with less acres. Many have set up CSA's Horse academies, Breweries, petting farms and produce. We have found compost and mulch as our extra income. It is an organic product that can be produced and sold locally. People assume that the owners of the AAPL parcels are sitting on a huge pile of money from being in the program and are now taking advantage of the preservation program. In most cases this is not true. I did not receive any money for my preserved farm ground. The only money I handle from my preserved farm is the check I write for property taxes. With some work I hope that we will be able to operate and also provide anoutlet for the county's organics under CB 60.

J. Zack Brendel

[Zack@levellandscape.com](mailto:Zack@levellandscape.com)

4109841430



### **Testimony from Victor Velculescu, M.D., Ph.D. regarding proposed legislation CB60**

My name is Dr. Victor Velculescu and I reside in Dayton, MD. I am speaking today on behalf of Big Branch Overlook, our residential organization.

I am a physician-scientist and serve as Co-Director of Cancer Biology at the Sidney Kimmel Comprehensive Cancer Center at the Johns Hopkins University School of Medicine. I have been researching cancer for over 25 years, and have written extensively on this topic, publishing over 150 articles in the medical literature. I have also been on the Board of Directors of the American Association of Cancer Research, the largest cancer research organization in the United States.

I have been a resident in Dayton, MD for the past 15 years, and have enjoyed with my family the beautiful rural setting of Howard County. This county is well known nationally not only for its beauty, but also for its high educational standards in its public schools, its high quality of life, and its high level of civic institutions, and for all these you should be commended. Therefore, it has been a quite surprise to me that on a topic as simple as what we will discuss in the proposed CB60 bill, that the leadership of Howard County is taking steps backwards in promoting the health and safety of its citizens.

Frankly, I am speaking here today because I think that the proposed legislation CB60, which would essentially permit industrial scale mulching and composting operations in agricultural and residential areas, is a clear and present danger to the residents of Howard County. These dangers are real – they are documented by the medical literature and are highlighted by well-known health organizations, including the Centers for Disease Control (CDC) and the World Health Organization. The dangers from industrial mulch processing and composting include increased exposure to infectious and toxic agents, such as fungi and bacteria and their endotoxins, allergenic and carcinogenic effects of wood dust, and the inflammatory, toxic, and carcinogenic effects of organic dusts and volatile organic compounds. Although we may think of wood fragments and composting as something natural, the amount, type, and storage of materials that are generated in an industrial mulch or composting facility are no longer on a scale that we would encounter naturally or that are inherently safe.

These are not theoretical risks. I have provided in my submitted testimony a recent case report of a healthy retired gentleman that developed fungal pneumonia after exposure to mulch. He developed kidney failure and died of infections months later. It was clear that fungal spores from mulch were the route of infection. There are dozens of reports in the literature from throughout the world that are related to infectious agents in mulch, primarily fungi and bacteria. Fungal spores can travel large distances on the order of miles and are of particular risk to immune comprised individuals, including children and the elderly.

The dangers of composting can be even higher because they lead to generation of not only infectious microbes, but also of volatile organic compounds that may be toxic. Such chemicals may lead to renal, hematological, neurological and liver damage. Composting processes can lead to increases of hazardous metals and organic substances in contaminated water, and burial of animal cancer carcasses can lead to significant contamination of soil and groundwater with antimicrobials and other chemicals. As a clearly documented example in San Jose, California, hundreds of individuals had significant health effects simply because they lived near a composting yard. This example showed the

importance of placing compost facilities with adequate setbacks from residential areas, some recommending two miles from residential and high travel areas.

In addition to infectious agents, and volatile compounds, a clear health risk is also the exposure to wood and organic dust from mulch and composting facilities. The CDC has documented that wood dust particles are associated with a variety of health effects including dermatologic effects such as dermatitis, allergic respiratory effects including asthma, and mucosal and nonallergic respiratory effects, including bronchitis, irritation, bleeding, and obstruction, as well as coughing, wheezing, sinusitis, and prolonged colds. Organic dusts from composting can lead to pulmonary inflammation, occupational asthma, chronic bronchitis, gastrointestinal disturbances, fevers, irritation of the eyes, ear and skin. As one example among many, a well-documented study from 2003 showed increased risk of bronchitis, coughing, shortness of breath, fatigue and eye symptoms in residential areas hundreds of meters from a composting site. As local examples compiled Mr. James Nickel, a number of individuals living up several miles from the Oak Ridge Farms facility in Woodbine, MD have reported respiratory related issues, and two were found to have wood particulate matter in their respiratory system.

