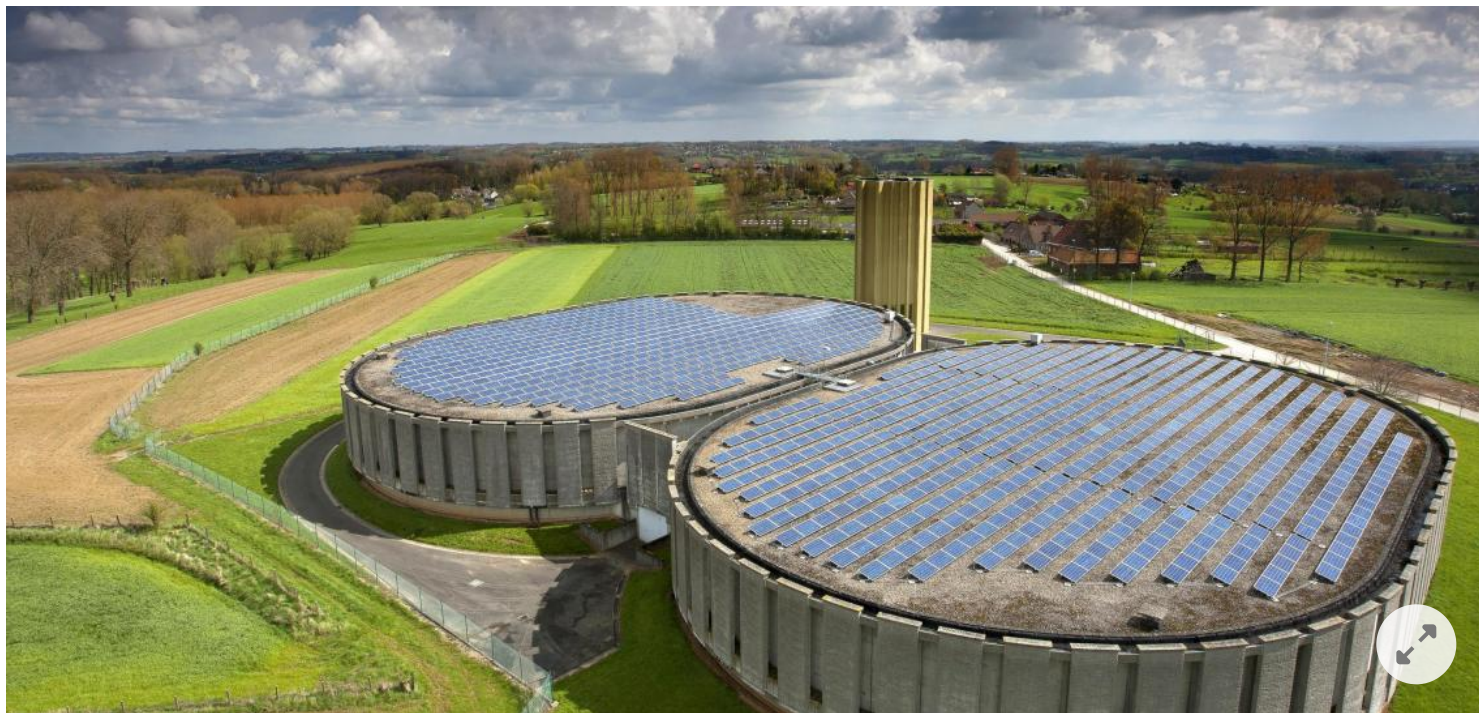


BUSINESS HEAVY METALS HAZARD

Study warns of environmental risks from solar modules

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View of two water tanks with solar systems in the Ardennes. The pollutants contained in the modules can pose an environmental risk

Source: W. Pattyn / picture alliance / blickwinkel / W

Contrary to what has been assumed, the pollutants contained in solar modules are water-soluble. This is shown by a study commissioned by the Ministry of Economic Affairs. It is the EU's turn to solve the problem.

The exception regulation of the European Ordinance on Hazardous Substances (RoHS) for solar modules results (</themen/solarenergie-solarfoerderung/>) in serious environmental risks. This is the result of a study commissioned by the Federal Ministry of Economics on the "release of pollutants from photovoltaic modules".

The final report of the Stuttgart Institute for Photovoltaics (ipv) and the Institute for Sanitary Engineering, Water Quality and Waste Management (Iswa) is exclusively available to WELT AM SONNTAG.

The researchers had investigated whether the pollutants used in the four main photovoltaic technologies are water-soluble. Contrary to previous assumptions, the result shows that pollutants such as lead or the carcinogenic cadmium can be almost completely washed out of the fragments of solar modules over a period of several months, for example by rainwater.

Toxic pollutants can be washed out

In view of the widespread use of solar modules, the researchers emphasize the importance of retrieving old solar modules and recycling them as completely as possible. However, it is "difficult to imagine that the collection will be 100 percent successful, not even in a technically and politically well-organized industrial country," warn the Stuttgart researchers.

"Environmental hazards certainly arise when modules or parts of them (legal or illegal) end up in normal waste bins, glass containers or other ways, e.g. in landfills or (possibly still finely ground) in the substructure of roads and remain there for a long time or always. "Then the pollutants would be released from water.

The researchers are particularly critical of the possible environmental risks from the use of polluted modules in developing countries. "The dangers and hazards caused by toxins in photovoltaic modules appear particularly high in countries where there are no organized waste disposal systems," the study continues. "Especially in less developed countries in the so-called Global South, which are particularly predestined for the use of photovoltaics because of the high solar radiation, it appears extremely problematic to use modules that contain pollutants."

Tons of lead and cadmium are used

According to calculations by the researchers, around 3700 square kilometers worldwide will be covered with solar modules by the end of this year. Every day, around three square kilometers of solar surface "with the pollutants it contains" would be added.

"From the installed power and the power-related weight, we can estimate that by 2016 photovoltaics had distributed around 11,000 tons of lead and around 800 tons of Cd (cadmium)," the study says.

In 2006, the European Union prohibited the use of toxic heavy metals, in particular solder containing lead, in the RoHS directive for the electrical industry. However, following the intervention of solar lobbyists, photovoltaic modules remained exempt from this requirement.

According to the Stuttgart researchers, lead-containing tin solder can be replaced by lead-free connections “with little extra effort” in the solar industry.

“The easiest way to avoid environmental hazards from pollutants, at least in Europe, would be to include photovoltaic modules like other electrical and electronic products in the EU’s RoHS directive,” suggest the Stuttgart researchers. “With the prohibition of lead in the soldering tin of the modules alone, 97 percent of the photovoltaic modules (with the exception of CdTe modules) would be free of pollutants and dangers to the environment would be avoided.”

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