

STAKEHOLDER GROUP ON THE ROLE OF DEPACKAGERS IN MANAGING FOOD WASTE - REPORT OF RECOMMENDATIONS

January 15, 2023

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I. Executive Summary

Plastic and per and polyfluoroalkyl substances (PFAS) from products and packaging represent an environmental and human health concern. In two issue papers, the Environmental Protection Agency (EPA) has identified food waste recycling as a pathway for plastic and PFAS contamination in composts and digestates. EPA also recognizes that there are limitations to the available information and identifies research gaps to inform the practice going forward. In a related effort to protect the environment and public health from PFAS and plastic contamination, the Vermont legislature passed Act 170 in 2022 requiring the evaluation and assessment of commercial depackaging operations in Vermont. ANR was charged with convening a collaborative stakeholder group to discuss three main questions and provide a report of recommendations to the Senate Committee on Natural Resources and Energy and the House Committee on Natural Resources, Fish and Wildlife on or before January 15, 2023.

The three main charges the stakeholder group was tasked with researching, discussing and responding to are;

1. recommendations on whether the organics management hierarchy in [10 V.S.A. § 6605k](#) should apply to each generator of organic waste;
2. whether the Agency of Natural Resources should modify its [existing policy](#) surrounding the source separation of organic wastes; and
3. any recommendations on the proper use of depackagers in the management of organic waste.

II. Background

A. Act 148 - Universal Recycling Law

In 2012, Vermont Legislature passed Act 148, a progressive law banning food residuals (among other recyclable materials) from landfill disposal. Act 148 includes a policy that food residuals be managed in a manner consistent with the priority uses established in the Vermont Food Recovery Hierarchy and also defines food residuals as source separated at the point of generation from non-compostable materials. Statute staggered the disposal bans over the course of six years based on generation volume. The largest generators, exceeding 104 tons of food residuals per year were subject to the law effective July 1, 2014 and the smallest generators (any amount of food residuals) became subject to the law on July 1 2020.

Implementing Act 148 required the cooperation and participation of many governmental entities (state and local), private businesses, non-profit organizations, and citizens of Vermont. Dozens of meetings were held around the state at various milestones of the law's rollout to educate haulers, businesses, and residents of the requirements and the available food residual management options.

In 2014 the Vermont General Assembly charged ANR with forming the [Solid Waste Infrastructure Advisory Committee](#) to assess and report on the infrastructure needs and possible revenue sources, to manage recyclable and organic materials generated as a result of Act 148. Implementation issues were discussed at regular [Universal Recycling Law Stakeholder Group meetings](#) held typically on a quarterly basis from 2015 to 2019 when the Legislature was not in session. ANR conducted media campaigns on YouTube, Facebook, internet and social media sites, Front Porch Forum, and local and cable television and radio stations to reach and educate Vermonters on the recycling and composting requirements of Act 148. Additionally, ANR has partnered with the Composting Association of Vermont to host the annual [Vermont Organics Recycling Summit](#) inviting leading researchers and experts to inform local organic waste recycling efforts and policy.

In general, the Universal Recycling law has been successful at increasing the availability of recycling, food donation, and food residual composting/digestion services in the state. In the first few years of the law's rollout, Vermont saw tremendous growth in the amount of food diverted to feed Vermonters via food banks and gleaning services. There was an increase in agricultural partners accepting food residuals as a component of their laying hen feeding regimen, utilizing locally available resources to offset feed and fertilizer costs, diversify farm income and produce egg and soil

amendment commodities. Composters statewide also saw an increase in the volumes of imported source separated food residuals. All of these outcomes, feeding Vermonters, strengthening farms, reducing the reliance on imported feeds and synthetic fertilizers, using locally available resources to grow food and build the soil strengthened our food system and our communities.

As the food residual disposal ban requirements of the law expanded to more and more generators over time, so too did the need for additional infrastructure and alternative management methods and technologies. In January 2020, ANR permitted Vermont’s first food depackaging facility. Also around this time, ANR-DEC issued a “[DEC Policy for Managing Food Residuals, Including Packaged Food Residuals](#)” detailing how packaged food and source separated food residuals should be managed in the state.

Following the issuance of the policy, there was concern from some food waste management stakeholders that the policy did not strictly adhere to the source separation and food recovery hierarchy requirements of Act 148. Some stakeholders advocated to the Legislature that the policy might result in microplastic and other possible contamination to agricultural soils and might have the potential for detrimental impacts to human health and the environment. During the 2021-2022 session, Act 170 was passed which tasked ANR with convening a collaborative stakeholder group to evaluate the application of the food recovery hierarchy, to evaluate ANR-DEC’s 2020 Packaged Food policy and to make recommendations on the proper use of depackagers in the management of food residuals. Act 170 charged ANR with submitting the recommendations of the stakeholder process to the Senate Committee on Natural Resources and Energy and the House Committee on Natural Resources, Fish and Wildlife on or before January 15, 2023.

B. Role of Depackagers in Managing Food Waste Stakeholder Group and Process

Statute specified seven sectors to be represented in the stakeholder group. To fill these roles, ANR first solicited participation from individuals who had already provided testimony during the Act 170 draft legislation. The list of participants was finalized by ANR on July 12, 2022, and consisted of the following representatives:

Required Sector per Statute	Participant	Affiliation
VT Agency of Agriculture, Food & Markets	Steve Cash	VAAFM, Inspection Program
A food waste composter	Dan Goossen	Green Mountain Compost
A farm that allows animals to forage food waste	Tom Gilbert	Black Dirt Farm
A company operating a depackaging facility	Michael Casella	Casella Waste Management
The VT Retailers and Grocers Association	Erin Sigrist	VT Retailers and Grocers Assoc
A company that anaerobically digests food waste	Billy Connelly	Vanguard Renewables
A food product manufacturing company in VT	Jenna Evans	Ben & Jerry’s

The stakeholder group held 7 public meetings at the ANR offices in the National Life building in Montpelier and 1 stakeholder-only Microsoft Teams meeting to discuss the draft report of recommendations. Meetings were also hosted via Microsoft Teams video and phone call in options to maximize accessibility. Prior to the first meeting, ANR drafted a process framework document outlining roles, meeting structure, public participation, public access to documents and applicable open meeting law requirements. No comments were received from stakeholders and the document was finalized and used to guide the process. Stakeholders determined the agendas and discussion topics and ANR primarily provided administrative support. ANR created a [stakeholder group webpage](#) for organizational purposes. A complete record of meeting agendas, minutes, complete meeting recordings, and attendees can be found on the webpage as well. All documents created by, used by or referred to by the group during this process can be found at the following file directory: https://anrweb.vt.gov/DEC/_DEC/depackager.aspx

The format of the meetings was discussion based with opportunities for each participant to provide their point of view or input to the relevant agenda topics and to ask questions of guest expert presenters. Public attendance and participation was encouraged throughout the stakeholder process as well with meeting announcements distributed on various list serves and over 25 individuals from the public and/or interested parties attending the meetings. Written feedback from outside stakeholders was not a requirement of the Act 170, the stakeholder group, or ANR, but a few individuals voluntarily submitted written comments and can be found [here](#) (under the “public submitted comments and resources folder”).