In addition to these issues, the health effect that is of most concern to me is that many aspects of industrial mulching and composting lead to dust particles and compounds that have been categorized by the World Health Organization (WHO) and the CDC as carcinogenic or cancer causing. Very simply these organizations indicate "Wood dust causes cancer of the nasal cavity and paranasal sinuses, and of the nasopharynx. It is carcinogenic to humans." There are hundreds of papers in the medical literature that document the increased risk from wood dust for nasal cancers, lung cancers, Hodgkin's lymphoma, and potentially other kinds of cancers, as well as volatile organic compounds as a risk factor for leukemia and nasal carcinoma.

Carcinogens by definition increase the risk of cancer, especially to those exposed over longer periods of time. Howard County has many communities where there are a large number of children and other residents that spend a significant amount of time outdoors and would be directly exposed to the health risks I have described. And of course, many residents plan to live in these communities for many years, even their entire lives. To allow exposure to infectious, toxic, and carcinogenic agents from these types of facilities to a large number of individuals in residential areas does not seem to be in the public interest. As I have said previously, this would make Howard County the equivalent of a petri dish of health experimentation. In addition to the health effects on individuals, such legislation would obviously expose the county and indirectly all residents to liability issues on a variety of fronts. Given this and other testimony that you have heard, I would urge members of the County Council to support legislation that would limit these type of industrial mulching and composting operations to industrial M-1, M-2 and solid waste (SW) areas and prevent them from occurring in farming, agricultural, conservation, and residential areas in Howard County.

I thank you for your attention.

# **Health Hazards of Industrial Wood Waste and Composting**

Victor Velculescu, M.D., Ph.D.  
Sidney Kimmel Comprehensive Cancer Center  
Johns Hopkins University

Submitted to Howard County Task Force, December 14, 2014

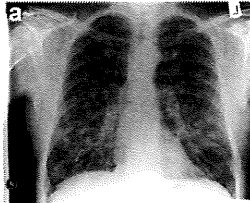
## **Health Hazards**

Industrial mulch processing and composting results in increased health risks

- Mulch infectious agents – fungi and bacteria
- Wood dust – allergic and mucosal effects
- Wood dust – cancer
- Composting – volatile compounds, organic dust, infectious agents
- Exposure and risk

## Infectious agents example: acute fungal pneumonia

At presentation

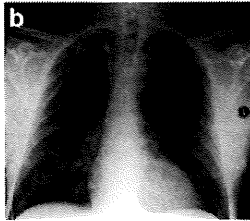


A 69 year old retired man with no significant medical history. Developed acute pneumonia after spreading tree bark mulch.

Hospitalized, developed kidney injury and failure. Remained dialysis dependent and housebound.

Died of sepsis 10 months later.

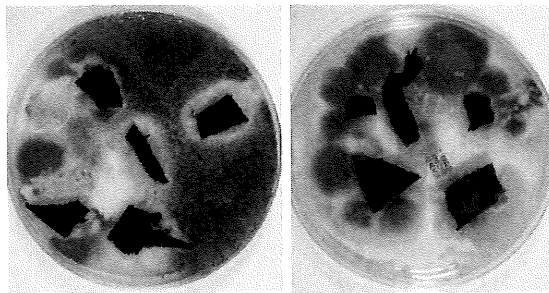
2 months later



Inhalation of fungal spores from mulch was determined be the likely route of infection.

Medical MycologyCaseReports2(2013)125-127

## Infectious agents example: acute fungal pneumonia



**Mulch culture showing growth of microorganisms  
(*Aspergillus fumigatus*, *Rhizopus* spp., *Sporobolomyces* spp. and bacteria)**

Medical MycologyCaseReports2(2013)125-127

## Studies of mulch related infections in medical literature

1: Ameratunga R, Woon ST, Vyas J, Roberts S. Fulminant mulch pneumonitis in undiagnosed chronic granulomatous disease: a medical emergency. *Clin Pediatr (Phila)*. 2010 Dec;49(12):1143-6. doi: 10.1177/0009922810370057. Epub 2010 Aug 19.

