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Washington Department of Ecology
Kyle Dorsey, Rule Coordinator
Waste 2 Resources Program
P.O. Box 47600
Olympia, WA 98504-7600

REF: Boeing Comments on Proposed Revisions to Chapter 173-350 WAC, Solid Waste Handling Standards

Dear Mr. Dorsey,

The Boeing Company offers the following comments on the proposed revisions to the Solid Waste Handling Standards, Chapter 173-350 WAC, specifically sections -020, -021, -100, -300, -410, and -990.

As aerospace materials evolve to meet greater demands for aircraft fuel efficiency and lower greenhouse gas emissions, structural strength, and other requirements, the mix of secondary materials from aircraft manufacturing is also changing. Secondary fiber-reinforced composite materials (FRCM) from aerospace manufacturing operations include expired uncured prepreg fabric,¹ residual scrap from cutting uncured and cured prepreps, scrap cured finished parts, and components removed from in-service aircraft for replacement. While each is different, they have physical properties that are valuable to secondary users.

While some elements of the draft revisions to Chapter 173-350 WAC offer clarity about the definition of solid waste and permissible waste management practices, other elements are confusing and could stifle development of reutilization opportunities for materials such as FRCM that might not yet have well-established and consistent secondary markets. The following comments are offered in an effort to avoid creating regulatory disincentives that have the unintended consequence of discouraging new repurposing opportunities for secondary materials. In the long term, regulatory streamlining will encourage activities that will reduce the volume of potentially useful materials being landfilled.

¹ Note that even though uncured FRCM might be expired for the purpose of manufacturing flight-critical aerospace parts and components, these materials are reused in applications such as sports equipment and building materials.

1. WAC 173-350-020(2)(dd) Research and Development Activities

The Boeing Company appreciates and supports the proposed exclusion for research and development (R&D) activities that will enable and encourage development of new or improved solid waste reutilization techniques and technologies. The proposed R&D exclusion,² while slightly modified from language offered by Boeing in previous comments, captures the essential elements and intent that such activities be exempt when conducted by qualified persons under controlled conditions. The explicit R&D exemption clarifies the status of such R&D projects, like the reinforced permeable pavement project seeking to demonstrate the viability of reusing leftover fiber reinforced composite materials to strengthen permeable pavement -- which is supported by Boeing and our stormwater improvement partners (including Department of Ecology, the Washington Stormwater Center, and Washington State University).

2. WAC 173-350-020(2)(s) Handling of Reusable Materials

In order to assure that the handling of secondary FRCM in support of the actual reuse of these materials in permeable pavements (i.e., after R&D is completed) is also clearly exempt, and that the exemption aligns with the R&D exemption in proposed -020(2)(dd), proposed WAC 173-350-020(2)(s) should be changed as follows:

"(s) Collection, transport, and transfer ~~sale~~ of used goods and materials (including surplus, excess, or scrap materials) solely for the purpose of reuse, as defined in WAC 173-350-100;"

3. WAC 173-350-100 Definition of "Source Separation"

"Source separation" of materials for reutilization or disposal is a common activity at Boeing and other businesses in Washington. Source separation activities occur on shop floors (including separating FRCM from other secondary materials generated by aerospace manufacturing processes), as well as offices and cafeterias, where employees regularly place different materials

² "(2)(dd) Materials used in research and development activities intended to evaluate, develop or demonstrate potential new or improved beneficial use, reuse or recycling methods or technologies for solid wastes conducted by qualified persons in controlled laboratory, bench scale, or pilot study conditions at the facility at which the materials are generated, at another facility owned or operated by the generator, at an institution of higher education as defined in RCW 28B.10.016, at a higher education institution as defined in RCW 28B.07.020, or at a public or private laboratory or other facility contracted by the waste generator or institution to conduct such activities. These activities include the research and development operations, the separation, collection, transport and transfer of such materials in support of those operations. Solid wastes handled in connection with such activities shall be reasonably limited to quantities needed to conduct the research and development project(s), and any excess or residual of such materials remaining after such activities and any solid waste generated by such activities shall be handled in accordance with this chapter or chapter 173-303 WAC, Dangerous waste regulations, as applicable."



in different collection bins, some destined for reuse, some for recycling, and some for landfilling. Boeing has never considered the act of sorting at the point of generation to be a regulated solid waste handling activity, and we do not believe that Ecology has either (as confirmed during the March 9th 2018 Q&A session preceding the public hearing on the proposed revisions).

To make the regulatory language clear that source separation activities are not regulated, Boeing requests the following addition to the definition of "source separation" in WAC 173-350-100:

"Source separation" means the separation of different kinds of solid waste at the place where the waste originates. Source separation is not a solid waste handling activity.

