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RESEARCHERS URGE CAUTION ABOUT THE USE OF PLASTIC “WASTE” IN CONSTRUCTION MATERIALS

New scientific review sheds light on the often overlooked full costs of a fast-growing false solution to plastic pollution.

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Construction materials made from used and discarded plastic are linked to negative ecological, economic, health, and social impacts that are commonly overlooked and understudied, and problematically create new markets that drive demand for more plastic production.

In a [review](#) of 100 studies primarily published in the last 10 years, published this month in *Frontiers in Built Environment*, researchers assessed the costs and benefits of incorporating used and discarded plastic into composites, roads, synthetic turf, lumber, soil stabilizers, adhesives, insulation, and rammed earth. Based on their findings, the researchers urge caution—and more research—before these materials are created and adopted widely for use.

Industries and businesses have typically categorized discarded plastic as plastic “waste” to justify its suitability for lucrative secondary markets. As the plastic pollution crisis—and a search for solutions—intensifies, production of construction materials made from plastic waste as a means of sequestering and making use of plastic pollution is growing rapidly.

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The researchers set out to determine what is known and to evaluate the hypothesized effects of incorporating plastic waste in construction materials. They found that studies commonly portrayed construction materials made from plastic waste as “recycled,” though in reality, the wastes were downcycled or applied to downgraded uses. Studies overwhelmingly portrayed creation of these materials as beneficial, even when negative impacts were clearly identified.

However, the researchers determined that benefits of this practice appear oversold: Studies overwhelmingly failed to fully assess—and in some cases, omitted—certain serious effects of producing construction materials from plastic waste. Notably absent were investigations into the effects of producing plastic particles (microplastics and nanoplastics), a step inherently necessary in creating many of the materials reviewed. The production and pollution of microplastics and nanoplastics is known to be hazardous to human cells, wildlife, and Earth systems. Also missing from reviewed studies were vital discussions of environmental injustices and occupational exposures to pollutants caused by producing the construction materials, and the health impacts of housing people in constructions made of plastic waste.

The study’s lead author, Erica Cirino, Communications Manager at Plastic Pollution Coalition and author of [*Thicker Than Water: The Quest for Solutions to the Plastic Crisis*](#), said, “The majority of studies skewed toward favorable despite evidence of serious costs and hazards. Downcycling plastic waste is not circular and represents an ongoing effort at greenwashing, which perpetuates plastic pollution and its related injustices—delaying urgently needed real solutions.”

The researchers emphasized the need to prioritize effective upstream solutions to plastic pollution, principally through curbing wasteful plastics production. In the immediate term, they recommended that safeguards be

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implemented to promote better health and labor conditions for people working in the informal waste sector, mandatory material end-of-life plans, and standardized material toxicity tests (preferably audited by a third party).

Paper: '[Assessing benefits and risks of incorporating plastic waste in construction materials](#)' by Erica Cirino, Sandra Curtis, Janette Wallis, Tierney Thys, James Brown, Charles Rolsky, and Lisa M. Erdle in *Frontiers in Built Environment*. Published July 5, 2023. doi: [10.3389/fbuil.2023.1206474](https://doi.org/10.3389/fbuil.2023.1206474)

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About Plastic Pollution Coalition: Plastic Pollution Coalition is a non-profit communications and advocacy organization that collaborates with an expansive global alliance of organizations, businesses, and individuals to create a more just, equitable, regenerative world free of plastic pollution and its toxic impacts. www.plasticpollutioncoalition.org

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