At the request of the stakeholders, ANR scheduled the following 7 experts to present to the group.

- Peter Blair – Just Zero: Shared his legal interpretation of applicable terms and definitions in statute. ([Link to video](#)). In addition to presenting to the group, Peter provided a [memorandum on the legal analysis of the Vermont food residuals management hierarchy](#).
- Eric Roy, Ph.D. – UVM: Provided an overview of the ongoing work they are doing in their lab to develop analytical methods and study microplastics in various food residual streams. He also provided a [pre-print of a literature review](#) of pertinent papers and a [summary of his presentation](#) to the group for reference. ([Link to presentation recording](#)).
- Kyla Bennet – PEER.org: Provided an overview of environmental policy considerations VT could consider in light of PFAS and microplastics in the organics recycling system. ([Link to presentation recording](#))
- George Parmenter – Hannaford: Provided a large regional grocer’s perspective on the victories and challenges of meeting the Act 148 food waste diversion goals and hierarchy priorities. ([Link to presentation recording](#))
- Raju Badireddy – UVM: Presented on emergent PFAS treatment technologies and what applications they may be suitable for. ([Link to presentation recording](#))
- Sarah Vose, Ph.D – State Toxicologist, VT Dept. of Health: Provided a brief summary of the human health impacts and concerns from PFAS and microplastics. ([Link to presentation recording](#) and slide show.)
- Brent Demers – City Market/Onion River Coop: Provided a local grocer’s perspective of how the Co-op’s robust environmental mission drives waste reduction, diversion for feeding people and compliance with Act 148’s hierarchy priorities. ([Link to presentation recording](#))

III. Conclusions and Recommendations

Act 170 specified that the Role of Depackagers in Managing Food Waste Stakeholder Group include participants from seven distinct business sectors and areas of interest. By design the collaborative stakeholder process includes participants from different industries who have different organics management recommendations. During this process group consensus was not always possible. The “Summary” sections in this report draws from the stakeholder recommendations submitted to ANR as well as the discussion from the stakeholder meetings and summarizes any areas where there was complete agreement or majority agreement and otherwise will defer to the stakeholders to convey their recommendations in their own words.

A. Conclusions

1. Vermont Food Recovery Hierarchy

Statutory charge from Act 170: “(1) *recommendations on whether the organics management hierarchy in 10*

V.S.A. § 6605k should apply to each generator of organic waste;”

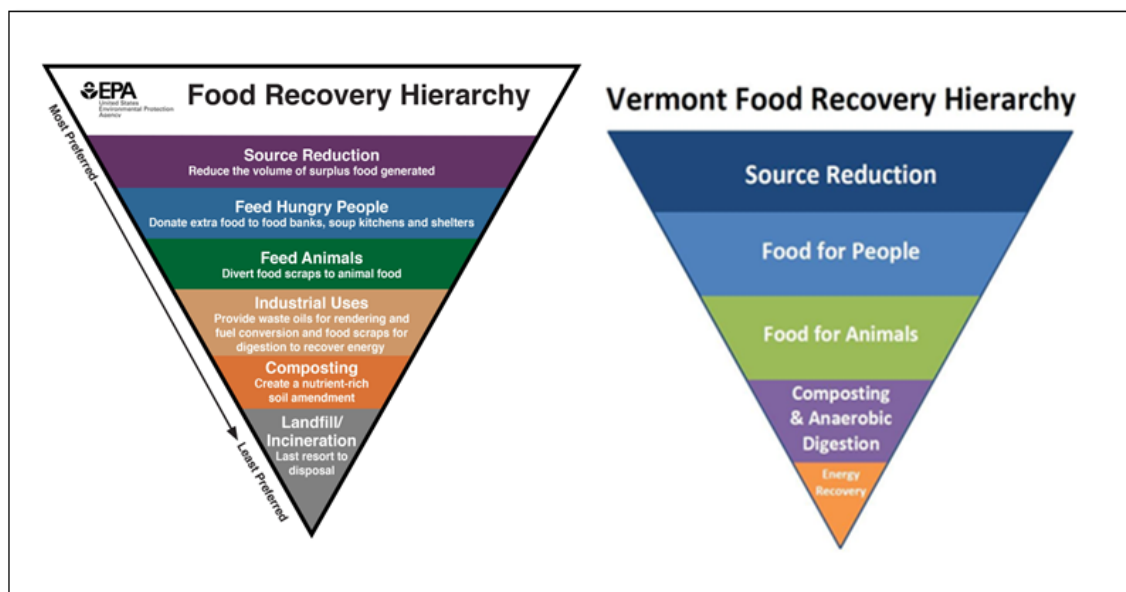
Summary

There was majority consensus (6 stakeholders agreed, one abstained in lieu of further life cycle analysis data) that the VT Food Recovery Hierarchy should apply to each generator of organic wastes. The stakeholders unanimously found value in having an established food recovery hierarchy to promote Vermont’s resource management goals and priorities.

Indirectly related to the specific request for recommendation charged by Act 170, a consistent theme expressed by stakeholders (4 out of 7) was that ANR should prioritize outreach and education efforts around the Food Recovery Hierarchy for generators over enforcement. Several stakeholders requested more guidance from ANR that clearly outlines the source separation requirements for generators and haulers and specifies any exemptions that depart from that baseline requirement. One example discussed would be a grocer with an established food residual source separation and employee education program would need to source separate all food residuals but *could* qualify for an exemption to outsource packaged food to a depackager for removal of inorganic and non-compostable materials.