While, with this clarification, this is a useful definition, it should be noted that the term "source separation" is not used anywhere else in the proposed rule or existing regulations. However, something similar (i.e., "separation") is used in the definition of "reuse," resulting in an ambiguity that needs to be remedied in the final rule, as suggested immediately below.

4. WAC 173-350-100 Definition of "Reuse" and Inappropriate References to Reuse in Other Provisions of the Regulations

4.1. Definition of "reuse" – clarify that source separation of reusable materials is not a solid waste handling activity

The proposed term "reuse" is defined as follows:

"Reuse" means using an object or material again, either for its original purpose or for a similar purpose, without significantly altering the physical form of the object or material. Reuse is not solid waste handling, ***but separating materials from other solid wastes for reuse is a solid waste handling activity.*** Use of solid waste as fill or alternative daily cover is not reuse." (emphasis added)

Boeing supports the principle that reuse should be encouraged and not subject to the solid waste handling regulations. It is unclear why the italicized phrase above in bold italics is included in the definition of reuse, especially since "*source separation*" (whether for reuse, recycling or disposal) is not a solid waste handling activity.

In order to assure that "source separation" of reusable materials is not regulated as solid waste handling, the proposed definition of "reuse" should be changed to either: (a) entirely delete the phrase "but separating materials from other solid wastes for reuse is a solid waste handling activity"; or (b) clearly indicate that "source separation" is not a solid waste handling activity, as follows:

"Reuse" means using an object or material again, either for its original purpose or for a similar purpose, without significantly altering the physical form of the object or material. Reuse is not a solid waste handling activity, but separating materials from other solid wastes for reuse (other than source separation as defined in WAC 173-350-100) is a solid waste handling activity. Use of solid waste as fill or alternative daily cover is not reuse."

4.2. References to Reuse in Other Provisions of the Regulations

The term "reuse" is used throughout the proposed rule, but, because reuse is not a solid waste handling activity, its use in the WAC 173-350-100 definitions of "active area," "processing," and "recyclable materials" appears to be out of place. In these cases the definitions describe a regulated activity or material. Including reuse, which is not a solid waste handling activity, causes confusion. The term "reuse" should be struck in these three definitions.

5. WAC 173-350-021 Financial Tests for Determination of Solid Waste

Two financial tests are proposed for determining whether a material is a solid waste (-021(2)(f)), or is no longer a solid waste (-021(3)(c)):

A material is a solid waste if:

"(2)(f) The generator has paid for or will need to pay for removal or processing of the material for solid waste recycling, storage, incineration, or landfilling;"

A material might no longer be a solid waste if:

"(3)(c) The material has positive market value, as indicated by established markets for the material. Paying a person to remove or process the material for recycling, disposal, or incineration is not positive market value, nor is paying a discounted amount for removal or processing;"

As discussed below, these proposed financial tests are unreliable and unnecessary and should be eliminated in the final rule in favor of performance-based criteria.

- Markets for secondary materials are subject to wide pricing variation over time. Recent concern over China's ban on certain scrap materials illustrates that market values can change suddenly, in response to global events. Because of this price variation, a secondary material that has positive market value today may become a "solid waste" under the proposed rule if prices drop, but then return to non-"solid waste" status when the market recovers. When virgin material prices are high, businesses that are able to instead reutilize a secondary material may be willing to bear all the costs and even pay generators for the secondary materials, but when virgin material prices are low, such businesses can go through periods when they agree to accept some secondary materials (such as plastics and newsprint) only if the generator bears some or all of the costs of removal and/or processing.
- Some Washington businesses are committed to reducing or eliminating landfill disposal, and are willing to subsidize (pay) for legitimate reutilization of their secondary materials to meet company environmental stewardship goals. As exemplified by the "zero waste to landfill" movement, with today's environmentally progressive focus on avoiding waste disposal, generators are willing to pay some or even all the costs to remove and/or process their secondary materials to avoid land-filling. In other words, environmentally progressive generators are self-internalizing the external social costs of disposing of such materials as

waste. Instead of following their internal cost-benefit ratio indicating that landfilling or incineration is the low cost option, these generators choose to voluntarily minimize societal costs by subsidizing reutilization.

