



**American
Forest & Paper
Association**

BETTER PRACTICES
BETTER PLANET **2030**
SUSTAINABLE PRODUCTS FOR A SUSTAINABLE FUTURE

*The Sustainable Use
of Paper Recycling Residuals
as Non-Hazardous Secondary Materials*

June 14, 2023

American Forest & Paper Association

Paper Recycling Residuals

- Authorized as an NHSM in 2016 rule - met legitimacy criteria:
 - Managed as fuel
 - Fuel qualities similar to traditional fuels
 - Contaminant comparison also similar to traditional fuel (biomass)
- However, definition included unnecessary restrictions
 - Small amounts of non-fibers
 - Primarily short fibers (less suitable for making recycled paper)
- OLEM has the authority to remove these limitations – 2018 petition
- Competitive market creates incentive for recycle paper mills to extract usable fiber so no compelling need for EPA to micro-manage PRR.

What are Paper Recycling Residuals?

- Secondary material generated from recycling of paper, paperboard and corrugated containers.
 - Materials that paper recycling mills cannot use to make paper or paperboard.
- Recycling mill feedstock includes office paper, cardboard, newsprint, paper packaging, etc. It can come in bales or other forms.
- Non-fiber items can come in as well because it comes from material recovery facility (MRF) that receives a mixed stream of materials, then separates and sorts out various types of recyclables.
- Institute for Scrap Recycling Industries (ISRI) has guidelines on the quality of furnish coming into mills to ensure what a mill is buying is predominantly fiber that can be made into new tissue, paper or paperboard products.
- Those guidelines are set at 1 or 2% non-fiber depending on the class of feedstock.
 - These guidelines help ensure the feedstock is a valuable material – no discard is taking place.
- The 2% guideline is meant as ceiling on non-fiber material in *feedstock* suitable for repulping.
 - If the feedstock is coming into a mill has 2% non-fiber material, then the residuals from that feedstock that is not turned into paper would necessarily have more than 2% non-fiber.
- Finally, there is no method to measure 2% by weight of PRRs
- **In summary, applying a guideline meant for feedstock to residuals is inappropriate and unworkable.**

Recycling 101

- Mills extract the fiber from the feedstock (e.g., paper bales) in “repulper.”
- Mills seek to optimize fiber recovery.
- Hard to measure the percent of non-fiber and there is no standard methodology, so relying on percent is an inappropriate approach.
- Concepts of *meaningful heating value* and use for energy recovery are appropriate and can be implemented.
- **Some non-fiber materials (e.g., waxes, plastic tape, and adhesives) increase the overall heating value of PRR.**

Energy Recovery using PRRs

- PRRs have similar (or better) Btu value compared to biomass, which is a traditional fuel.
- As fired, biomass moisture contents can vary depending on the type of biomass and storage method (e.g. uncovered bark piles).
- Boilers at paper mills are very efficient at getting energy from a wide variety of fuels with range of moisture contents – built into their designs (wet stoker, fluidized bed, etc.)
- Mills adjust qualities of PRRs to ensure energy recovery – dewatering, mixing with other biomass fuels – and optimize combustion conditions.
- OLEM determined that PRR with higher amounts of non-fiber materials “would likely have a lower heating value.”

- **This is erroneous.**

Dry Basis Fuel Comparison

Fuel	Min Heating Value (Btu/lb. on dry basis)	Max Heating Value (Btu/lb. on a dry basis)
Biomass/Bark (Boiler MACT data base)	2,800	16,000
PRRs (Boiler MACT and member data)	3,800	18,000

Air Quality Impacts

- PRRs are burned in boilers covered by Boiler MACT's stringent limits.
- Regulated pollutants include acid gases/HCl, mercury, metal/PM, organic HAPs/CO, and dioxin.
- Limits represent the best control technology under the Clean Air Act.
- Do not expect any health risks – EPA will consider under residual risk review.
- Boilers also covered by various NO_x and SO₂ limits under Clean Air Act or state permits.
- **Air quality is protected!**

Some of the Impacts of not using PRR for Energy

- A 2% threshold for residuals is inappropriate and unworkable.
- Contrary to the OLEM Waste Hierarchy – PRRs would go to landfills rather than recover the energy value.
- Prevalence of MRFs/single stream collection introduces more non-fiber materials.
- Thousands of tons of valuable fuels lost – ~400,000 tons (EPA est.)
 - 7.4 MMBtu/ton or \$12 M in added annual fuel costs (if natural gas, @\$4/MMBtu).
- Potential added annual landfill costs (if no other use) - \$50/ton → \$20M/yr
- Some mills planning to add or expand PRRs as fuels given Btu value and company sustainability goals to reduce landfilling – lost opportunities and stranded capital that was invested assuming continued use as fuel.
- If half the Btu value is replaced by natural gas, then GHG emissions increase by 86,000 tpy – counter to President Biden’s net zero climate goals.

Solution/Recommendation

- Simplify the definition to address concern about effect of non-fiber content on heating value and provide the clarity desired by both EPA and industry:
 - *241.2 Paper recycling residuals* means the secondary material generated from the recycling of paper, paperboard and corrugated containers **that includes fibers generally too small or weak** be used to make new paper and paperboard products.
 - *241.4(a)(6) Paper recycling residuals* generated from the recycling of recovered paper, paperboard and corrugated containers and combusted by paper recycling mills whose boilers are designed to burn solid fuel **where such residuals are managed in a manner that preserves the meaningful heating value of the materials.**
- Alternative is well within the boundaries/authorities of section 241.
- Win for environment/climate and business – sustainable solution.
- IF need to define heating value (in preamble or rule) set at **6,300 btu/lb** or above on a dry basis, annually; keep recordkeeping aligned with business practices.