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Sent: Sunday, January 13, 2019 5:38 PM

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Cc: Thomas G. Benton; Paul D. Trampe; Chris Yakabouski; Kevin Marshall; Timothy J. McLaughlin; David Ross; Gary Skinner; Aimee Mann; Wanda Parrish; Patrick White; Paulette Mann; Paulette Mann

Subject: Tornado Destroys 170,000 Cadmium Telluride Solar Panels - Desert Sunlight 2015

Spotsylvania Planning Commissioners --

I have been looking for months for scientific evidence that the "encapsulation" that sPower claims has been scientifically proven. They claim that a single sheet of plastic attached to the bottom layer of glass prevents the panel from shattering, and that all of the Cadmium remains inside a broken solar panel. Their analogy is a car windshield that will break, but not shatter.

I presented my 'nightmare scenario' to you several weeks ago in which a tornado or other severe weather event hits the solar power plant and the panels are destroyed and strewn over a large debris field. Then, severe contamination of the soil and water occurs because the cleanup effort is limited to picking up the large pieces of glass, and not every piece of debris. If the Cadmium is not effectively "encapsulated", then a very rigorous cleanup effort will be required, not a quick cleanup of the big stuff.

I found that a tornado has indeed hit a large solar power plant containing Cadmium Telluride thin-film solar panels manufactured by First Solar. The facility is called Desert Sunlight, it is located in the Mojave Desert in California, and has a capacity of 550 MW. An EF-0 tornado with a windspeed above 80 mph hit a corner of the facility and destroyed 170,000 CdTe solar panels.

The following document contains some information about the incident and a picture of the damage. NextEra Energy described the incident in an article about their role in helping to clean up the damage, since they co-own the facility.

Tornado Destroys 170,000 Cadmium Telluride Solar Panels - Desert Sunlight 2015

You can see from the close-up view of the damage that there are pieces of broken solar panels laying on the ground.

I have not been able to find any more information about this incident. I asked the Bureau of Land Management for information a few months ago since the facility is located on BLM land, but they have not responded to my request. I have also asked First Solar for information on the 'encapsulation' that has been claimed by the solar industry (including the North Carolina Clean Technology Center that sPower referenced in their Cadmium Safety document), but First Solar has not responded with any information. First Solar not only manufactured the solar panels used, but they are also the operators of the site. They are very well aware of this incident, the damage that was caused, and any environmental problems that were caused. However, they are not talking.

At the last Planning Commission hearing, Dr. Fthenakis (sPower's solar expert) stated that he has done extensive research about the encapsulation of Cadmium Telluride inside the two layers of glass. After the meeting, I asked Dr. Fthenakis for any references that show the Cadmium remains inside the solar panels following a catastrophic weather event like a tornado, hurricane, etc. He told me that all of his research has been done for encapsulation of Cadmium during a fire, and that he is not aware of any work that evaluates encapsulation efficiency following a severe storm. sPower included Dr. Fthenakis' report on Cadmium encapsulation during a fire in their Cadmium Safety report.

Note that the tornado that hit Desert Sunlight was the lowest category for a tornado (EF-0) and it still destroyed 170,000 solar panels. It does not take a major hurricane, like those that his the Caribbean, to cause extensive damage. There was a quote in the NextEra Energy article: “We were lucky that the tornado only impacted the corner of the facility, the extent of damage was significant.”

Once again, I ask you to prohibit the use of all thin-film type solar panels, which is what Culpeper County did in their Special Use Permit for the Greenwood Solar project that was recently approved. The risk of contamination of the soil and water is too great without clear scientific studies that prove that the Cadmium Telluride is effectively encapsulated in the solar panels after they are destroyed by a severe weather event.

Regards,

David Hammond

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