

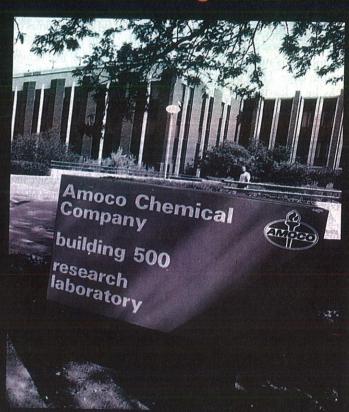


BY JONATHAN EIG

Nightmare in Building 503

The Amoco Research Center in suburban Naperville has been hit with a horrifying medical mystery. Since 1989, 19 employees have been

Now, for the first time, some of the



No one else at the table notices. Nor do they notice, later, when the same man pours coffee into his wineglass and wine into his coffee cup. But his wife worries all the way home.

A memo. One of thousands. Maybe one of millions. Like a tiny cell in a complicated organism, it probably means nothing by itself. It is written by a technician to someone higher up. They are identified by code.

From: ZGRSO2
To: ZEPPO2
Date and time 06/02/88 08:09:51
Upon initial investigation of the odor problems in the 500 building. I found a number of directly related infractions that required immediate

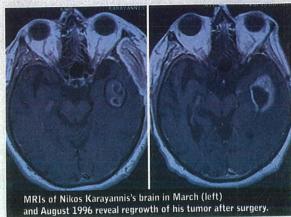
resolution....

A wristwatch. Gold face, gold band. Something the company presented him in honor of long years of service. The owner has just finished a barrage of medical tests, and the doctor has delivered the worst possible news. It is a brain tumor, it is malignant, and it is already quite large. He'll be lucky to live a year. As he is leaving the doctor's office, the man's wife reaches into her purse and pulls out her husband's watch. The man straps it back on his wrist.

The doctor's eyes open wide, as if seeing something he had missed on the MRI. "Oh," he says. "You work at Amoco."

An office park. Driving by on Interstate 88 in suburban Naperville, one might mistake it for a small college campus. There are ponds, trees, acres of prairie grass, and a family of trumpeter swans paddling on a man-made lake. This is the Amoco Research Center, a series of chemical laboratories and office buildings spread over 180 acres.

It is also home to a horrifying and ongoing medical mystery. Since 1989, 19 employees have been diagnosed with brain tumors. Fifteen of them worked in



the same building. Seven of the 19 had malignant tumors. If the entire country had the same cancer rate as that building, brain cancer cases would increase sevenfold, to about 122,000 cases a year.

By the latest count, Amoco has recorded seven gliomas (malignant tumors in the cells that support and insulate the brain's nerves); five benign meningiomas (affecting the membranes enclosing the brain); five benign acoustic Schwannomas (affecting cells covering nerve fibers near the inner ear); and two benign pituitary adenomas (affecting the pituitary gland). The malignant tumors have already killed four of their seven victims, and the other three probably don't have long to live. Benign brain tumors are much less dangerous, assuming that they are detected before they begin pressing on sensitive areas of the brain. Everyone at Amoco with a benign tumor has survived, and at least one patient has returned to work.

For a time, even as the medical files accrued, Amoco officials said they were not sure they had a problem. After all, more than 8,000 men and women have worked at the research center since it opened in 1970. In any large work force one would expect to find a certain number of cancer cases, and coincidental

clusters of cancers occasionally occur. But malignant tumors were found in five men who worked at the same time on the same floor, conducting similar kinds of experiments. Today, Amoco officials concede there appears to be a problem.

Investigators have focused most of their attention on that troubled floor—the third floor of Building 503—where researchers were working to develop new ways to make plastics. As you drive by on Interstate 88 you can see it. It's the floor with the shades drawn.