2: Siddiqui S, Anderson VL, Hilligoss DM, Abinun M, Kuijpers TW, Masur H, Witebsky FG, Shea YR, Gallin JI, Malech HL, Holland SM. Fulminant mulch pneumonitis: an emergency presentation of chronic granulomatous disease. *Clin Infect Dis*. 2007 Sep 15;45(6):673-81. Epub 2007 Aug 8.

3: Veillette M, Cormier Y, Israël-Assayaq E, Meriaux A, Duchaine C. Hypersensitivity pneumonitis in a hardwood processing plant related to heavy mold exposure. *J Occup Environ Hyg*. 2006 Jun;3(6):301-7.

4: Nagai K, Sukoh N, Yamamoto H, Suzuki A, Inoue M, Watanabe N, Kuroda R, Yamaguchi E. [Pulmonary disease after massive inhalation of *Aspergillus niger*]. *Nihon Kokyuki Gakkai Zasshi*. 1998 Jun;36(6):551-5. Japanese.

5: Weber S, Kullman G, Petsonk E, Jones WG, Olenchock S, Sorenson W, Parker, Marcelo-Baciu R, Frazer D, Castranova V. Organic dust exposures from compost handling: case presentation and respiratory exposure assessment. *Am J Ind Med*. 1993 Oct;24(4):365-74.

6: Johnson CL, Bernstein IL, Gallagher JS, Bonventre PF, Brooks SM. Familial hypersensitivity pneumonitis induced by *Bacillus subtilis*. *Am Rev Respir Dis*. 1980 Aug;122(2):339-48. PubMed PMID: 6774642.

**Dozens of examples of scientific articles from throughout the world related to infectious agents in mulch.**

**Particularly important and dangerous for immune compromised individuals.**

**Recent study found that of patients with fulminant mulch pneumonitis, half of those died of due to infection and underlying kidney disease.**

## Health Hazards

Industrial mulch processing and composting results in increased health risks

- Mulch infectious agents – fungi and bacteria
- Wood dust – allergic and mucosal effects
- Wood dust – cancer
- Composting – volatile compounds, organic dust, infectious agents
- Exposure and risk



## Health Effects of Wood Dust

From Centers for Disease Control and Prevention:

“Exposure to wood dust has long been associated with a variety of adverse health effects, including dermatitis, allergic respiratory effects, mucosal and nonallergic respiratory effects, and cancer. The toxicity data in animals are limited, particularly with regard to exposure to wood dust alone; there are, however, a large number of studies in humans.”

1988 CDC OSHA PEL Documentation

## Health Effects of Wood Dust

From *Ann Agric Environ Med* 2010, **17**, 29–44.

- **Abstract:** This paper reviews the literature on associations between dry wood dust exposure and non-malignant respiratory diseases ... The results support an association between dry wood dust exposure and asthma, asthma symptoms, coughing, bronchitis, and acute and chronic impairment of lung function. In addition, an association between wood dust exposure and rhino-conjunctivitis is seen across the studies.”

## **Dermatitis**

- “Dermatitis. There are a large number of case reports, epidemiological studies, and other data on the health effects of wood dust exposure in humans. Dermatitis caused by exposure to wood dusts is common, and can be caused either by chemical irritation, sensitization (allergic reaction), or both of these together. As many as 300 species of trees have been implicated in wood-caused dermatitis.”

1988 CDC OSHA PEL Documentation

## **Asthma**

- “Allergic respiratory effects. Allergic respiratory responses are mediated by the immune system, as is also the case with allergic dermatitis. Many authors have reported cases of allergic reactions in workers exposed to wood dust ... Asthma is the most common response to wood dust exposure”

1988 CDC OSHA PEL Documentation

## Other Lung Effects

- “Mucosal and nonallergic respiratory effects (changes in the structure and function of the nasal mucosa and respiratory tract that are caused by exposure to wood dust). These changes include nasal dryness, irritation, bleeding, and obstruction; coughing, wheezing, and sneezing; sinusitis; and prolonged colds.”