Research conducted by the group on the food recovery hierarchy:

- The group asked two grocers operating locations in Vermont for feedback on food waste diversion and meeting hierarchy priorities. Grocers have been major participants in the food recovery system routing food for human consumption. The presenting grocer representatives did not voice any major issues with the current VT Food Recovery Hierarchy.
- There was also research into what other states have done to optimize conformance with food recovery programs. Some possible solutions include: outreach and guidance programs for grocers and restaurants to develop or enhance packaged and fresh food donation programs, tax incentives for food recovery focuses businesses or grocers with food donation programs, grant opportunities to food recovery businesses for upgrades like refrigerated hauling equipment.
- EPA is [currently conducting](#) a life-cycle analysis of the existing [EPA Food Recovery Hierarchy](#) (note: EPA’s Food Recovery Hierarchy is slightly different from Vermont’s – see below) to determine if adjustments should be made based on overall environmental impact of any of the listed priorities. A report on the study is expected in the second half of 2023.



Stakeholder submitted recommendations on whether the organics management hierarchy in 10 VSA Section 6605k should apply to each generator of organics waste.

Michael Casella, Casella Waste Management Inc.

Many generators are currently utilizing the options on the hierarchy; some are using a variety of options to manage their food scraps while others may use only one. There are many variables that lead a generator to determine which option(s) they may use; these include the type of material they generate, cost, labor, logistics, and the availability or willingness of the destination facility to accept their material. We believe that the hierarchy already does apply to generators, this was demonstrated when the Vermont Foodbank saw a 40% increase in food donations in 2016 after the initial ban was implemented ([Universal Recycling Law Boosts Fresh Food Donations | Agency of Natural Resources \(vermont.gov\)](#)). The question isn't whether the hierarchy should apply, the question is should it be enforced.

Casella feels strongly that future success of the Universal Recycling Law should be achieved through on-going outreach and education. Applying enforcement to all generators is not feasible and could result in the opposite effect. The Agency's resources are better spent providing education to generators on how to divert their food scraps from disposal (which is currently not being enforced) and let the generators decide which management option(s) to use that best suit their business model.

Steve Cash, Vermont Agency of Agriculture, Food and Markets

1. The term generator should be defined so it is clear who is a generator, and who is not. The definition should also make clear that those handling organic waste, that they did not generate, are not generators.
2. If an entity is hired or contracted to handle a generator's organic waste, that should not alleviate the generator from managing their waste in a way that adheres to the organics management hierarchy.

Billy Connelly, Vanguard Renewables

We have asked repeatedly whether the State of Vermont wants our Stakeholder Group's recommendations and decisions to be based on data and scientific information.

Before deciding on the question of whether the organics management hierarchy in V.S.A. § 6605k should apply to each generator of organic waste, we must be clear on the highest and best use for organic material. Vermont's version of the Food Recovery Hierarchy differs from the Food Recovery Hierarchy developed by the U.S. Environmental Protection Agency and used throughout the United States. We agree with the U.S. EPA (Environmental Protection Agency) Food Recovery Hierarchy that the first step should be to reduce the volume of surplus food. We also agree that the next highest and best use of food is to feed hungry people and then to feed animals. Considering the environmental impacts of greenhouse gases on our climate when organics decompose, we agree that the next highest and best use for food residuals is to process the material in anaerobic digesters, especially digesters that sequester methane and convert it to renewable natural gas. We agree that the next destinations for food waste are composting and then landfill/incineration.

It would be important to understand if the State of Vermont is determining the highest and best use for material in its hierarchy based on data and where that data may be located. This would be the first step in understanding if Vermont's version of the hierarchy is superior to the U.S. Environmental Protection Agency Food Recovery Hierarchy. Has Vermont clearly defined and provided evidence that its hierarchy clearly ranks destinations for organic material according to the highest and best use for that organic material? If unable to prove the superiority of the Vermont hierarchy, the State must align with science, with federal agencies, academics, state and local governments, organizations, and businesses that agree with and follow the U.S. Environmental Protection Agency Food Recovery Hierarchy. The State should also commit to studying and understanding the lifecycles of and best and highest uses of organics materials.

Jenna Evans, Ben & Jerry's

1. The hierarchy should apply to all generators of organic waste.

2. Generators should always strive to follow the hierarchy but should be allowed some flexibility depending on practical factors such as the quality of the waste stream, how far away the end destination is, willingness of end destination to accept material, cost, generator liability, etc.
3. Exemptions and exceptions should be clearly defined.
4. Education should be prioritized over enforcement.

Tom Gilbert, Black Dirt Farm

I. General Remarks on the Universal Recycling Law

In 2012, the Vermont Legislature passed the Universal Recycling Law (Act 148) to develop, along with other recycling goals, Vermont's organic recycling infrastructure and address issues within the existing system that were not working before. Arguments that the law is too ambitious fail to understand the intention behind the law and the scope of the problems it aims to solve. In fact, we cannot solve these issues without changing paradigms and moving away from a "business as usual" approach.

Efforts to undermine the ambition of the Universal Recycling Law are in direct conflict with the intention of the legislators who passed it. Vermont must be bold in its efforts to properly implement the requirements of this important piece of legislation. Vermont should not alter the ambition and intent of the law to accommodate national or multinational private interests.

A. The Role of the State in Risk Management

At the heart of answering the three questions posed to the Vermont Depackaging Stakeholder Group is an evaluation of the way the Agency of Natural Resources evaluates and manages risk. Government and its agencies are tasked with serving the public good. Therefore, the focus must be on mitigating risk, not just managing it.

Several stakeholders were unwilling to engage in meaningful discussion regarding the framework of how we manage risk within the organics recycling system. The state should be taking a precautionary approach that seeks to avoid and mitigate risk. This precautionary approach is not anti-scientific. In fact, it is good science, and even better policy. The Universal Recycling Law was enacted to build a strong, resilient organic recycling system where excess edible food that can't be donated is used for animal feed or composted/digested to create a valuable soil amendment. To the extent that there are policies or practices that increase the likelihood of contamination within the system, those policies and practices should be prohibited until they can be proven safe and effective.

This is a precautionary approach which is centered on utilizing what is known, or unknown, to develop a safe and equitable framework. This approach is common in the European Union and in many other countries. In fact, the alternative framework utilized by the Environmental Protection Agency and state environmental agencies in the United States is really where the science falls off. If you know that a toxin likely has a greater impact than currently established, including on the basis of knowing existing research is not comprehensive, the pragmatic approach would be to extend caution beyond the boundary of current knowledge to ensure safety while you gather more information.