So far, Amoco has spent millions of

dollars hiring consultants to discover what caused the outbreak of tumors in Building 503. The experts have scoured the building for radiation and electromagnetic waves. They have torn open walls and ripped out pipes in their search, yet they say they have found no flaws in the building. Now the consultants are poring through thousands of lab records to see if they can pinpoint a small number of chemicals used by all or most of the cancer victims. They are

wrapping up their studies and preparing to issue reports. But even if they narrow the field to a handful of dangerous substances, it's unlikely they will ever be able to say with certainty what caused these tumors. Carcinogens don't leave fingerprints.

The elevator door opens and three Amoco executives step onto Building 503's third floor. One of them is an epidemiologist, an expert in the causes of disease; another is a chemical engineer; the third is a public relations specialist. They have come on a sunny summer day to lead a tour of the building. But perhaps more specifically, they have come to illustrate their belief that Building 503 is safe. They offer their presence here on the third floor as proof.

Some at Amoco refer to it as the "ghost floor." The plumbing has been torn out of the sinks, and laboratories have become lightly coated in dust. The place has the feel of an abandoned Western mining town, but with linoleum tile floors instead of dirt-packed streets. Except for a few test tubes, some tan metal furniture, and a few old safety notices pinned to bulletin boards, nothing has been left behind. Eerily, however, the ventilation shafts continue to suck air





THE DOCTOR'S EYES OPEN WIDE, AS IF SEEING SOMETHING HE HAD MISSED ON THE MRI. "OH," HE SAYS. "YOU WORK AT AMOCO."

out of the labs and blow it into the sky.

"I compare this to a big puzzle," says Jim Lowry, the chemical engineer and chairman of the company's brain tumor task force, using a metaphor popular among Amoco officials. "But in our case we don't have the picture on the cover of the box and we have some of the pieces missing, and some others don't belong in the box. We're probably at the point where we've got two-thirds of the puzzle constructed."

But some current and former Amoco employees—including several of the men stricken with cancer—think the company may be disregarding a big piece of the puzzle. Speaking here for the first time, they say they were concerned about foul odors and poor ventilation in Building 503 long before the first two cases of brain tumors were diagnosed in 1989. Several employees say vents were malfunctioning from the day the building opened. A memo, dated 1988 and written by a worried building technician, says

chemical vapors may have routinely been pulled into the air conditioning system and circulated throughout the building. Some former employees think Amoco is focusing on chemicals rather than ventilation because the company doesn't want to admit the cancers might have been preventable. If no one knew at the time the chemicals were dangerous, it might be more difficult for the sick employees to blame Amoco. But what if human error created poor ventilation and exposed chemists to fumes that should have been safely removed? "It really gets me upset when Amoco calls it a mystery and the newspaper headlines say 'The Mystery of Building 503," says Glen Schultz, the building technician who wrote the 1988 memo. "I don't think it's a mystery. I think I put my finger on it."

Amoco officials acknowledge that the ventilation system had flaws and that some vapors might have been blown through the air conditioning system. But they also say they have thoroughly inves-

tigated the conditions and determined that the fumes were not potent enough to have caused harm.

Amoco has been widely lauded in the press for conducting an aggressive medical investigation and for sharing its findings with employees. But nearly ten years after the first two cancers were diagnosed, employees continue to live with the fear of the unknown. The overwhelming majority at Amoco still have not been screened for cancer. "I feel that I've been at risk," says one employee who worked in Building 503 for more than a decade, beginning in 1979. "I hope nothing will happen, but you don't really know. And by the time you find out, it's too late."

As this employee and others have discovered, fear can be malignant, too.

A family tree. Typed the old-fashioned way, on an electric type-writer. It is a document worthy of a brilliant mind, with footnotes, cross-refer-

ences, and only a hint of bragging about the accomplishments of the author's family. Written in English and Greek, it is the last quality work produced by Nikos Karayannis, whose own footnote reads in part: "Research on Polypropylene production with Amoco Chemical (in Naperville, IL) in 1970-1994, retiring as Senior Research Associate. . . . 29 US patents, 225 original research papers, 6 review articles, and 4 (at this time) Oakwood Consulting studies."