1988 CDC OSHA PEL Documentation

## Health Hazards

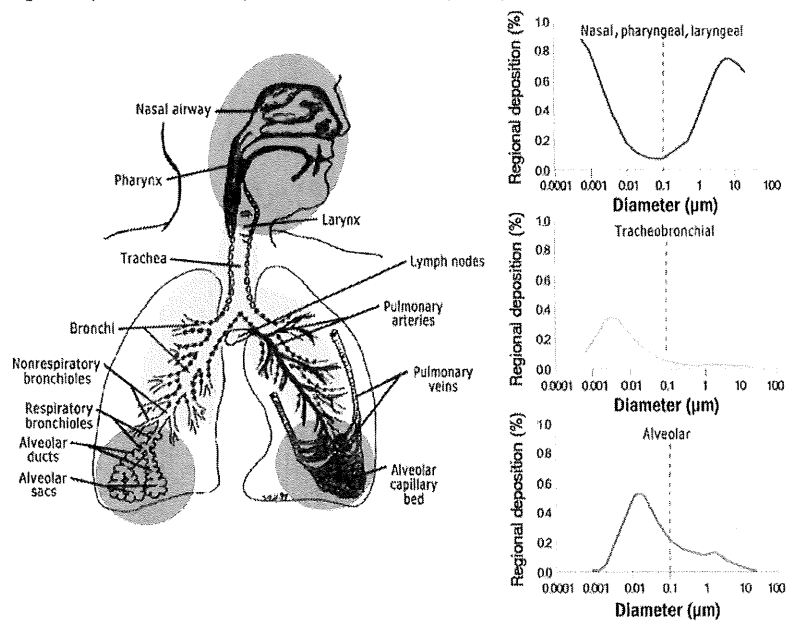
Industrial mulch processing and composting results in increased health risks

- Mulch infectious agents – fungi and bacteria
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- Composting – volatile compounds, organic dust, infectious agents
- Exposure and risk

# Cancer

- “The association between occupational exposure to wood dust and various forms of cancer has been explored in many studies and in many countries.” (CDC)
- “There is *sufficient evidence* in humans for the carcinogenicity of wood dust. Wood dust causes cancer of the nasal cavity and paranasal sinuses and of the nasopharynx. Wood dust is *carcinogenic to humans (Group 1)*.” (WHO, IARC)

Fig. 4.1 Deposition of inhaled particles in the human respiratory tract during nasal breathing



From [Shvedchikova et al. \(2007\)](#). Drawing courtesy of J Harkema. Reproduced with permission from Environmental Health Perspectives.

## Nasal Cancer

- “Summary of evidence for nasal and sinus cavity cancers. The literature clearly demonstrates an association between wood dust exposure and nasal cancer. “
- English studies first identified this link by showing a 10- to 100 times-greater incidence of nasal adenocarcinoma among those exposed to wood dust than in the general population.
- “In the United States, three studies have reported a fourfold risk of nasal cancer or adenocarcinoma ... and wood dust exposure.”

1988 CDC OSHA PEL Documentation

## Lung Cancer

- “Pulmonary cancer. A number of studies investigating the association between wood dust exposure and the development of lung cancer have been conducted.”
- Milham (1974/Ex. 1-943) found a significant excess of malignant tumors of the bronchus and lung in workers who exposed to wood dust.

1988 CDC OSHA PEL Documentation



## Hodgkin Lymphoma

- “Hodgkin's disease. Milham and Hesser concluded, on the basis of a case-cohort study of 1,549 white males dying of this disease ... that there was an association between Hodgkin's disease and exposure to wood dust.”
- Other studies concluded that men working in the wood industries in the eastern United States as well as Washington state were at special risk for Hodgkin's disease.

1988 CDC OSHA PEL Documentation

## Other Cancers

- “Other cancers. NIOSH (1987a/Ex. 1-1005) concluded that the data on the relationship between occupational exposure to wood dust and the development of cancers other than nasal, Hodgkin's disease, or lung cancers are insufficient and inconclusive.”
- Emerging evidence that risks of oral cancer increase with exposure to wood dust.

1988 CDC OSHA PEL Documentation

	<h2 style="text-align: center;">Health Hazards</h2>
	<p>Industrial mulch processing and composting results in increased health risks</p> <ul style="list-style-type: none"><li>■ Mulch infectious agents – fungi and bacteria</li><li>■ Wood dust – allergic and mucosal effects</li><li>■ Wood dust – cancer</li><li>■ Composting – volatile compounds, organic dust, infectious agents</li><li>■ Exposure and risk</li></ul>

	<h2 style="text-align: center;">Composting</h2>
	<p>A commonly used method of waste management involving aerobic, biological process of degradation of biodegradable organic matter</p>

## **Composting Health Effects – VOC's**

- Composting generates volatile organic compounds (VOCs)
- VOCs can comprise hundreds of compounds including benzene, toluene, m,p-xylene, o-xylene, styrene, formaldehyde, chloroform, ethylbenzene among others.
- High levels of VOC's observed in many studies at variety of composting sites

Environ. Sci. Technol. 1995, 29, 896-902  
J.L. Domingo, M. Nadal / Environment International 35 (2009) 382–389

## **Composting Health Effects – VOC's**

VOC's comprise substances that are

- **Carcinogenic:** examples include benzene, a risk factor for leukemia, and formaldehyde, associated with nasal carcinoma
- **Toxic:** includes many VOC's that may lead to renal, hematological, neurological and hepatic damage as well as mucosal irritation.