- As Washington manufacturers develop and incorporate new materials into their products, new secondary materials are also created. While the proposed R&D exemption provides a starting place for generators to determine whether techniques and technologies can be developed to reutilize these new secondary materials, there is a gap in the proposed rule between the narrowly-defined R&D process and the existence of an "established market." When a new recycling opportunity is developing, and the market for the secondary material is still thin, the generator might need to subsidize the reutilization of that material, but this does not mean that the material should be subject to regulation as solid waste. The "established market" test discourages development of new markets, which may involve changes in "who pays what to whom" during the market development process. As the rule is proposed, new secondary materials must immediately have "positive market value" as indicated by an "established market," or be treated as solid waste by all who handle them.
- While the proposed financial tests are presumably intended as a surrogate to predict whether a secondary material will be dangerously stockpiled, or discarded or abandoned, those tests are not mere indicia that a material might or might not be a solid waste, but are independent tests that would classify a secondary material based on the financial tests alone without regard to other factors. The proposed rule already has performance-based stockpiling criteria at (2)(g),³ discarded/abandoned criteria at (2)(a)⁴ and (3)(a),⁵ and storage and management criteria at (3)(d).⁶ These performance-based tests, together with applicable provisions of Ecology's air pollution control and water pollution control regulations, as well as the provisions of the Model Toxic Substance Control Act (MTCA) and the public health laws, provide fully adequate criteria, requirements and remedies to protect the environment without stifling innovation and stewardship.

³ "The material has been stockpiled for recycling, reuse, or use after recycling, but no market is available and stockpiles provide vector attraction or harborage, or release pollutants into the environment in violation of other human health or environmental rules and regulations."

⁴ "The material has been discarded, abandoned, or disposed of."

⁵ "The material is no longer discarded or abandoned."

⁶ "The material is stored and managed to preserve its value, and is stored in a manner that presents little or no risk to human health and the environment."

5.1 WAC 173-350-021 Determination of solid waste -021(2)(f)

For the reasons above, Boeing believes that the financial test proposed at WAC 173-350-021(2)(f) is unreliable and unnecessary, and should be eliminated in the final rule in favor of performance-based criteria. However, the test also suffers from a number of logical, technical and drafting problems that would need to be remedied if it is retained in any form.

“(2)(f) The generator has paid for or will need to pay for removal or processing of the material for **solid waste recycling**, storage, **incineration**, or **landfilling**,” (emphasis added)

Including the term "solid waste" in a criteria for determining whether a material is a solid waste creates a circular reference and a logical absurdity. Further, the terms recycling,⁷ incineration,⁸ and landfilling⁹ already indicate that these activities are solid waste handling activities, without the modifier "solid waste." In fact, including the modifier "solid waste" before these terms implies that recycling, incineration or landfilling can involve something other than solid waste – a seemingly false implication given the definitions of these terms. "Solid waste" should be removed from the text of (2)(f) as a matter of clear drafting. Even better would be deleting the entire phrase "for solid waste recycling, storage, incineration, or landfilling," since the mere use of the terms "recycling," "incineration" and "landfilling" strongly imply that the material is solid waste regardless of who pays for what.

The term "storage" is also problematic.

“(2)(f) The generator has paid for or will need to pay for removal or processing of the material for solid waste recycling, **storage**, incineration, or landfilling;” (emphasis added)

Literally read, if the generator “has paid for or will need to pay for removal ... of the material for ... storage,” then the material is a “solid waste.” Thus, for example, if a person pays to have Brinks armored car transport gold bars to a safe deposit box ("removal ... for ... storage"), the gold bars would thereby be rendered solid waste. In order to assure that paid removal (transportation) of goods to storage does not legally convert those goods to solid waste, the term “storage,” should be struck. It is notable that the term "storage" is not used in proposed subsection -021(3)(c) below, indicating that it is also unnecessary in -021(2)(f).

Finally, the "paid for or will need to pay for removal" test implies that the cost of transportation *alone* can render the material a “solid waste.” Transportation for hire costs money, whether one is moving gold bars or moving trash, and the cost of transportation alone tells one nothing about the value of the material itself. In order to prevent any paid transportation from placing a material in the solid waste category, the phrase "in excess of value received for the materials" must be inserted.

⁷ **“Recycling”** means transforming or remanufacturing *waste materials* into usable or marketable materials for use other than landfill disposal or incineration. Recycling includes processing waste materials to produce tangible commodities.” (emphasis added).

⁸ **“Incineration”** means a process of reducing the volume of *solid wastes* operating under federal and state environmental laws and regulations by use of an enclosed device using controlled flame combustion.” (emphasis added).

⁹ **“Landfill”** means a disposal facility or part of a facility at which *solid waste* is permanently placed in or on land including facilities that use solid waste as a component of fill.” (emphasis added).

In sum, if the financial test of -021(2)(f) remains at all, which it should not for the reasons explained above regarding volatile and emerging markets for reutilizable materials, then the paragraph should be changed to read as follows:

“(2)(f) The generator has paid for or will need to pay for removal or processing of the material in excess of the value received for the material ~~for solid waste recycling, storage, incineration, or landfilling;~~”

5.2. WAC 173-350-021 Determination that a material is no longer solid waste -021(3)(c)

One of the proposed criteria for determining that a material is no longer a solid waste is:

“(3)(c) The material has positive market value, as indicated by established markets for the material. Paying a person to remove or process the material for recycling, disposal, or incineration is not positive market value, nor is paying a discounted amount for removal or processing.”