When passing the Universal Recycling Law, the Legislature charged the Agency of Natural Resources with "conducting analysis" and "making recommendations" regarding the reduction of the volume, amount, and toxicity of the waste stream. The Legislature charged the Agency with making these recommendations to "ensure that packaging used, and products sold in the state are not an undue burden on the state's ability to manage its waste". It would appear that the presence of PFAS in food packaging, the use of mechanical separation of packaging from organics that increases the potential presence of both microplastics and PFAS in compost and digestate would fall within this directive.

Moving forward, the Agency of Natural Resources must play a more assertive role as the regulator of Vermont's organics management system, and chart the path, as opposed to responding to market conditions or the pressure of specific industries reactively.

II. Whether the Organics Management Hierarchy in 10 V.S.A. § 6605k Should Apply to Each Generator of Organic Waste.

Yes

I strongly believe that the organics management hierarchy should apply to all generators. This was the legislature's intent when drafting the Universal Recycling Law and mandating that the hierarchy is the binding framework for how organics are managed in the state. However, there should be limited and clearly defined exemptions to ensure the practical application of the law and the hierarchy.

A. The Hierarchy Should Apply to All Generators

Keeping the hierarchy intact and broadly applicable is important. The legislature included the hierarchy to embed values into Vermont's organics management system that override general market considerations. This was done to ensure socially desirable outcomes. The current policy of viewing the hierarchy as a menu of options undermines the legislature's intent to make the hierarchy binding and hierarchical.

Therefore, I strongly recommend that the hierarchy be kept intact, and that the Agency of Natural Resources clarify that it applies to all generators. This means all generators are required to direct organic resources to their highest and best use *where services are available*. The Agency should clarify this through rulemaking to make clear that the requirement to fulfill any one level of the hierarchy is based on the generator having an entity or service provider that is willing and able to transport and manage the material according to the hierarchy. In other words, where a provider is willing and able to provide services that direct organic resources to their highest use according to the hierarchy, the generator shall not reject that offer in favor of a management method lower on the hierarchy.

To ensure the hierarchy is being followed, the Agency of Natural Resources should clarify that no practice should invariably preclude the ability to utilize organics through management methods higher up on the hierarchy.

B. The Agency of Natural Resources Should Establish Clearly Defined Exemptions Where Generators Are Not Required to Strictly Follow the Hierarchy.

While the hierarchy should apply to all generators, the Agency of Natural Resources should establish clearly defined exemptions to ensure flexibility. These exemptions should be granted for specific instances and on a case-by-case basis, not entire generators.

Moreover, the exemptions should be clearly defined. The Agency is currently using the "de minimis" language of the Universal Recycling Law to handle all exemptions. This language allows for generators to dispose of a de minimis amount of organics as solid waste if the generator has established a source separation program. By using this as the basis for all exemptions without clearly indicating when and how generators can deviate from the requirements of the hierarchy, the Agency has created confusion that undermines the purpose and importance of the hierarchy.

Specifically, the agency should create a specific exemption that allows generators to use management methods lower on the hierarchy when responding to an emergency situation, such as a refrigeration failure. When restaurants or grocery stores experience a refrigeration failure, a significant amount of organic material needs to be managed quickly. These generators likely do not have the time to try and identify a food bank, food rescue organization, or farmer that could use the organic material as animal feed. Therefore, in this instance, these generators should be able to default arranging for the material to be composted or digested.

C. Role of the Agency of Natural Resources in Implementing the Hierarchy.

To better support operators within Vermont's organic management system, including generators and haulers, the Agency should develop tools, resources, and outreach materials to help explain the binding nature of the hierarchy

and how it guides management methods. The Agency should establish a database of registered operators that offer services relevant to the management methods outlined in the hierarchy. This should be more expansive than just those operations that hold permits from the Agency. It should include contact information for food banks, farmers that have livestock, and organics haulers. The Agency should also develop tools that provide a visual representation for how the hierarchy works. This should include things like a decision-making tree and flow-chart.

Dan Goossen, Green Mountain Compost

We believe that the hierarchy in Act 148 was intended to apply to all generators and was written in a manner to provide the flexibility necessary for generators to choose how they manage their food scraps depending on many factors. These include availability of and proximity to diversion opportunities, quality of food scraps, and cost. We believe that education should be the primary tool used for most generators rather than enforcement and that enforcement should be used only for the largest generators.

Applying strengthened requirements for large generators to ensure that they're always making a concerted effort to find the highest and best uses for their disposed organics streams would be a welcome change. Copying portions of the California models that require written agreements with food recovery organizations and expanding it to cover animal feed where appropriate would be preferable pathways for achieving improved adherence to the organics management hierarchy. Any additional tracking requirements should be restricted to only the largest generators.

Erin Sigrist, VT Retailers and Grocers Association

Many generators are already applying the hierarchy in their organic waste management plan. Large generators tend to have the capabilities to apply the practice of the hierarchy to find the highest and best use. However, all generators could use support and clear communications from regulators on expectations. As with any regulation, one-size-fits-all is unrealistic and therefore, exemptions should be expressly defined and flexibility must be provided. Such exemptions must include, but are not limited to, cost, liability related to various diversion options, availability of diversion options, resulting environmental impacts on the holistic diversion process, etc. We believe that additional education and outreach is needed to ensure partnerships are established in order to strengthen Vermont's organic waste management systems.

2. Vermont Packaged Food Policy

Statutory charge from Act 170: *“(2) whether the Agency of Natural Resources should modify its existing policy surrounding the source separation of organic wastes; and”*

Summary

Many participants voiced the opinion that there were shortcomings of the current ANR Policy and provided their recommended improvements (see below) although two stakeholders stated that they did not want to see any change in the policy until there was sufficient data to judge overall environmental and human health impacts of various practices. A majority of the stakeholders (4 out of 7) agreed that ANR policy should be clarified to prevent the comingling of packaged foods and source separated organics. A consistent message among many stakeholders that operate organics hauling and/or processing businesses was that they would like to see:

- 1) clear messaging from ANR on the permitted uses for various food waste material types, and
- 2) guidance and outreach from ANR to haulers on the source separated food residual requirements ensuring that VT food residual haulers statewide would require the same cleanliness standards of all clients.

Stakeholder submitted recommendations on whether ANR should modify its existing policy surrounding the source separation of organic wastes.

Michael Casella, Casella Waste Management Inc.

