SOLAR PANEL AND LITHIUM BATTERY UNIVERSAL WASTE PROPOSED RULE

ISSUE SUMMARY:

EPA announced a rulemaking effort in October 2023 to propose new regulations for end-of-life solar panels and lithium batteries under the RCRA universal waste regulations found at 40 CFR Part 273. These rules will streamline the management of end-of-life solar panels and increase safety standards for managing end-of-life lithium batteries, while continuing to promote recycling.

UPCOMING MILESTONES:

- **November - December 2024** – Workgroup Closure
- **January – April 2025** – OMB review
- **June 2025** – Signature of the proposed rule

BACKGROUND:

Within one rulemaking package, EPA is developing proposed rules to add hazardous waste solar panels to the universal waste regulations and to establish a new, distinct category of universal waste specifically tailored to lithium batteries. Designation as a universal waste streamlines the management standards for certain types of hazardous wastes that are commonly generated by a wide variety of establishments, in order to promote recycling, ease regulatory burden, and divert common hazardous wastes from landfills.

Clean energy technologies like solar panels and electric vehicle battery packs and other lithium batteries are instrumental to establishing a diversified energy mix. But like all energy production technologies, when solar panels and lithium batteries reach the end of their useful lives, their associated wastes must be responsibly recycled and managed. Recycling these materials returns valuable critical minerals to the economy, both conserving resources and reducing the overall energy use needed to produce new solar panels and lithium batteries.

Solar Panels

Solar panels are safe when in use and maintained appropriately and some end-of-life solar panels are not likely hazardous waste under RCRA. However, some end-of-life solar panels contain enough metals, like lead, to meet the definition of hazardous waste under RCRA. For these solar panels, EPA is drafting streamlined end-of-life management requirements under the universal waste regulations in 40 CFR Part 273 to increase solar panel recycling while maintaining appropriate environmental protections.

Management as universal waste will improve management of all solar panel waste whether hazardous waste or not. These new universal waste regulations would provide a clear, practical system for handling discarded solar panels. These streamlined universal waste regulations are expected to promote the collection and recycling of solar panels and encourage the development of municipal and commercial programs to reduce the quantity of these wastes going to municipal solid waste landfills.

EPA is developing the solar panel portion of this rule in response to the November 19, 2021, petition submitted by a coalition of industry associations affiliated with the electric power industry (The Edison Electric Institute, the American Clean Power Association, the U.S. Chamber of Commerce, the National Association of Manufacturers, the American Public Power Association, the Large Public Power Council, the National Rural Electric Cooperative Association, the Utility Solid Waste Activities Group, and the Cross-Cutting Issues Group) to add photovoltaic solar panels to the universal waste management program.

Lithium Batteries
Lithium batteries are used in many products such as cell phones, toys, wireless headphones, handheld power tools, small and large appliances, electric vehicles, and electrical energy storage systems. Though lithium batteries are generally safe when used, stored, and charged appropriately, these batteries can cause fires when improperly discarded or otherwise mismanaged at end of life, creating a hazard for workers, communities, and the infrastructure that handles waste collection and management.

Though a category of universal waste for all types of batteries already exists, establishing a new, separate category of universal waste specifically for lithium batteries will improve safety standards and reduce fires from mismanaged end-of-life lithium batteries, while continuing to promote battery recycling. EPA is working on standards consistent with current industry best practices to harmonize battery management across the industry. EPA is updating these lithium battery universal waste standards in response to a 2021 EPA report on fires caused by lithium-ion batteries in the waste management process ("An Analysis of Lithium-ion Battery Fires in Waste Management and Recycling") and feedback from a corresponding workshop in October 2021.

KEY EXTERNAL STAKEHOLDERS:

☐ Congress ☒ Industry ☒States ☒ Tribes ☐ Media ☒ Other Federal Agency
☒ NGO ☒ Local Government ☐ Other: _____

As EPA implements the RCRA program together with authorized states, states, as well as tribes, are key partners. EPA is in the process of conducting an EO 13132 Federalism consultation for state and local government organizations for this rule. State concerns include protecting human health and the environment from the damages caused by battery fires, maintaining safe battery recycling, and ensuring that any costs imposed by the rule remain manageable for state and local governments. States are already familiar with the universal waste regulatory framework, and five states have already added solar panels as state-only universal wastes or are considering it.

The electric utility industry supports adding solar panels as a universal waste, as explained in their rulemaking petition. The industry has found classification of solar panel waste challenging, and management as a universal waste would provide a clear management system without the need to make a hazardous waste determination. The battery recycling industry already supports managing lithium batteries as a universal waste and has also expressed preliminary support for regulatory changes that are consistent across the states that bring the entire industry up to the best management practices enacted by the leading recyclers.

The solar industry, NGO community, and DOE's Solar Energy Technologies Office are interested in seeing clear messaging that does not imply that all solar panels are hazardous waste, or that solar panels are dangerous during use, which could hurt the deployment of solar panels. EPA is aware of these sensitivities and has taken these concerns into account in the rule's messaging.

MOVING FORWARD:

ORCR will work on completing publication of the proposed rule. After proposal, the team will work on responding to comments and developing the final rule.

LEAD OFFICE/REGION: OLEM

OTHER KEY OFFICES/REGIONS: OP, OECA, OGC, ORD, REGION 5