

A New Source of Green Energy: Burning Tires?

If rubber recycling hits a glut, there may be little choice.

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Reuse and recycle. It's a message that's been hammered home; unfortunately, it isn't always feasible. The automobile tire is the perfect example. Even hybrid cars need four of them apiece, and the global love affair with the automobile isn't ending anytime soon. Worldwide, about a billion tires are sold annually, and eventually all get tossed. In the United States alone, we throw away 300 million tires a year—one for every man, woman, and child. These castoffs are a huge source of automotive-related pollution—the average used tire weighs 22.5 pounds and contains about two gallons of fuel, as well as other combustible carbon compounds. Dumped into huge stockpiles, tires harbor vermin, contribute to the spread of disease by creating mosquito breeding grounds, and feed huge fires: In August 1998, a grass fire ignited 7 million tires near the town of Tracy in California's San Joaquin Valley, sending a plume of soot and noxious gas thousands of feet into the air. State authorities originally expected the fire to burn for about two weeks, but it endured for two and a half years. Cleanup was completed only in 2006, at a cost of \$19 million.

Tires are so difficult to dispose of because they don't easily become anything else. Up to now, any effort to recover the raw materials used to make tires has failed because more fuel is needed to decompose the tire than is used in making a new one.

Engineers have been making some progress in dealing with this refuse, using old tires as raw ingredients for new construction materials for roads and recreation facilities. But ironically, the best solution may be simply to use old tires to do what they do best: burn.

According to Michael Blumenthal, vice president of the environment and resource recovery group of the tire industry's Rubber Manufacturers Association (RMA), 1992 was the first year that processors began to dip into the scrap tire inventory to convert it into new products, mixing crumb rubber and tire dust—ground-up rubber tires—with a urethane binder to make sidewalks, playground surfaces, and basketball courts. Many engineers now construct new roads using tire chips for backfill and insulation and to give asphalt added springiness and longer life. Whole tires are used to build breakwaters, barriers, and berms. In Milpitas, California, engineers used 660,000 shredded tires as lightweight roadbed to support the Dixon Landing Road interchange on Interstate 880.

Because of innovations like these, figures from the RMA show the percentage of scrap tires that have been recycled in the United States is rising, from virtually zero in 1990 to 30 percent in 2005. The RMA's counterpart across the Atlantic, the European Tyre & Rubber Manufacturers' Association (ETRMA), recorded comparable achievements, with Europe recycling 27 percent of its scrap tires in 2004. This progress is helping make a dent in the stockpiles of old tires, at least in developed countries. In 1990 the United States had an estimated 1 billion old tires lying around. By 2005 (the most recent year for which statistics are available), the United States had slashed that figure to 188 million, thanks to both recycling and using tires as industrial fuel.

Vern Reum is one of the leaders in the effort to banish tires from the dumps and recycle them into productive use. Reum, president and owner of Tire Depot in Polson, Montana, has been in the scrap tire business for 18 years and now handles some 1.2 million of them per year. His company collects tires from Montana, Idaho, Washington, Oregon, and Wyoming, making

most of its money by charging dealers for transporting the tires and for disposal - a per-tire assessment known as a tipping fee.

At its Polson headquarters, a 30-acre tract on a Native American reservation in western Montana, Tire Depot searches the new arrivals for what Reum calls “the best used tires in the Pacific Northwest, bar none.” Inner tubes from this select group are loaded into open-top trailers and sold to rubber reclaimers, who use them as truck-tire liners. The sidewalls of huge truck tires - thousands per week during the summer - are sold as covers for silage pits and as sleeve anchors to hold plastic traffic barrels in place. The company shreds the rest of its tires into two-inch-wide strips and sells what it can to construction companies for backfill, roadbed, or retaining walls.

Tire Depot also has a huge number of tires - some 20 million at this point - buried beneath mounds of gravel. Reum hopes to process those tires into crumb rubber that he can peddle to day care centers, schools, horse arenas, and anyone else who needs a soft landing. He intends to build a \$2 million crumb rubber facility and is trying to get the state of Montana to float him a low-interest loan to cover it. “I’ll build it regardless,” he says. “I’m trying to do something for the environment.”

U.S. tire consumption for sports surfaces leapt 67 percent between 2003 and 2005, according to the RMA, but the association’s most recent scrap tire report cautions that boom times will last perhaps “another two to three years” before the market is saturated. The problem is that once a running track or a silage pit cover is built, it doesn’t need repair or replacement for a long time. Bearing up at the neighborhood playground is child’s play for a material that has done 40,000 miles of hard, hot turnpike time.

Consequently, the ultimate solution may be considerably less elegant than recycling: using tires as fuel. According to the Environmental Protection Agency (EPA), tires deliver 25 percent more energy than coal, with an emission profile of greenhouse gases and other pollutants that is about the same, making them acceptable as an industrial fuel. The RMA says that in 2005, 52 percent of all the scrap tires reclaimed in the United States were burned for fuel. In Europe the figure was 31 percent, according to the ETRMA.

Nowhere are more scrap tires combusted - 58 million of them in 2005 - with less fuss than in the giant kilns used to make cement. Kilns can consume whole tires but are routinely criticized for releasing pollutants, especially dioxin, which environmentalists contend is a by-product of chlorine compounds contained in the tires. Critics also worry that tires are opening the door to the use of kilns as general-purpose incinerators handling all kinds of nasty substances. “We believe the burning of tires is the first step to burning a whole slew of waste materials, even diapers,” says Anne Hedges, program director for the Montana Environmental Information Center. “The kilns are like a garbage disposal.”

Hedges is a firm supporter of recycling efforts like Reum’s. While Reum has sold tires for burning in the past, he has not delivered a single tire to a cement kiln or a paper mill for years. “We don’t believe in polluting the atmosphere, and burning tires is one of the worst things you can do with them,” he says.

Andy O’Hare, vice president for regulatory affairs of the Portland Cement Association, defends the kilns as “ecological stewards” because they use “other industry castoffs productively” and notes that dioxin emissions are regulated by the EPA. He says dioxin can be a by-product of cement making regardless of the fuel used in the process. To allay

