

Saddled With Legacy of Dioxin, Town Considers an Odd Ally: The Mushroom

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For years, a Georgia-Pacific lumber mill dominated the coast of Fort Bragg, Calif.
With the mill closed, the beautiful view remains, but so does toxic waste.

FORT BRAGG, Calif. —

On a warm April evening, 90 people crowded into the cafeteria of Redwood Elementary School here to meet with representatives of the State Department of Toxic Substances Control. The substance at issue was dioxin, a pollutant that infests the site of a former lumber mill in this town 130 miles north of San Francisco. And the method of cleanup being proposed was a novel one: mushrooms. Mushrooms have been used in the cleaning up of oil spills, a process called bioremediation, but they have not been used to treat dioxin.

“I am going to make a heretical suggestion,” said Debra Scott, who works at a health food collective and has lived in the area for more than two decades, to whoops and cheers. “We could be the pilot study.”

Fort Bragg is in Mendocino County, a stretch of coast known for its grand seascapes, organic wineries and trailblazing politics: the county was the first in the nation to legalize medical marijuana and to ban genetically modified crops and animals. Fort Bragg, population 7,000, never fit in here. Home to the country’s second-largest redwood mill for over a century, it was a working man’s town where the only wine tasting was at a row of smoky taverns. But change has come since the mill closed in 2002. The town already has a Fair Trade coffee company and a raw food cooking school. The City Council is considering a ban on plastic grocery bags. And with the push for mushrooms, the town seems to have officially exchanged its grit for green.

The mill, owned by Georgia-Pacific, took up 420 acres, a space roughly half the size of Central Park, between downtown Fort Bragg and the Pacific Ocean. Among several toxic hot spots discovered here were five plots of soil with high levels of dioxin that Georgia-Pacific says were ash piles from 2001-2, when the mill burned wood from Bay Area landfills to create power and sell it to Pacific Gas & Electric.

Debate remains about how toxic dioxin is to humans, but the **Department of Toxic Substances Control says there is no safe level of exposure [to dioxin -- NAB'S bold.]**

Kimi Klein, a human health toxicologist with the department, said that although the dioxin on the mill site was not the most toxic dioxin out there, there was “very good evidence” that chronic exposure to dioxin caused cancer and “it is our policy to say if any chemical causes cancer there is no safe level.” Fort Bragg must clean the dioxin-contaminated coastline this year or risk losing a \$4.2 million grant from the California Coastal Conservancy for a coastal trail. Its options: haul the soil in a thousand truckloads to a landfill about 200 miles away, or bury it on site in a plastic-lined, 1.3-acre landfill.

Alarmed by the ultimatum, residents called in Paul E. Stamets, author of “Mycelium Running: How Mushrooms Can Help Save the World.” Typically, contaminated soil is hauled off, buried or burned. Using the mushroom method, Mr. Stamets said, it is put in plots, strewn with straw and left alone with mushroom spawn. The spawn release a fine, threadlike web called mycelium that secretes enzymes “like little Pac-Mans that break down molecular bonds,” Mr. Stamets said. And presto: toxins fall apart.

In January, Mr. Stamets came down from Fungi Perfecti, his mushroom farm in Olympia, Wash. He walked the three-mile coastline at the site, winding around rocky coves on wind-swept bluffs where grass has grown over an airstrip but barely conceals the ash piles. It was “one of the most beautiful places in the world, hands down,” he said. Quick to caution against easy remedies — “I am not a panacea for all their problems” — he said he had hope for cleaning up dioxin and other hazardous substances on the site. “The less recalcitrant toxins could be broken down within 10 years.”

At least two dioxin-degrading species of mushroom indigenous to the Northern California coast could work, he said: turkey tail and oyster mushrooms. Turkey tails have ruffled edges and are made into medicinal tea. Oyster mushrooms have domed tops and are frequently found in Asian food. Local mushroom enthusiasts envision the site as a global center for the study of bioremediation that could even export fungi to other polluted communities.