

# More Solar Panels Mean More Waste

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What do we do with millions of panels when they stop working? In November 2016, the Environment Ministry of Japan warned that the country will produce 800,000 tons of solar waste by 2040, and it can't yet handle those volumes. That same year, the International Renewable Energy Agency estimated that there were already 250,000 metric tons of solar panel waste worldwide and that this number would grow to 78 million by 2050. "That's an amazing amount of growth," says Mary Hutzler, a senior fellow at the Institute for Energy Research. "It's going to be a major problem."

Usually, panels are warrantied for 25 to 30 years and can last even longer. But as the solar industry has grown, the market has been flooded with cheaply made Chinese panels that can break down in as few as five years, according to *Solar Power World* editor-in-chief Kelly Pickerel.

To understand the challenges of solar waste, it's helpful to understand how the panels are built. There are different types of solar panels, but most of them contain aluminum, glass, silver, and an elastic material called ethylene-vinyl acetate. The problem is that they can also contain more dangerous and sometimes cancer-causing, materials such as lead, chromium, and cadmium. Functional panels are sealed off with glass and are very safe. But when the glass breaks or the panels are damaged, those substances can leak.

This risk is especially high with poorly made solar panels installed in areas that experience extreme weather, like hurricanes and hail. Winds and rain can break the glass, allowing chemicals to leach into the soil and then into the water system, according to Hutzler. Pickerel points out that though solar power helped Puerto Rico recover after Hurricane Maria, there were a couple areas on the island where panels were damaged. "In those situations, we have to make sure that we collect the damaged panels," she says.

To be clear, damaged solar panels leaching toxic materials isn't an enormous risk, given how much solar panels help address the near-term dangers of global warming and how many *other* dangers are present during hurricanes. But it's one we need to keep in mind since climate change experts suggest that these extreme weather events are here to stay.

Solar panels are just one part of the problem of old electronics, which is now the fastest-growing category of waste. China once accepted about 70 percent of the world's e-waste, but it started refusing to take recycling a couple of years ago. Since then, Western countries have started shipping their waste to Southeast Asian countries, but it's not a long-term solution. For example, companies sometimes sell old (but not dead) panels to other countries that want them for cheap, but, again, that just moves the waste around.

To read the full story, visit <https://www.theverge.com/2018/10/25/18018820/solar-panel-waste-chemicals-energy-environment-recycling>.