The Agency should not modify its existing policy until more data exists from the research projects that are currently underway. The Agency should turn its focus to developing a consistent contamination standard for microplastics and

PFAS that is evenly applied to all types of organics processing facilities. This standard should be derived from ANR's EPA Pollution Prevention Sampling Project (which Casella wrote a letter in support of) and in collaboration with the on-going research conducted by the University of Vermont Rubenstein School of Environment & Natural Resources, which Casella also supports. The contamination standard should apply to all out-going processed materials (digestate & compost) that are destined for land application. Furthermore, all organics processing facilities need a contamination standard and rejection procedure for excessively contaminated incoming materials, specifically source-separated materials. This should also be determined from further research.

While it is understood that some generators do a better job at separating their food scraps than others, there is no evidence that source-separated organic material is inherently free of contaminants. Recognizing that Vermont passed one of the most aggressive organics bans in the country, Casella expressed concerns with contamination in organic materials before various stakeholder groups and in testimony before the Legislature where we urged the State to move at a slower pace until we had a better understanding of how to manage contaminated food scraps. Ideally, a contamination standard should have been in place before the organics ban was implemented, policies were developed, investments were made, and businesses developed internal management practices.

In addition to developing standards, manufacturers should be required to remove PFAS and other similar chemicals from all types of food packaging and other materials. This requirement needs to be implemented at both Federal and State levels on an aggressive timeline and to the greatest extent possible. Separating food from its packaging does not mean that the food no longer contains PFAS or microplastics. The Food & Drug Administration tested a variety of foods for PFAS and found various levels existed in each sample (Reference: [pfas on your plate - Google Search](#)).

Steve Cash, Vermont Agency of Agriculture, Food and Markets

1. The Agency of Natural Resources should change its policies surrounding source separation so that it does not allow food residuals to be managed by comingling packaged and unpackaged food waste.
2. A separate definition should be created for food residuals that have been processed in depackaging equipment. This material is not uncontaminated and it does not align with the definition of a food residual.
3. If the policies around source separation are not changed, the output of depackaging equipment should be managed as a solid waste by ANR including sampling for microplastics and PFAS prior to export. The application of the output waste should be regulated under a residuals management program and records of land application date, rate, and contents of nutrients, PFAS, and microplastics content should be collected and monitored. The land used for depackager waste management should not be used to grow food or feed without sufficient testing and management practices in place to ensure it is safe to do so.

Billy Connelly, Vanguard Renewables

The Agency should not modify its existing policy around source separation. We agree that clean, uncontaminated organics are best for their intended destination and that contamination is problematic for the next use for that material, whether it be diverted to feed hungry people, for animal feed, anaerobic digestion, or composting. Since source separation does not guarantee that the organics stream is free of contaminants, a more holistic, full systems approach, informed by scientific information and data will yield the best possible outcomes for Vermont and its ecosystems.

We continue to ask if the State has sufficient data and understanding of the full environmental impact of source separated organic waste, depending on the destination for that waste, on our climate, air, water, soil, and our ecosystem. Lacking sufficient data means that the State should commit resources to collecting and understanding that data so that decision makers have reliable information prior to recommending or adopting any changes to existing processes.

Jenna Evans, Ben & Jerry's

1. Yes, the policy should be changed so that food residual streams should be separated from their packaging

and packaged organics at the point of generation in an effort to minimize plastics and microplastics contamination. The mixing of those streams contaminates the entire streams and does not allow maximum benefit to the best end use. Exemptions and exceptions should be clearly defined and only apply to the most difficult packaging.

Tom Gilbert, Black Dirt Farm

Yes, the Agency of Natural Resources should modify its existing policy surrounding source separation of organics. Specifically, the Agency should apply its previous interpretation of source separation that was captured in the [Food Residual and Packaged Organics Management Policy from August, 2019](#). Specifically, this policy should establish that:

- (1) “It is the Agency’s policy that food residuals shall not be mixed with packaged organics at the point of generation.”
- (2) “The plain language of the statute [Universal Recycling Law] is clear that food residual, by definition, must be source separated from non-compostable materials at the point of generation and managed in a manner consistent with the priorities listed in the food residual management hierarchy.”
- (3) “Mixing food residuals with packaged organics does not satisfy the source separation requirement and automatically precludes the materials from being utilized by any of the higher priority options on the hierarchy.”

This policy will clarify that the majority of food materials, including most packaged food products, must be source separated at the point of generation as required by the Universal Recycling Law. Moreover, the policy recognizes that the commingling of organics and packaging is impracticable, against the law, and creates an organic stream that precludes management methods higher up the hierarchy.

A. Source Separation Should be the Overarching Standard for Organics Management.

Source separation should remain the overarching standard for organic management in Vermont because it is the most practical and effective way to ensure the organics themselves, and ultimately, the soil amendments they are used to create, are not contaminated with toxins, especially those that are highly dangerous, persistent, bio-accumulative, and impossible to remove or remediate. To support this policy the Agency of Natural Resources should more widely promote and explain the practice of source separation. This should include education and technical support efforts to generators and haulers, as well as facility operators. The Agency’s education campaign should prioritize efforts to improve practices to prevent contamination.

B. Depackaging Should Be a Limited Exemption From the General Requirement of Source Separation.

Source separation is not only the most effective strategy for keeping the organics stream clean and free of contamination, it is also entirely viable for the overwhelming majority of organics, including most packaged organics. However, Vermont should recognize that there are some specific, discrete material streams for which source separation is an impracticable solution. Using alternative methods such as mechanical depackaging should be considered for these materials. However, this should be a limited exemption that is only eligible for specific types of hard to de-package material streams. This is not a unique parallel pathway for compliance but an exemption from the general standard which is source separation.

If a generator has a uniquely challenging product line that cannot feasibly be source-separated at the point of generation, then the generator should be able to get an exemption from the source separation requirement for that product line alone. The generator will still have to source separate all other organics. Moreover, the generator should not be able to mix the product line destined for depackaging with source separated organics. This again reflects the previous policy of the Agency which stated that every generator of organics will “have a source separated organic material stream” and that some generators, those that have a uniquely challenging product line to manage, will have a “source separated organic material stream and a distinct packaged organics stream. The two streams shall be kept separate and shall not be commingled.”

This policy would re-establish source separation as the singular framework for organic management, within which other methods of management such as depackaging can exist as exceptions. This will help clarify the rules to all stakeholders in the organics management system and align with the requirements of the Universal Recycling Law.

C. The Agency of Natural Resources Must Take a More Active Role in Promoting Source Separation

To effectively implement source separation in Vermont it is important to recognize that poorly executed source separation can cause pollution, and that good source separation inherently requires systemic, broad-based behavior change. The Agency of Natural Resource should develop public messaging materials that reflect the best practices for source separation and encourage behavior change.

