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BODY:

The brilliant scientist knew he was dying, his brain was under siege, but he wanted to make his mind work.

So he would retreat to his basement, decorated with photos of the sun-bleached buildings of his native Greece, and compose lists on both sides of lined notebook paper.

He listed hundreds of opera recordings he had collected.

He listed restaurants he dined at in his world travels.

He also listed chemicals he had mixed and measured. He had handled almost every element on the periodic table, from aluminum to zinc, in his successful career, during which he had written 225 scientific papers and lectured in Russia, France, China, Brazil and Australia.

As the scientist wrote, a tumor ballooned in his head, squeezing his brain. His memory faded. He began fumbling for words.

Nick Karayannis' brain was betraying him, and he thought he knew why. He suspected it was connected to his years as a research chemist at Amoco Corp. Workers in the same building where he had conducted groundbreaking experiments had developed brain cancer. He didn't think it was coincidence.

Neither did his son, Marios, a lawyer specializing in personal injury cases. So he took on a new client: his father.

Nick Karayannis would never make it to court. But when he died last February, his son pushed on.

He hadn't known what his father was writing during those final months, so he wasn't sure what

to make of it.

"He never said, 'I composed a list. Here are all the chemicals I've worked with,' " Marios Karayannis says.

Maybe it was just a mental exercise. But maybe it was something more.

Could Nick Karayannis have been taking inventory, trying to figure out if one chemical, or a combination, had somehow poisoned him?

His son will never know.

"But knowing his personality," he says, "I suspect it was exactly that."

The Amoco Research Center, a pastoral campus of brick buildings in Naperville, 30 miles (50 kilometers) west of the oil giant's Chicago headquarters, is a hub of invention.

This arm of research and development has brought Amoco billions of dollars over the years with developments that include the raw material for making polyester, oil additives and plastics used in car lights, carpet fibers and milk cartons.

Many came from the 500 building complex, center of chemical research.

Now that complex particularly building 503 is at the heart of a medical mystery that is tragic and frustrating and, after a decade, still unsolved.

Since 1989, 20 center workers have been diagnosed with benign and malignant brain tumors; 14 worked in the 500 complex.

The seven with brain cancer all men were in that complex, five in building 503. All were Amoco veterans, working on similar projects from the late 1970s to the mid 1980s.

Four, including Nick Karayannis, are already dead.

The malignant tumors are gliomas, a cancer of the cells that insulate the nerves of the brain.

The glioma rate in building 503 is eight times the national average; seven per 100,000 people develop the tumor each year.

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Amoco has spent millions investigating and hiring experts to determine what, if anything, in the workplace caused these tumors.

"We've done everything we can to take the place apart and get to the bottom of what's going on here," says Mike Wells, Amoco's epidemiologist. "So little is known about brain cancer and tumors, trying to understand is a very difficult thing."

"We're trying to put together a puzzle," he adds, "and we don't even have a picture of what it looks like."

Amoco has studied the air, water and soil, digging 30 feet (9 meters) deep to make sure the building was not atop a toxic dump. It has checked for radiation, poked into drain traps and ventilation hoods.

Experts even installed life-size mannequins with nose and mouth sensors to test vapors and built a model of the 500 complex, with trees and roads, and recreated weather and atmospheric conditions to study ventilation.

Soon, Amoco will receive the results of its most exhaustive study: the final report from a two-year investigation by researchers from Johns Hopkins University and the University of Alabama-Birmingham.

Last October, those investigators confirmed their earlier findings that the malignant tumors seemed more than a random cancer cluster. But Amoco emphasizes that's not proof.

"What we have been able to do is establish a pattern with the brain cancers that suggests the possibility of a work relationship," Wells says.

Though investigators have yet to declare a culprit, attorneys already are pointing fingers.

Nine lawsuits allege workers were exposed to numerous neurotoxins elements that poison the central nervous system because of inadequate ventilation and lax safety.

"Amoco was exposing its employees for 25 years to toxic chemicals and did nothing about it," claims Grant Dixon, a lawyer representing six former workers, three of whom are dead. "Since the building opened, 503 had a number of problems and has never been adequately fixed. Ventilation is the heart of the whole case."

Amoco says it always responded quickly to complaints of foul odors or other ventilation-associated problems and notes investigators have discounted this as a likely source of tumors.

"If there was a ventilation problem, you would expect the carcinogen would have gone through the entire building as opposed to just have been limited to the third floor and perhaps the second

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floor," adds Jim Lowry, head of Amoco's brain cancer task force.

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