Karayannis never ceased to startle his family and friends. He spoke English, French, Greek, German, and Latin. They said he knew more about opera than most professional singers, and he knew more about Shakespeare than many college English professors. It was not uncommon, in the Karayannises' Naperville home, to find Nick in the den watching a soccer game on the television while listening to an opera on the stereo and reading a book by Melville or Joyce. During conversation at the dinner table, his wife would notice his empty hand moving across the tablecloth as if he were writing scientific formulas, or perhaps a sonnet. "What he was doing, I don't know," says Sasha, 65, a beautiful woman who still walks with the grace of a young dancer. "I'd shake him. 'Karayannis, are you listening to me?" He heard everything she said, but it was not enough to fully occupy his mind.

Sasha never grasped the intricacies of her husband's work at Amoco. "It's plastic," she says. "That's the only thing I know. He developed a catalyst to make plastic. Supposedly, he was one of the best."

Yes, he was. Karayannis, along with four other scientists in Naperville, developed a process by which certain plastics could be made more consistently, more efficiently, and less expensively than before. It might not sound glamorous, but for a chemist, such a discovery is equivalent to winning the Super Bowl. In the biggest research facilities, it happens perhaps once in a decade. Every year, the catalyst discovered by Karayannis and his team is used to produce more than 2.5 billion tons of carpet fibers, plastic bottles, automobile bumpers, and other items too numerous and mundane to mention.

When Karayannis retired a few years ago, he planned to spend more time with Sasha, travel more often to their native Greece, and start his own consulting company with several other Amoco re-

tirees. Even before the retirement, however, in the early 1990s, Sasha suspected something was wrong with her husband. He would drive too fast and lose his temper when she told him to slow down. He had never had a temper before. Sasha dismissed it as a factor of age.

Then came even more strange behavior. One night, out for dinner at a Greek restaurant in Chicago, Karayannis stopped putting his fork to his mouth and relied exclusively on his knife to spear and eat his food. He poured coffee into his wineglass and wine into his coffee cup. Then she began to notice a slight limp, as if her husband were favoring his right side. While vacationing in Florida in the fall of 1995, he lost consciousness and was taken to the hospital. The brain scan didn't detect a problem, so he went home. A few months later, while having breakfast with a friend, he collapsed on the man's shoulder and remained unconscious for 30 minutes. This time, the brain scan revealed a growth the size of a walnut behind his left temple.

Dr. Douglas Anderson, at Loyola Medical Center in Maywood, had already diagnosed two brain tumors among Amoco employees when Karayannis came to see him. At first, he didn't know Karayannis was his third. It dawned on him only when Sasha reached into her purse and pulled out the gold watch with the Amoco torch on the band. Karayannis was his third patient from Amoco. Later, he would operate on a fourth. Only one of the men has survived.

Dr. Anderson removed the tumor from Karayannis's brain in February of 1996 and began treating him with radiation and chemotherapy. Karayannis talked about returning to work at his new consulting company, and for a while he did. He tried to make it to the Amoco Research Center during the lunch hour to play bridge with some of his old friends, but after a short time Dr. Anderson ordered Sasha to take away his car keys. "That was my hardest day," says Sasha. "I told him Dr. Anderson took the keys."

Karayannis told his friends that he was determined to get a few more years of work from his brain, and he retreated to his wood-paneled basement to exercise whatever cells he could still command. He began making long, carefully written lists. Lists of operas. Lists of composers. Lists of the world's top restaurants. Lists of the potentially dangerous

chemicals he had worked with at Amoco.

It was as if the man were trying to somehow impose order on chaos. His mind, the thing he thought he knew best, had broken ranks, and he was struggling to bring it back in line. Before long, however, his careful lists began to break down. The names of operas began to pop up in lists of chemicals, and chemicals crept into his lists of operas.