As with subsection -021(2)(f) above, Boeing believes that a financial test that relies on “positive market value” and “established markets” is unreliable and unnecessary, and should be eliminated in the final rule in favor of performance-based criteria. However, the test also suffers from logical, technical and drafting problems that would need to be remedied if it is retained in any form.

Again, as in subsection -021(2)(f), the “paying a person to remove” test implies that the cost of transportation alone can cause a material to remain in “solid waste” status. Transportation for hire costs money, and the cost of transportation tells one nothing about the value of the material itself. In order to prevent any paid transportation from retaining a material in the solid waste category, the phrase “in excess of value received for the materials” must be inserted.

Additionally, if paying for removal or processing retains a material in “solid waste” status, then whether the payment is a full payment or a discounted payment makes no difference, so the final phrase regarding discounted payment should be removed.

In sum, if the financial test of -021(3)(c) remains at all, which it should not for the reasons explained above regarding volatile and emerging markets for reutilizable materials, then the paragraph should be changed to read as follows:

“(3)(c) The material has positive market value, as indicated by established markets for the material. Paying a person to remove or process the material, in excess of the value received for the material for recycling, disposal, or incineration is not positive market value, ~~nor is paying a discounted amount for removal or processing.~~”

6. WAC 173-350-300 On-site waste generator storage, collection, and transportation

While there appears to be no dispute that a generator’s on-site storage, collection, and transportation are not subject to permitting, the proposed regulations fail to make this clear. Therefore, we request the following addition to WAC 173-350-300:

“(1) Applicability. These standards apply to the temporary storage of solid waste in a container at a premises, business establishment, or industry and the collecting and transporting of the solid waste. These activities are exempt from solid waste handling permitting.”

Further, to align this waste generator permit exemption with language in the draft rule section on Determination of Solid Waste, Boeing recommends the following additions to WAC 173-350-021(4):

“(4) If a material does not meet all of the criteria of subsection (3) of this section, the person in possession of the material is considered to be handling solid waste and is required to obtain a permit from the jurisdictional health department, or meet the requirements of a conditional permit exemption under the applicable section(s) of this chapter, or manage the material in accordance with the provisions of section 200, Beneficial use permit exemptions, or meet the requirements for on-site storage, collection and transportation of WAC 173-350-300. In an action to enforce the requirements of this chapter, the generator or person in possession of the material who does not have a permit or an exemption from permitting, must demonstrate that the material is no longer a solid waste.”

7. WAC 173-350-990 Criteria for Inert Waste

The proposed rule would delete Section -990, Criteria for Inert Waste, and substitute a discrete listing of inert wastes in WAC 173-350-410(1). This proposed listing is drawn from RCW 70.95.065(2), the statutory list of wastes that must be allowed in inert waste landfills if they have not been tainted. However, the statute at 70.95.065(1) RCW requires more of the Department of Ecology. The statute states that the Department “*shall develop specific criteria* for the types of solid wastes that are allowed to be received by inert waste landfills that seek to continue operation after February 10, 2003.” (emphasis added). While Section -990(3) might be inadequate and in



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need of revision,¹⁰ the statute requires that Ecology's regulations include criteria that can be applied to unlisted materials including future secondary materials, not just a static inert waste list drawn from the statute. In order to fulfill its mandatory duty under the statute to promulgate *criteria* for the determination of "inert waste" as required by 70.95.065(1), in addition to the listed materials in 70.95.065(2), WAC 173-350-990 must be retained, and Ecology should take additional public comment on revisions to the criteria in -990(3).

We look forward to providing any needed additional clarification or engagement on these issues. Our point of contact is David Shanks, at david.l.shanks@boeing.com (314) 777-9227.

Sincerely,

A handwritten signature in blue ink, appearing to read "S. Shestak", with a long horizontal line extending to the right.

Steve Shestak
Director, Environment
Environment, Health and Safety

cc: Susan Champlain
Director, Government Operations

¹⁰ For example, the criteria at WAC 173-350-990(3)(a)(i) states that inert waste (not otherwise listed) "[n]ot be capable of catching fire and burning from contact with flames." The ambiguous "capable of catching fire and burning from contact with flames" test provides little guidance because virtually any carbon-containing material is capable of being combusted in a high temperature incinerator, but many might not catch fire from under common conditions. This criteria adds little to the other criteria in Section 990 (including the Dangerous Waste criteria, which also addresses ignitibility) and should be deleted or made more specific with flame temperature and duration specifications.