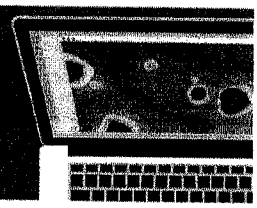

Solar Panel Waste: A Disposal Problem

Charles Rotter / December 23, 2018

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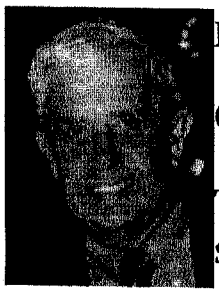
Solar photovoltaic energy is not as environmentally conscious a choice as many think it is

Solar Panel Waste: A Disposal Problem



By Jack Dini —— Bio and Archives—*December 7, 2018*

Global Warming-Energy-Environment |

The last few years have seen growing concern over what happens to solar panels at the end of their life. Consider the following statements:

– The problem of solar panel disposal will explode with full force in two or three decades and wreck the environment because it is a huge amount of waste which is not easy to recycle. [1]

– Solar panels create 300 times more toxic waste per unit of energy than do nuclear power plants. If solar and nuclear produce the same amount of electricity over the next 25 years that nuclear produced in 2016, and the wastes are stacked on football fields, the nuclear waste would reach the height of the Leaning Tower of Pisa (53 meters), while the solar waste would reach the height of two Mt. Everests (16 km). [2]

– Contrary to previous assumptions, pollutants such as lead or carcinogenic cadmium can be almost completely washed out of the fragments of solar modules over a period of several months by rain water. [1]

– In countries like China, India, and Ghana, people living near e-waste dumps often burn the waste in order to salvage the valuable copper wires for resale. Since this process requires burning off plastic, the resulting smoke contains toxic fumes that are carcinogenic and teratogenic (birth-defect causing) when inhaled. [2]

Solar photovoltaic panels, whose operating life is 20 to 30 years, lose productivity over time. The International Renewable Energy Agency estimated that there were about 250,000 metric tons of solar panel waste in the world at the end of 2016 and that this figure would definitely increase. Solar panels contain lead, cadmium, and other toxic chemicals that cannot be removed without breaking apart the entire panel. [3]

In November 2016, Japan's Environment Ministry issued a warning that the amount of solar panel waste Japan produces each year is likely to increase from 10,000 to 800,000 tons by 2040, and the country has no plan for safely disposing of it. [4] A recent report found that it would take 19 years for Toshiba Environmental Solutions to finish recycling all of the solar waste Japan produced by 2020. By 2034, the annual waste production will be 70 to 80 time larger than that of 2020. [5]

China has more solar power plants than any other country, operating roughly twice as many solar panels as the United States and also has no plan for the disposal of the old panels. In China, there could be 20 million metric tons of solar panel waste, or 2,000 times the weight of the Eiffel Tower by 2050. [4]

California, another world leader in deploying solar panels, likewise has no plan for disposal, despite its boast of environmental consciousness. Only Europe requires solar panel manufacturers to collect and dispose of solar waste at the end of their useful lives.

Another issue: according to federal data, building solar panels significantly increases emissions of nitrogen trifluoride (NF3), which is 17,200 times more potent than carbon dioxide as a greenhouse gas over a 100 year time period. NF3 emissions increased by 1,057 percent over the last 25 years. In comparison, US carbon dioxide emissions only increased by about 5 percent during that same time period. [4]

While disposal of solar panels has taken place in regular landfills, it is not recommended because the modules can break and toxic materials can leach into the soil, causing problems with drinking water. Solar panels can be recycled but the cost of recycling is generally more than the economic value of the material recovered. Used panels are also sold to developing world countries that want to purchase them inexpensively despite their reduced ability to produce energy. [3]

Washington State is the only US state that requires the manufacture to develop a recycle plan, but the state requirement does not address the cost of recycling. Adding a fee to the cost of solar panels would help ensure that the disposal issue is addressed in the event the manufacturer goes bankrupt. Since 2016, Sungevity, Beamreach, Verengo Solar, SunEdison, Yingli Green Energy, Solar World and Suniva have gone bankrupt. The result of such bankruptcies is that the cost of managing or recycling PV waste will be born by the public. [1]

Colorado-based Abound Solar that got hundreds of millions of dollars in federal loan guarantees before going belly-up and didn't just empty taxpayers wallets, it left behind a toxic mess of carcinogens, broken glass, and contaminated water. A Northern Colorado Business Report estimates it will cost up to $3.7 million to clean and repair the building so it can again be leased. [6]

A multi-year effort by federal, state and local agencies to prop up an Oregon solar panel manufacturer (SoloPower) has ended in a shuttered factory, millions of tax payers dollars down the drain, and a heavily polluted manufacturing site. Although the county had the legal right to seize the plant's equipment for delinquent taxes, it was unlikely to do so because the plant was heavily polluted with cadmium and hydrochloric acid. Cleaning up the plant is estimated to cost more than $500,000. [7]

Natural events such as storms, tornadoes, hurricanes, earthquakes, etc., can cause damage to the panels. For example, in 2015, a tornado broke 200,000 solar modules at southern California's solar firm Desert Sunlight. More recently, the second largest solar farm in Puerto Rico, generating 40 percent of the island's electricity, was severely damaged during a hurricane. With 100,000 pounds of cadmium contained in 1.8 million solar panels calculated for a proposed 6,350 acre solar farm in Virginia, any breakage is a cause for concern. Further, even rain water has been found to flush

out cadmium within an intact solar panel.[3]

While nuclear units can easily operate 50 or 60 years, solar panels have relatively short operational lifespans (20 to 30 years), so their disposal will become a problem in the next few decades. While nuclear waste is contained in heavy drums and regularly monitored, very little has been done to deal with solar waste. Solar waste outside of Europe tends to end up in a large stream of electronic waste. [4]

Conclusion- Solar photovoltaic energy is not as environmentally conscious a choice as many think it is. Besides being an intermittent source of energy and more expensive than traditional technologies, it has serious waste disposal issues that few countries are tackling. The hazardous materials used in their construction are not easy to recycle and can contaminate drinking water.[4]

References

1. Michael Shellenberger, "If solar panels are so clean, why do they produce so much toxic waste?", Forbes, May 23, 2018
2. Jemin Desai and Mark Nelson, "Are we headed for a solar waste crisis?", Environmental Progress, June 21, 2017
3. "Solar panel waste: solar energy not so green after all," naturalgasnow.org, Sept. 13, 2018
4. "Will solar power be at fault for the next environmental crisis?", Institute for Energy Research, Aug. 15, 2017
5. Osamu Tomioka, "Japan tries to chip away at mountain of disused solar panels," Nikkei Asian Review, Nov. 8, 2016
6. "Bankrupt solar panels firm took stimulus money, left a toxic mess, says report," foxnews.com, Oct. 31, 2013
7. Bonner R. Cohen, "Failed Oregon solar equipment plant leaves behind millions in taxpayer losses," The Heartland Institute, Nov. 26, 2018

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