The family tree, completed in September of 1996, would stand as his last fine work. Soon after that, he began bumping into walls and falling down. For months, he stumbled around with a lump the size of a baseball protruding from his head and bright pink and yellow lines painted on his skull to guide the doctor when he fired beams of radiation at the spot where his tumor had grown. For most of 1997 he was confined to bed, where he would listen to operas and try to read. Books that would have lasted him only a week or two now tortured him for months. By the end of the summer, the cancer cells had taken over so much of his brain that he could no longer speak. As winter set in, his children half hoped he would pass away.

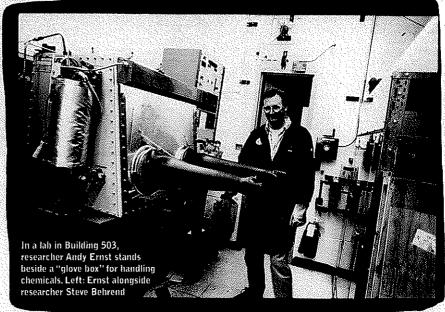
He lasted until February 5, 1998. Maria Callas was singing on the stereo. Flaubert's *Bouvard and Pécuchet* was on his nightstand. He was 66 years old.

A fleck of dust. A tiny gray blur floating in red liquid. In fact, it is a malignant cancer cell examined through a microscope. Healthy cells grow and divide to form new cells. But when they lose the ability to control their own growth, they start to divide too often and without any order. That's how tumors form, from one tiny cell among millions.

If healthy brain cells were put in the same dish of red nutrients, they soon would die. But malignant cells are considered practically immortal. Some of those stored in Dr. Herbert H. Engelhard's lab at Northwestern Memorial Hospital are from people who had cancer in the early 1950s. The persistence of these cells explains why almost no one survives a malignant brain tumor; they continue to divide and grow, crowding the healthy parts of the brain until it shuts down.

"The diagnosis of brain cancer is like a lightning bolt out of the blue," says Dr.





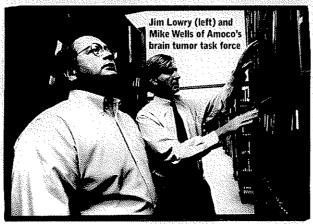
"I'M MORE WORRIED ABOUT SUCKING SOMETHING OFF THE INTER-STATE THAN I AM BREATHING ANYTHING HERE," SAYS LOWRY.

Engelhard, director of the brain tumor research lab. "One day you have a headache, you go for a scan, and then they tell you you probably have about one year to live. By the time you get the scan, it's too late."

The brain's glia cells are like Jell-O; they're soft and fatty. They support the brain's neurons, and they give rise to malignant tumors. Engelhard says it is almost impossible to determine why cancer cells start to grow in some people and

not others. Secondhand cigarette smoke, electromagnetic waves, low doses of radiation, charred meat, and toxic chemicals are all possible triggers. "Sometimes it seems like we live in a carcinogenic soup," he says.

Everyone stricken with cancer wants to know why, says the doctor, but pinpointing a cause for each tumor is like trying to bottle lightning. To make matters trickier, years might go by between the patient's exposure to a carcinogen and the detection of a tumor. Even if a researcher were to discover that a certain toxic chemical caused cancer and that workers in Building 503 had been exposed, it still would not prove that the chemical had caused these particular tumors. Brain cancer defies much of our knowledge and most of our attempts to control it.



Amoco, formerly known as

Standard Oil, is one of the world's biggest businesses, with more than 40,000 employees and \$36 billion in revenues last year. The company finds oil, converts it into petroleum products, and uses some of the byproducts to produce raw materials for polyester, yarn, and carpet backing. Along the way, things get complicated. There are wells to drill, gas stations to manage, oil to ship. In such a giant operation, sometimes accidents happen. It is also true, however, that in a giant corporation coincidences sometimes occur. For a long time, Amoco has been struggling to determine which one it has on its hands.

In 1989, in a span of about 30 days, two men who worked in laboratory 3327 on the third floor of Building 503 were diagnosed with gliomas. The coinci-

dence seemed too great for many employees to ignore, and the company promised an investigation. It began by going through its internal records to see if any other employees or former employees had developed similar tumors. Investigators found a case from 1986, and they discovered that this employee, too, had worked in lab 3327.

