

# Solar Panels/Lithium Batteries/RCRA: U.S. Environmental Protection Agency Announces Plan to Craft/Modify Universal Waste Regulations



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The United States Environmental Protection Agency (“EPA”) announced that it is planning to propose new rules to:

... improve the management and recycling of end-of-life solar panels and lithium batteries.

EPA states it is considering proposing:

- Adding hazardous waste solar panels to the Resource Conservation and Recovery Act (“RCRA”) universal waste regulations
- Establishing a new/distinct category of universal waste specifically tailored to lithium batteries

Because of the explosion of clean energy infrastructure in projects, EPA focused attention on the disposition of these two clean energy components at end-of-life.

EPA has indicated that hazardous waste testing of solar panels has determined that different varieties may have varied metals present in the semiconductor and solder. Metals such as lead and cadmium are projected to be present in some circumstances such that they could be considered characteristic RCRA hazardous waste. However, the federal agency recognizes that whether a particular solar panel would be a characteristic hazardous waste can vary even within the same model and manufacturer.

Nevertheless, because the United States is expected by 2030 to generate as much as one million total tons of solar panel waste, the federal agency believes consideration should be given as to the standards for their disposition.

Similar concerns apply to lithium batteries because of their use in electric vehicles. The proportion of electric cars powered by lithium-ion batteries is rapidly increasing. Further, recycling lithium-ion batteries is deemed important for purposes of conserving critical minerals and reducing the overall energy use needed to produce new batteries. However, in the case of lithium-ion batteries they are already typically deemed RCRA hazardous waste (and are designated as universal waste). Instead, EPA’s concern is that the possibility for fires when improperly managed represents a risk that needs to be addressed by modified universal waste regulations.

The purpose of the RCRA universal waste regulations is to provide a stream-lined hazardous waste management system. They are intended to encourage environmentally sound collection and proper management of the waste within the system.

In addition to hazardous waste batteries, materials that have been previously added to the universal waste system include:

- Certain hazardous waste pesticides
- Certain mercury-contained equipment
- Hazardous waste lamps
- Certain consumer electronic items
- Aerosol cans

The universal regulations are found in 40 CFR Part 273. They operate in lieu of regulation under 40 CFR Parts 262-272 for such hazardous waste. Note that the Part 273 Universal Regulations do provide for certain requirements such as:

- Employee training
- Labeling containers
- Time limits on accumulation of such waste at a site prior to offsite disposal or recycling
- Pipeline and Hazardous Materials Safety Administration shipping requirements

An additional advantage of universal waste regulations is that they are not counted towards the amounts of hazardous waste generation which affect the applicable RCRA generator category for a facility.

In the case of solar panels, note that some states have already enacted laws or regulations addressing their status (including listing as a universal waste). RCRA delegated states have the ability to undertake such listings.

EPA has not formally proposed a rule. Instead, it is projecting issuing proposed rules in the Summer of 2025.

A link to EPA's statement addressing these issues can be downloaded [here](#).