Source separation should remain the overarching theme behind all public messaging and educational efforts and should be done authentically. To effectively source separate we need to undertake statewide behavior change and develop new cultural orientations. This cannot happen if the public does not have faith in how committed the State is to creating and maintaining a clean and beneficial organics management system. To the extent exceptions to the source separation are necessary, they should be clearly defined, and the Agency should require training for employees to help them contextualize and understand what is required. Vermont cannot continue to allow generators to float back and forth between depackaging and source separation because this undermines messaging and efforts to get public buy-in for source separation.

As part of the public messaging campaign, the Agency should establish a list of acceptable and unacceptable materials when it comes to organics management to help generators more effectively source separate. For instance, plastic lined cardboard should be removed from organics as it cannot be composted or digested. The agency should also conduct more research on paper products to clarify whether they should be source separated. Additionally, practices that are contrary to the source separation requirements, such as depackaging, should be evaluated for collateral impacts.

The current policy has created significant confusion which is undermining Vermont's organic management system. The overall goal of organics recycling should be recentered by the Agency. Fundamentally, source separation, and its goals of resource conservation, should be applied to all materials streams and ensure that organic and inorganic materials alike make their way to recycling markets. Encumbering recyclable packaging in depackaging and unnecessarily causing these materials to go to disposal – incineration or landfill – unless entirely necessary, should not be allowed.

D. Enforcement of Source Separation

The Agency must take a more active role in enforcing the source separation requirement. This does not mean inspecting every load or trash bag. There are many ways for the Agency to enforce the objective of source separation. The most obvious is to reaffirm the source separation requirement and educate the public about it in a clear and consistent manner.

For example, The Agency's previous decision to dismiss PLU stickers as contaminants shows how the agency's conflicting policies create enforcement issues. PLU stickers are not compostable, are easily removable, and therefore should be required to be separated from produce at the point of generation. Simply providing a clear, unified message that these materials must be source separated would have gone a long way with establishing clear policies and procedures for all generators. In this case enforcement could have been as simple as verbally affirming and reiterating the Law as it is written.

Fundamentally, enforcement could largely be a messaging campaign. Like most aspects of State and Federal Law, we will never actually have the capacity to fully enforce, but that doesn't mean we just start telling folks to not worry about traffic lights or taxes. Enforcement begins with establishing clear, unwavering expectations, and reflecting those in the way we discuss and portray the Law.

Other efforts to promote and enforce the source separation requirements could include:

- (1) Lists of banned materials from organics management facilities

- (2) The use of the existing Materials Management Plan and facility permits to define what is acceptable and not acceptable at facilities
- (3) Training for generators, haulers, and facility operators.
- (4) Requiring plans from large generators, haulers, and facility operators about how they plan on preventing contamination.

Dan Goossen, Green Mountain Compost

Yes, the ANR should modify its existing policy surrounding the source separation of organic that reflects the ANR-DEC policy drafted August 2019 and titled

[2019.08.05.DRAFTMEMOFOODRESIDUALSMANAGEMENTPOLICYV2](#). This policy should include:

1. Prohibiting comingling of packaged and non-packaged food residuals which degrades the quality of the food residual stream and severely limits options for further treatment or processing. The State should clarify its language to prohibit the comingling of these two streams in recognition of many outlets across the State that may be able to process these materials in a way that minimizes the amount of plastics and microplastics entering the environment.
2. Requiring generators to send unpackaged source separated food residuals not suitable for donating or animal feed to a facility that will manage it separately from packaged food residuals throughout the entire treatment process.
3. Clear definitions for lightly packaged and heavily packaged materials that are treated as separate waste streams. Generators should be allowed to send heavily packaged materials for unrestricted processing via depackaging for maximum nutrient recovery and landfill/incineration avoidance. Generators should be required to separate lightly packaged food residuals from their packaging, and those residuals treated as all other non-packaged food residuals.
4. Existing exemptions for very small generators such as convenience stores should continue to be allowed so long as they have a food waste source separation program in place that staff are trained on and are utilizing.

Erin Sigrist, VT Retailers and Grocers Association

The Agency should not modify the existing policy surrounding the source separation of organics. Source separation does not guarantee a lack of contamination, and without clear data that proves source separation can yield reduced contamination, such requirements should not be mandated. Depackaging facilities, approved by the State, have provided generators the most efficient and effective form of organic waste management to date.

The Agency should identify consistent standards, specific benchmarks, and carry out continued research for efficient and effective processing functions, taking into consideration the holistic and realistic process of organic waste management. Such processes include cost, availability of diversion options, realistic business processes, etc.

Due to consumer and legislative demand, manufacturers have begun to remove PFAS and other chemicals from food packaging and other materials. This process alone takes time and research. Further data and research and efforts from manufacturers must be allowed to respond to the current trend of chemical elimination prior to modifying the existing source separation policy.

3. The Role of Depackagers

Statutory charge from Act 170: *“(3) any recommendations on the proper use of depackagers in the management of organic waste.”*

Summary

All stakeholders agreed that there is a role within Vermont’s organics management system for depackagers to recover resources. However, no consensus was reached on what that role should be. Everyone agreed that depackaging in emergency situations such as a freezer/refrigerator failure was crucial. Some saw depackagers as reserved for specific well-defined categories of packaged materials such as, *“large and homogenous waste streams*

such as from food manufacturers, or those that are difficult to source separate due to heavy packaging, and are not able to be handled higher in the hierarchy due to practical factors.”

More than half (4 out of 7) of the stakeholders expressed a concern about the fragmentation of certain types of plastic packaging through the mechanical de-packaging process.

All the stakeholders thought that additional research and data would either be necessary or helpful in guiding the use of depackagers in Vermont.

Stakeholder submitted recommendations on the proper use of depackagers in the management of organic waste.

Michael Casella, Casella Waste Management Inc.

While new to Vermont, de-packaging technology has been in existence throughout New England since at least 2009. Depackagers play a significant role in managing pre and postconsumer food waste and in helping the State of Vermont achieve further organic diversion goals. Depackaging operations should not be considered less effective or desirable over other types of processing facilities.

Casella invested in depackaging technology in response to our concerns of having enough capacity and our customers concerns over the organics ban and how to manage their food waste products. In the absence of a standard and State regulations for depackaging or compost facilities, Casella implemented a pre-approval process for all incoming materials. This approval process not only allows Casella the ability to understand why material is not suitable to be sold or donated, it also gives us the ability to test incoming materials as applicable and make inquiries of the generator concerning packaging components.