At the time, Amoco inspectors considered every possible

cause. They tore apart the walls, floors, and ceilings in Building 503. They investigated satellite dishes and radio microwave towers to see if they were emitting any dangerous electromagnetic signals. They studied the work histories of the cancer victims to see if they had come in contact with any known neurotoxins.

The investigation uncovered some startling false leads. Early in the hunt, investigators discovered that a radioactive instrument had been lost on the Amoco campus in 1983. It was a small source of radioactivity. So small you would have to work within three feet for eight months before you received a dose large enough to concern the U.S. Nuclear Regulatory Commission, and even then, you would probably be OK. The instrument, used as a gauge to measure energy levels, was contained in a *(continued on page 126)*

Building 503

tinued from page 99 41/2-by-7-inch steel box that weighed about 30 pounds. It was last seen, padlocked in a containment vessel, in another building 300 yards from 503. Inspectors from Amoco and the Nuclear Regulatory Commission searched for three months but never found it. Nor did they find evidence of radioactive contamination anywhere on campus.

"If it was something that obvious, we would have found it long ago," says Mike Wells, Amoco's chief epidemiologist and a member of the brain tumor task force.

He sounds wishful.

The 1989 investigation came up dry. Even the statisticians said three tumors in one laboratory, while unusual, were probably no cause for alarm. Two of the three men had worked in lab 3327 for of 1996, when Nick Karayannis was diagnosed with another glioma, the fourth among employees on his floor. Karayannis didn't work in lab 3327, but he was close enough for everyone concerned. He was also one of the company's bestknown and best-liked chemists. When news hit that he had a malignant tumor, seven years of a gradual calming among employees ended in an instant. Fear spread quickly, like a foul odor.

Norman Stein worked as the director of the polypropylene research division on the third floor of Building 503 from 1973 to 1987; then he stayed in the building as a senior consulting engineer until 1992, when he retired. He supervised Karayannis and worked with many of the men who developed tumors. He says employees perfectly safe, and employees continue to occupy the labs and offices on the first two floors. But Amoco's own internal documents suggest that Building 503 once had serious problems. The key issue, according to former employees and a detailed 1988 memo, was ventilation.

"There are always ventilation issues in a chemical lab," says Stein. "I was there when the building opened. I was instrumental in designing one of the pilot plant areas in [another Amoco research] building. It was all state of the art. They tried to put in the best. As time went on, we found out some of the hoods [enclosed areas in which chemicals are mixed and fumes are removed through vacuums] were not as good as we'd like. They updated them. That was after the first can-

WHEN NEWS HIT THAT KARAYANNIS HAD A MALIGNANT TUMOR, SEVEN YEARS OF A GRADUAL CALMING AMONG EMPLOYEES ENDED IN AN INSTANT.

only a year, and they had worked there within a year of their diagnoses. Most tumors take at least five years from their initial growth until their detection.

Amoco executives calculated that roughly 2,500 people had worked in Building 503 or one of its two connecting buildings in the 500 complex. "The fact that all 3 of the male employees having gliomas were exposed to this laboratory is a true curiosity but seems to be a blind alley," wrote Dr. Paul S. Levy, an Amoco consultant from the University of Illinois at Chicago, in a 1989 report.

Epidemiologists usually like to talk about darts rather than alleys. Toss enough darts, and some will form clusters on the dart board. Most of the time, the cluster is the result of random luck. The same thing happens with cancer clusters. Every few years, one reads about a high school where several math teachers have developed Lou Gehrig's disease, or a school where an unusually high number of children have developed leukemia, or a suburban street where brain tumors occur in almost every house on a particular side of the street. In almost every case, the experts find no cause, and they chalk it up to random clustering, otherwise known as lousy luck. That's what they said about Amoco, too. Consultants from the Mayo Clinic recommended that Amoco take no action except to monitor its employees. The third floor of Building 503 remained open.