J.L. Domingo, M. Nadal / Environment International 35 (2009) 382–389

## **Composting Health Effects – Biologic Agents**

Composting sites due to their contents comprise infectious, allergenic, toxic, and carcinogenic agents including

- Fungi such as *Aspergillus fumigatus* (*A. fumigatus*), gram negative bacteria, and parasitic protozoa, all involved in a variety of infectious conditions
- Endotoxins produced by bacteria and fungi, including aflatoxins which are known to be associated with liver cancer

J.L. Domingo, M. Nadal / Environment International 35 (2009) 382–389

## **Composting Health Effects – Biologic Agents**

Composting sites due to their contents comprise infectious, allergenic, toxic, and carcinogenic agents including

- Organic dusts that can lead to pulmonary inflammation (acute inflammation, hypersensitive pneumonitis), occupational asthma, chronic bronchitis, gastrointestinal disturbances, fevers, and irritation of eyes, ear and skin.

J.L. Domingo, M. Nadal / Environment International 35 (2009) 382–389

## **Composting Health Effects – Animal Mortality and Leachate**

- Composting process can lead to increases in solubility of hazardous metals and organic substances in contaminated water (leachate)
- Burial of animal carcasses can lead to significant contamination of soil and groundwater with antimicrobials, steroid hormones, other veterinary pharmaceuticals

Q. Yuan et al. / Science of the Total Environment 456–457 (2013) 246–253

## **Composting Health Effects – Food Wastes and Pathogens**

- “There have been numerous studies on pathogen content in the composting process.”
- “In San Jose, California literally hundreds of people were affected by a nearby composting yard. This case illustrates the importance of carefully siting compost facilities with adequate setbacks from residential areas. One study, presented at a BioCycle conference recommended two miles isolation distance from residential and high travel areas.”

Cronin, C. Pathogens and Public Health Concerns with Composting  
Vermont Department of Environmental Conservation



## Local Example – MDE and Recycled Green Industries

- "A Woodbine company that had been processing food scraps into composted materials with commercial applications ... has ceased those operations after hearing concerns about pollution from the Maryland Department of the Environment... Food scraps present different environmental concerns than yard waste, the spokesman said. Namely, food contains "nutrients and potential pathogens" not found in yard waste, and are harmful to the environment when washed into surface and ground water, said Jay Apperson, the spokesman, in an email... The letter said water samples taken by the department on or near the company's property "confirm that the operation is generating polluted leachate and storm water and is discharging pollutants without a permit in violation of state law."

Rector, K. Baltimore Sun, Feb 6, 2012

## Real World Example of Composting Health Effects on Nearby Residents

- Health effects to a residential area from environmental outdoor pollution hundreds of meters from a composting site (Occup Environ Med 2003;60:336–342)

Reported health complaints§	SS#	Bioaerosol pollution in residential air, up to >10 <sup>6</sup> CFU m <sup>-3</sup> air		Duration of present residency >5 years	
		OR**	95% CI††	OR	95% CI
<b>Respiratory tract</b>					
Frequency of colds >5x/year	209	1.94	0.65 to 6.78	4.72	1.19 to 31.83
Bronchitis	210	3.02	1.35 to 7.06	2.91	1.29 to 7.03
Waking up due to coughing	202	2.70	1.23 to 6.10	2.51	1.19 to 5.53
Wheezing	207	1.96	0.84 to 4.82	2.95	1.22 to 7.99
Shortness of breath at rest	203	3.99	1.31 to 15.19	1.50	0.56 to 4.49
Coughing on rising or during the day††	210	2.67	1.17 to 6.10	1.51	0.69 to 3.29
Shortness of breath after exertion	205	4.23	1.74 to 11.34	2.03	0.90 to 4.91
<b>Eyes and general health</b>					
Itching eyes >10x/year	206	1.35	0.61 to 3.05	2.85	1.31 to 6.50
Smorling eyes >10x/year	205	2.44	1.02 to 6.22	2.42	1.06 to 5.86
Nausea or vomiting >5x/year	204	2.65	0.87 to 9.97	4.10	1.28 to 18.44
Excessive tiredness >5x/year	200	2.80	1.22 to 6.72	1.83	0.84 to 4.11
Shivering	210	4.63	1.44 to 20.85	3.67	1.32 to 12.20
Joint trouble >10x/year	207	1.27	0.54 to 3.07	1.52	0.65 to 3.71
Muscular complaints >10x/year	201	1.17	0.47 to 2.99	1.39	0.55 to 3.86

