



**Photovoltaikmodules - environmental acceptability and recycling potentiality**

The market for photovoltaic (PV) modules registers strong growth rates. It is assumed that solar modules produce energy on the average for 25 years. Afterwards they must be disposed of and/or recycled. It is a goal to introduce a sustainable recirculation system for PV products with a comprehensive collecting system including civic amenity sites; in addition suitable efficient recycling procedures must be developed, which allow a complete separation of valuable material in high purity and do not cause subsequent disposal problems. The level of knowledge for the liberation of pollutants from photovoltaic modules under different environmental condition at present is still small.

Liberation of pollutants during the operation of the modules according to information from manufacturers is impossible. The possibility of a release of pollutants, e.g. after stone impact, hail, fire, effect of acid rain or oxidizing agents etc. must be examined however. In addition it must be examined, what consequences appear, if modules and/or crushed modules are inappropriately disposed of (domestic waste, glass waste).

The project covers:

- Investigation and evaluation of recycling procedures for different solar modules
- Investigation of the liberation potential for pollutants from photovoltaic modules during the operation, in particular under strongly changing climatic conditions, and after the end of the lifetime under different conditions
- Evaluation of the environmental behavior and the recycling procedures regarding the situation in threshold and developing countries
- Investigation of the possibilities to avoid the liberation of pollutants and development of proposals for environmentally more friendly solar modules and recycling practices.
- Evaluation of the results.

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Fig.: Photovoltaic modules made of crystalline silicon