But everything changed in February

have been concerned—not only because they fear for their safety, but because they have been losing close friends. "It's kind of eerie," says Stein, 72. "I spent 23 years there. You have to ask yourself, Is it going to happen to me? I didn't live in the laboratories. I had an office at the end of the hall. But I was in them all the time. I don't know if [lab work] is a factor or not. I'm sure there's not just one factor. It's probably genes, your lifestyle, and exposure."

Stein had an MRI. Amoco paid for it, of course. And it came back clean. But he can understand why the overwhelming majority of his Amoco peers have chosen not to. Even good news means you're OK only until your next annual test. Bad news, though, may be a death sentence.

With the Karayannis diagnosis in 1996, Amoco restarted its investigation, this time hiring experts from the University of Alabama at Birmingham School of Public Health and the Johns Hopkins University School of Hygiene and Public Health to do the bulk of the work. The company also decided to close the third floor of Building 503.

If something did go wrong on the floor, it probably happened in the early 1980s, when most of the seven glioma victims were working there, Amoco officials say. They are hoping that the latest round of medical and chemical detective work will identify a small list of chemicals used at the time by all the victims. The company insists that the building itself is

cer, but it didn't have anything to do with the cancer. We were always concerned about ventilation. During 20 years we did smell vapors coming up from the [labs on the] second floor."

Employee concerns over ventilation began almost as soon as Building 503 opened. Irwin Ginsburg, now retired, worked as supervisor of employee relations when the research center opened in 1970. "We moved into the building too early," Ginsburg says today. "We had workmen all over the place. There was a problem with the installation of the hoods in the labs. Instead of taking the air out they were pushing it in. The problem was corrected fairly soon after we moved in, but for a while we had to prop doors open with barrels to correct the negative air pressure."

During the early 1980s, when the country was suffering an energy shortage, employees at Amoco say they believe the company reduced air circulation in the building to save electricity. If it did so, chemical vapors might have lingered dangerously long in the building. Amoco officials, however, insist that the company never intentionally reduced the speed of its vents.

Amoco overhauled its ventilation between 1992 and 1994. Company officials said there was never anything wrong with the old system, but they wanted to keep the plant operating at state-of-the-art conditions. Under the old system, the

Building 503

circulation system brought completely fresh air into Bulding 503 ten or eleven times every hour. Under the new system, all the air is turned over 18 times an hour.

Jim Lowry, of Amoco's brain tumor task force, says experts have inspected the ventilation system many times. They have created computer models to study the air flow, and they have even placed dummies in labs and released clouds of chemicals to see how they would be affected by certain exposures. He says the ventilation system was properly installed and properly operated, and it never created a risk to anyone's health. "I'm more worried about sucking something off the interstate than I am breathing anything here," says Lowry.

But even computer models can't perfectly simulate a ventilation system that is

Though no one can say how many chemicals were flushed down the vacuum system, Schultz knows from experience that it happened. When he first went into the basement to investigate the problem, a chemist or technician somewhere in the building disposed of chemical vapors using a vacuum, and the fumes reached Schultz and his crew. "We were overcome," he says. "Our eyes watered, we started choking, and we got out of there in a hurry. When we came back, the fumes were gone, and do you know where they went? Into the air conditioning system. It got blown back into the building."

When the second wave of cancer cases came to light a couple of years ago, Schultz says, he went to a doctor for an MRI, which showed he had not devel-

A lawyer. There had to be a lawyer. But, in this case, a lawyer with a familiar name. As his father lay dying, attorney Mario Karayannis began his own investigation of the cancer cluster at Amoco. He began learning for the first time about catalysts and heavy metals, about ethylene and propylene, about olefin polymers and solvents. His brother, Yannis, now studying at the University of Florida, was supposed to be the young chemist in the family. But Mario's father urged him to learn what he could. Nick knew he wouldn't live long enough to see the mystery solved. He wanted to know his son would take care of it.