Due to the ubiquitous nature of PFAS and the presence of microplastics, no processing technology is free of contamination risks. Digestion and composting are on the same level on Vermont’s food management hierarchy (note: EPA’s food waste hierarchy places digestion above composting). Neither compost facilities nor depackaging facilities should be processing excessively contaminated source-separated materials, these materials should be rejected and disposed of in landfills or incinerators.

Steve Cash, Vermont Agency of Agriculture, Food and Markets

1. The materials that are the outputs from the depackaging process should not be used for animal feed or registered as a fertilizer or compost/soil amendment, for use on land that grows food or feed, without sufficient testing to ensure it is safe to do so.
2. A PFAS and microplastics contamination threshold should be developed for the output waste from the depackager. This threshold should be utilized to further determine the appropriate uses of this type of equipment and the resulting waste.

Billy Connelly, Vanguard Renewables

There are many unresolved questions about contaminants in organic waste due to a lack of scientific research and available, reliable data. There is considerable interest in microplastics, in perfluoroalkyl and polyfluoroalkyl substances (PFAS/PFOA, and PFOS). Often, the terms have been conflated and used interchangeably. There is great concern, understandably, about the impact that plastics and PFAS/PFOA/PFOS contaminants already in our environment may have on Vermont’s citizens, animals, and ecosystem. There is evidence that these chemicals are ubiquitous. The potential impact on our soil and our water supplies is especially concerning given the unfortunate problems of at least one business, Massachusetts Natural Fertilizer Company ([news story online](#)), in neighboring Massachusetts.

If Vermont is committed to making decisions informed by data and science, then we must commit resources, including time, to understand the present situation, including existing background levels of plastics and other contaminants in Vermont’s soil, water, compost, crop land used for human consumption, crop land used for animal

feed, and other pathways for contaminants. We recommend the State not only study contaminants in Vermont's land and water but also commit resources to collaborate with neighboring states, New York, New Hampshire, and Massachusetts, and collaborate regionally with agencies in Connecticut, Rhode Island, Maine, Pennsylvania, New Jersey, and Maryland and leverage their resources to gather data to inform our decision-making.

Vermont should commit to developing a pathway forward to eliminate unnecessary plastics in all industries, especially in our food system. The State should also commit resources to better understand the role of depackaging in other states by consulting with the U.S. Environmental Protection Agency.

Jenna Evans, Ben & Jerry's

1. There is a place for depackagers in the organics system. Depackagers should be used only for large and mostly homogenous wastestreams such as from food manufacturers, or those that are difficult to source separate due to heavy packaging, and are not able to be handled higher in the hierarchy due to practical factors. These guidelines should be clearly defined and enforced.
2. Vermont should be concerned about the plastic fragmentation that is happening during the depackaging process. More research is necessary to more fully understand the risk of PFAS and microplastics impact on the land, air, water, animal and human health, as well as what exists in the environment as a background level. I support Billy's suggestion for Vermont to work with other states in the region on this topic. While that work is underway the state should be tracking land application of residuals and if possible, testing depackaging residuals and monitor soil for microplastics contamination and PFAS.
3. Depackagers should be not processing source separated organics as it introduces contamination to cleaner streams.
4. Depackaged food should not be used as animal feed or sent to compost/fertilizer applications unless proven safe to do so.

Tom Gilbert, Black Dirt Farm

Under the current language of the Universal Recycling Law, depackaging should not be permitted as it violates the source separation requirement. Therefore, any efforts to allow for depackaging of organics requires legislation, not rulemaking.

A. The Legislature Should Specify the Limited Areas Where Packaging Is Acceptable.

Depackaging does have a role in the Vermont organic management system. However, it should be discrete, specific, and not ubiquitous. Depackaging should not be the primary objective. Rather, it should be Plan B reserved for instances where it is necessary.

As explained above, I strongly recommend that Vermont continue to require source separation for the overwhelming majority of organics. However, depackaging should be permitted as a limited exception to the source separation requirements to manage discrete types of packaged organics that cannot be source separated. New legislation should be proposed that discretely defines when depackaging is an acceptable alternative to source separation. This legislation should specify what types of packaged organics are eligible for depackaging given their unique characteristics. This should consider things like the ratio of packaging to organic material, the number of layers of packaging, and the type of packaging materials. The legislation should also create a public process so stakeholders can provide input about how they feel specific types of packaged organics should be managed.

Additionally, the legislation should specify what materials are never eligible for depackaging. This should include:

- (1) Organic material that is suitable for management methods at the top of the hierarchy.
- (2) Non-packaged organics
- (3) Organics that are easy to source separate.

Again, this new legislation should make clear that the use of depackaging for specific types of packaged organics does not mean that a generator is completely exempt from the source separation requirements and that all organics

can be sent for depackaging. Rather, in the instances where depackaging is authorized, the generator should still be source separating all other organics in a parallel management stream.

B. The Agency Must End the Use of Depackaging Slurries and Outputs as Soil Amendments.

It is equally important that the Agency of Natural Resources establish rules about how the output from depackaging facilities, such as the slurry, can be used. Right now, slurries and organic material from depackaging facilities should be confined to low risk uses until there is adequate evidence to prove the material is safe and uncontaminated. In the short term, these materials should not be used on farmland, any land where food is grown, important ecological areas, or areas near sensitive populations.

In the long term, the Agency should establish permissible end-uses that are provisional based on the packaging material types, and the specific risk it creates for microplastic and toxic contamination such as PFAS contamination in soil. The development of these permissible end-uses should be based on research that establishes the material can be safely land applied.

C. Permitting of Depackaging Facilities

The Agency of Natural Resources should review the legality of permitting depackaging facilities in light of the prohibition on the landfilling or incineration of recyclable materials. Any new management method, including depackaging, should be evaluated for its collateral impacts, especially on issues of importance within the same governing legislation. On top of the inherent conflict between depackaging and the organics management hierarchy and source separation requirement, there is also a concern that the packaging material that comes out of depackaging facilities is not being recycled.

The Agency of Natural Resources should regulate and manage depackaging facilities to prevent the needless landfilling or incineration of recyclable packaging materials. This should include permitting requirements that require the Materials Handling Plan to describe the type of packaging materials that will be handled, how they will be handled at depackaging facilities and what their fate will be. The packaging materials should be part of the materials the facility is being permitted to handle, and the handling of these materials should comply with State Law. Once a facility is permitted and operating, it should report on these materials, their fate, and their destination. The recovery of one material should not justify the illegal disposal of other materials, unless there is sufficient evidence that it cannot be prevented or mitigated, and is otherwise necessary as opposed to just convenient.

