

Paper waste could be the solution to oil spills

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Credit: AI-generated image ([disclaimer](#))

(Phys.org)—Every year approximately 3 billion tonnes of waste are generated in the European Union. But not everything that gets thrown away is necessarily junk; in fact as one European research project is proving, one person's waste could be another's treasure. European researchers from the Technological, Environmental and Logistics Centre (TEC Ltd) in Slovenia have successfully transformed waste from paper mills into a product that can effectively soak up fuel from leaks or oil

from spills. The research group was 60 % co-financed by the Competitiveness and Innovation Framework Programme (CIP) Eco-Innovation Project's Executive Agency for Competitiveness and Innovation (EACI), receiving EUR 923,007 in funding to assist them in the 'process of industrialisation and the market uptake' of their technology.

Marko Likon, former CEO at TEC spoke about the link between paper mill [waste](#) and oil spills. 'We very quickly made the connection between oil and fuel sorption and waste from the paper industry, which then started us thinking of paper mill sludge as treasure rather than waste,' he said.

The amount of paper and paper-derived products is huge, and unfortunately so is their waste. In Europe alone the paper industry produces more than 14,400,000 million tonnes of paper mill sludge per year. The sludge from paper mills has traditionally had little usage as a material that can be employed in other [industrial applications](#), and as a result ended up in [landfills](#). Recent EU environmental legislation, however, means that as a result of [organic carbon](#) and other admixtures content in waste, landfilling is not necessarily an option.

Instead of becoming waste, the conversion to absorbent from paper mill sludge (CAPS) technology created by the research group at TEC means that paper mill sludge from the paper industry can now be recycled into a highly efficient [absorbent material](#) that they call CAPSorb, which is capable of cleaning oil and chemical spills in ports and marinas. The material is so efficient that they claim it will absorb more than 99 % of the initial quantity of the hydrophobic substance on the surface of the water, such as from an oil slick.

Its use is not only confined to open bodies of water, but it can also be used on hard surfaces to soak up substances of different viscosities. The

best part of the absorbent is that 1 kg of their material can absorb up to 4 kg of spilled substances.

By recycling waste to clean up waste they have not only provided an environmental benefit to the paper industry by reducing their waste, but have also provided an environmental benefit to businesses such as marinas by offering them an environmentally friendly solution to keep their surroundings clean.

The prospective market for their product is huge, aside from oil spills it can also be utilised in other industrial sectors, in particular those that require oil separators. These include ports, petrol stations (around 110,000 in Europe), [oil](#) refineries, mechanical workshops, car wash outlets, metal industries, the machine building industry, yacht marinas, restaurants, hotels, chemical industries and car parks.

The technology developed is relatively cheap, simple and easily replicable particularly in markets with a developed paper industry. An initial assembly line has already been put to the test in Slovenia and a further plant is scheduled to be ready in the near future in Finland. 'There are plans to expand our operation with a new production line within the Slovenian paper mill and later on with another production line in Finland,' says Franc Cernec, Project Leader at TEC.

The process of re-inserting waste into the economic cycle is known as Industrial Symbiosis, or Industrial Ecology. This process increases the portfolio of material or energy sources and takes its cue from naturally occurring ecosystems where animals and plants live in a symbiosis with each other. The underlying basis for this paradigm is that all wastes should be regarded as potential resources and that decoupling development from resource use is the key for sustainability. This philosophy also lies behind Europe's 'Resource Efficient Europe' initiative. This European project is an important step to proving what

can be done to achieve its goals.

Provided by CORDIS

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