"I don't want to say my father was obsessed," says Mario, 37, a tall, handsome, dark-haired man who practices law with a small firm in suburban Elgin. "But he

ONE NIGHT ALBERTINS SPILLED A MUG OF BEER AND KICKED THE TABLE. LATER, HE FOUND IT IMPOSSIBLE TO SIGN HIS OWN NAME. THEN HE NOTICED HE WAS LIMPING. HE KNEW RIGHT AWAY: "I WAS NUMBER 13."

no longer in place. And a memo dated June 2, 1988, seems to suggest the old system had abundant problems. The two-page memo, which carries the subject heading of "Odor Problems - 500 Bldg Complex," is written in the dense language of an engineer. In fact, it was written by former engineering technician Glen Schultz, who identified himself in the memo as ZGRSO2.

Schultz discovered that some chemists and technicians probably were using vacuum hoses in their labs to remove waste from the solvents they were mixing. Proper procedure would have required the scientists to put their waste in specially designed cans, which would be removed by waste haulers. But some of the scientists cut corners. The vacuums carried the waste to a tank in the basement, where Schultz, upon investigating complaints of foul odors, found a wide-open 11/2-inch drain line valve. He recognized that vapors from the waste were flowing from the open valve and into nearby blowers feeding the ventilation system, according to the memo, and he immediately capped the valve.

Schultz, reached at his home in Naperville, was surprised someone had found his 1988 memo, but he seemed relieved. "I'm glad someone's interested in it," he says.

oped any tumors. He also began writing a long letter to members of Amoco's brain tumor task force reminding them of his 1988 memo and explaining in greater detail how chemicals from the labs entered the building's airstream. Amoco had spent millions of dollars to completely reconstruct the building's ventilation and waste disposal system, but Schultz's letter to the company expressed concern that chemical vapors might still circulate through the building under certain atmospheric conditions.

Fred Tremmel, an industrial hygienist at Amoco and a member of the brain tumor task force, says investigators are aware that small amounts of chemical vapors may have once traveled through the air conditioning system. But he says investigators concluded that these vapors were not responsible for the cancers, and they are certain that no fumes circulate today through the building under any conditions. Researchers are focusing on the chemicals used in the labs, he says, not the methods by which those chemicals were removed from the building. "It was interesting but not all that remarkable," says Tremmel, referring to Schultz's theory. "The overall magnitude of the exposure people would have gotten from this just would not have been very significant."

was thinking about it a lot, at least while he was still able to communicate. He wanted to know what caused this."

Move this tale to the chemical corridor on Louisiana's sweaty bayou, and the Karayannis story begins to sound like a John Grisham novel. A brilliant man is killed by a mysterious brain tumor. His son, a small town lawyer, must battle one of the world's largest companies-an oil company, no less-to honor his father's memory. It gets even more dramatic, too, because several of Nick Karayannis's old friends from Amoco have also been diagnosed with tumors, and now four of them have hired young Mario as their lawyer. He has not filed suit yet. He is waiting. Waiting until Amoco completes its latest investigation or offers his clients a settlement, or until he learns more on his own about what might have caused the nightmare in Building 503.

But this is not a movie. Even Mario Karayannis admits that Amoco, for the most part, has tried to do the right thing for its sick employees. The company made substantial cash payments—"in the five figures," Mario says—to victims to help pay for some of the medical costs not covered by insurance. In late June, company officials phoned victims again to discuss offering each of them a second bundle of cash. Amoco (continued on page 161)

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officials said the payments should be construed not as an admission of guilt, but as a gesture that the company cares about its employees and former employees.

"Realistically, it's a public relations thing they're doing," says Mario Karayannis. "Some of the families felt there hadn't been enough financial help to pay for things like home health care. There is also some degree of anger over Amoco's constant denial of knowledge about what did and didn't occur in Building 503. They've done all these studies testing the soil, testing the air quality, but they're testing the soil today, the air quality today. These people who have been there a long time know there were problems in the past. It makes people bristle when you say the air quality today is fine when you know damn well something was wrong back then."