## Health Hazards

Industrial mulch processing and composting results in increased health risks

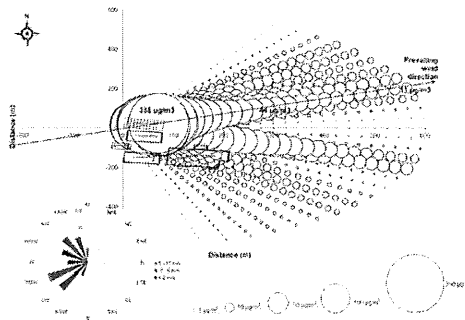
- Mulch infectious agents – fungi and bacteria
- Wood dust – allergic and mucosal effects
- Wood dust – cancer
- Composting – volatile compounds, organic dust, infectious agents
- Exposure and risk

## Significant Medical Literature of Effects of Emissions from Waste Facilities

- Chalvatzaki E, Aleksandropoulou V, Glytsos T, Lazaridis M. The effect of dust emissions from open storage piles to particle ambient concentration and human exposure. *Waste Manag.* 2012 Dec;32(12):2456-68
- Nadal M, Inza I, Schuhmacher M, Figueras MJ, Domingo JL. Health risks of the occupational exposure to microbiological and chemical pollutants in a municipal waste organic fraction treatment plant. *Int J Hyg Environ Health.* 2009 Nov;212(6):661-9.
- Domingo JL, Nadal M. Domestic waste composting facilities: a review of human health risks. *Environ Int.* 2009 Feb;35(2):382-9.
- Herr CE, Nieden Az Az, Stilianakis NI, Eikmann TF. Health effects associated with exposure to residential organic dust. *Am J Ind Med.* 2004 Oct;46(4):381-5.
- Herr CE, zur Nieden A, Stilianakis NI, Gieler U, Eikmann TF. Health effects associated with indoor storage of organic waste. *Int Arch Occup Environ Health.*
- Herr CE, Zur Nieden A, Jankofsky M, Stilianakis NI, Boedeker RH, Eikmann TF. Effects of bioaerosol polluted outdoor air on airways of residents: a cross sectional study. *Occup Environ Med.* 2003 May;60(5):336-42.

## Dust Emissions and Distance

- Dust emissions from open piles of mulch / organic waste can be measured at distances >500 m (>1500 feet) (Waste Management 32 (2012) 2456–2468 )



## Microorganisms and VOC's - Dispersion Distance

- High levels of molds, fungi, thermophilic fungi, bacteria and other microorganisms (concentrations of  $>10^4$  colony forming units) could be measured >300 m (>1000 feet) in residential air neighboring outdoor organic waste (Am. J. Ind. Med. 46:381–385, 2004)
- Volatile organic compounds can be detected at distances of up to 800 meters (Environment International 35 (2009) 382–389) and others

## **Dispersion of infectious agents – worst case scenario**

- Infectious agents have been shown to be dispersed at larger distances. Prominent example includes outbreak of Legionnaires disease in a radius of 6km through release from an elevated water tower
- Dispersion led to 86 infected cases of which 18 (21%) were fatal

J Infect Dis. 2006 Jan 1;193(1):102-11

## **Summary**

- Mulch and composting sites can pose risks for human health due to increased exposure of infectious agents, toxic substances, and VOC's. These include
  - infections due to fungal spores and bacteria
  - Increased risk of dermatitis, allergic respiratory effects, and mucosal and nonallergic respiratory effects
  - Increased risk of cancer, including nasal, lung, and Hodgkin lymphoma
- Exposure risks can occur at significant distances from waste processing area
- Numerous examples of exposure risks have been document in affected populations world-wide