Every depackaging facility that handles organics generated in Vermont should be required to certify that it is compliant with the state's prohibition on the landfilling or incineration of recyclable materials. Vermont should not allow the export of organics to facilities that operate in a way that violate Vermont's requirements, or utilize facilities or practices that would not otherwise be legal in Vermont. If we do not want the same potential impacts in our communities, we should not condone them in other communities. ANR should develop a regulatory framework that clarifies the end uses of all materials and affirms they are handled in a way that is consistent with Vermont regulations. Additionally, ANR should develop an Out-of-State Facility registration system that enables Out-of-State Facilities to affirm that they comply with Vermont Law. For instance, if packaged food is being sent to an Out-of-State depackaging facility, that facility should have to register, but additionally wherever they send the post-process packaging should also have to register and be compliant. If this material is sent to incineration, that incinerator should be required to meet Vermont standards. This would not only ensure Vermont operators are not in competition with non-Vermont operators operating by other rules, but it would also help Vermont comply with its own Environmental Justice Law.

Dan Goossen, Green Mountain Compost

1. Depackagers as a class are most effective when carrying out their designed purpose of separating food residuals from packaging. They can be particularly effective when processing homogenous or nearly-homogenous loads of material such as streams of materials from food manufacturers.
2. Vermont has many options from small to large for processing food residuals that are not in packaged form.

3. While the data remain inconclusive, much concern remains about the increased likelihood of plastic fragmentation for certain food residual streams that are processed via depackagers due to the intense mechanical process required for separation. Ongoing studies should be conducted to better understand the risks associated with depackaging and any increased potential of microplastics and PFAS in the resulting outputs.
4. Depackagers should not be allowed to process source separated organics. Processing source separated organics via depackagers adds an unnecessary step that requires additional transportation and processing inputs and likely renders these food residuals as non-viable for other organics recovery uses such as animal feed (chicken foraging) or composting.
5. Depackagers should be restricted to food residual streams for which they are best suited □ packaged foods - and only be made available for processing source separated organics as a last resort once all other options have been determined to be unavailable or there is insufficient capacity within a reasonable distance. Excessively contaminated SSO loads could be considered for processing via depackagers as a preferred option to landfilling or incineration, though this provision should be the exception rather than the rule in order to incentivize generators or haulers to prevent or decrease contamination levels.
6. The “convenience” and “efficiency” arguments given by industry players should be measured against the inevitable degrading of available food residual streams in the State of Vermont if comingling of packaged foods and source separated organics is allowed to continue as the rule. If left to market forces alone, it is likely that statewide efforts to reduce contamination levels in organics streams will suffer and the amount of food residuals suitable for animal feed, composting, and soil building will continue to decrease.
7. As the appetite for food waste slurry to feed anaerobic digesters continues to grow, pressure to “feed the beast” will increase, to the detriment of statewide soil health. Depackagers and digesters are important members of the team, but the state should be wary of making them the star players. The state should discourage the “hub and spoke” model, as this model increases GHG emissions from transportation and discourages local use of outputs on farms and in small- to medium-sized compost operations.

Erin Sigrist, VT Retailers and Grocers Association

Depackagers play an important role in Vermont. It is justified that Vermont should be concerned about plastic fragmentation, however, additional research is necessary. We agree with Billy Connelly of Vanguard Renewables that regional collaboration in the study of contaminants should be considered, and resources must be committed to ensure that research is carried out and as much data is gathered to make informed decisions.

B. Recommendations

The following are the consolidated recommendations that received majority support by the stakeholders:

Vermont Food Recovery Hierarchy:

1. The VT Food recovery hierarchy should apply to all generators in Vermont, however there was not majority support for ANR enforcement upon a generator for noncompliance with the hierarchy.
2. ANR should reinforce the VT Food Recovery Hierarchy by providing clear guidance, resources and educational programs to generators, haulers and facilities.

Vermont Packaged Food Policy:

1. A majority of stakeholders support revising the [packaged organics policy](#) to not allow co-mingling of source separated food residuals and packaged food.
2. ANR should support the packaged organics policy by providing clear guidance, resources and educational programs to generators, haulers and facilities.

Role of Depackagers:

1. Depackaging has a role in the Vermont organics recycling system. The State should clearly outline the

- acceptable practices and any prohibitions.
2. There was not majority support from stakeholders to prohibit source separated food residuals from being processed via a depackaging machine.
 3. The State should emphasize scientific study on the depackaging process, outputs and impacts to better understand and regulate the practice. There was not majority support to wait for comprehensive study results and data prior to initiating revisions to ANR policy and guidance.

IV. Next Steps

- A. ANR will prepare and distribute a revised, rough draft *DEC Policy for Managing Food Residuals, Including Packaged Food Residuals* based on the recommendations in this report by February 15, 2023 to Legislature, stakeholders and interested parties. ANR will follow standard public participation and public comment process for adopting a final policy.
 - i. ANR will prepare source separation guidance documents and education and outreach strategy for generators, haulers and facilities once the policy has been finalized.
- B. ANR will prepare guidance for generators on the VT Food Recovery Hierarchy by March 31, 2023. ANR will coordinate with solid waste management entity staff on outreach and education efforts with generators.
- C. ANR will continue their involvement and participation in various PFAS & microplastic task forces and studies:
 - i. Interstate Technology Regulatory Council - Microplastics Team & Microplastics Outreach Toolkit Team
 - ii. Northeast Waste Management Officials' Association – Toxics in Packaging Clearing House & PFAS in Consumer Products Project
 - iii. EPA Pollution Prevention Grant Project - Evaluation of PFAS and Microplastics in Food & Beverage Packaging and Throughout the Organics Recycling System.
 - iv. Assist Vermont Department of Health draft regulations prohibiting use of PFAS in firefighting foam & equipment, food packaging, rugs, carpets and aftermarket stain and water resistant treatments and ski waxes.
- D. On or before January 15, 2024, ANR will submit the report required by [Section 26 of Act 170](#) regarding the prevalence of microplastics and per- and polyfluoroalkyl substances (PFAS) in food waste and food packaging in Vermont, in consultation with the Vermont Agency of Agriculture, Food and Markets.
- E. Insofar as members are willing to continue, ANR will invite depackager stakeholder group members to advise on and assist with future organics management related issues.