As the young lawyer gathered more information about safety problems in Building 503, he reported back to his father, who grew more and more bitter. Mario began to understand his father's work, and he began to see the possible hazards. "You're taking chemicals and

adding metallic catalysts to the mix," he says, "and a lot of what they were getting, who knows what it was. You're playing with molecules. I don't think it was a surprise to anyone that dangerous materials were handled." The surprise, he believes, is that the ventilation system may not have sufficed to protect Amoco's workers from the dangerous materials. The elder Karayannis was of little help to his son's investigation, however. As Mario began to understand, his father lost the ability.

"Toward the end, it was brutal-you. don't want to hear about that," he says. He is normally soft-spoken, but here his voice lowers further. "It was hard to determine what he knew. He was living in a body that couldn't do what he wanted. He was one of the smartest guys I ever met, and the part the tumor took away was exactly that. Sometimes he knew what was going on, like when my kids showed up to visit. But he couldn't talk in more than one or two words, and they didn't always make sense."

He collects himself. "My personality is a lot like my father's. He probably would have approached this the same way.

Things are what they are. You can get angry and unreasonable or you can get on with your life. What I have are facts in a potential litigation. Right now I'm not his son anymore; I'm just his attorney."

Amoco is a giant corporation,

and it tends to move with all the speed and agility of a cargo ship. It takes time to track down every one of the 8,000 people who ever worked at the Naperville research center, sifting through personnel records, some of which predate the computer era. It takes even more time to plow through thousands of records of experiments, most of which have been photographed and transferred to microfilm. But some employees can't understand why the entire process has taken so long, given the urgency.

"We knew the employees were frustrated," says Mike Wells, the epidemiologist. "We were frustrated. We wanted answers. But we knew this was not going to be an overnight thing. This was like an archaeological dig, going back and trying to re-create the past."

Only in this case, fresh bodies were



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Building 503

falling into the pit even as the archaeologists dug. Under ordinary circumstances, people get MRIs only when they feel sick. Now, at Amoco, hundreds of employees and former employees who felt perfectly fine were visiting their doctors just to make sure. And some of them were finding tumors. The 19th brain tumor was announced in June, and Wells says he won't be surprised if there are more.

Amoco is also surveying everyone who ever worked at the Naperville site to see if other forms of cancer have occurred at unusually high rates. As of July, only about two-thirds of the employees had responded. The results of the study aren't expected to be released until this fall.

The most eagerly anticipated report, however, won't come until January, when the team from the University of Alabama is expected to announce whether it believes any of the activities in Building 503 could have contributed to the high cancer rate. Investigators have so far narrowed their inquiry to about 34 research projects among the tens of thousands conducted since the facility opened. Among the seven men with malignant gliomas, at least two overlapped on all 34 projects. Three of the men worked on one project. But because all the men worked on similar experiments, using heavy metals as catalysts to create plastics, it might prove impossible to pinpoint a single culprit. If a small enough number of chemicals were identified as suspects, Amoco could commission further tests to determine if they were carcinogenic. But even if that happens, the company will never be able to re-create the conditions under which its employees were exposed.

"Even if we get some answers in January," says Lowry, "the story's just beginning."

A lump in the throat. Irwin Ginsburg couldn't even feel it. He thought it was his Adam's apple. It was, in fact, a malignant tumor in his thyroid gland. He had it removed in 1982, and he's been fine ever since. Not until about 16 years later did he begin to think his cancer could have had something to do with his years at Amoco. Before retiring, Ginsburg worked 27 years for Amoco and spent about three of those years, from 1970 to 1972, in Building 503 in Naperville.

"It never dawned on me that there could be a connection," says Ginsburg,

62, who retired in 1993 and now lives on a picturesque hillside near the White Oak Mountains in Ooltewah, Tennessee. He never handled chemicals, but he was in and out of the labs every day.

As supervisor of employee relations, Ginsburg felt responsible for the people in Building 503, and he worries even to-day whether Amoco will be able to track down everyone who ever worked in the building. Even now, Amoco has never counted his case as part of its investigation because Ginsburg's cancer was in the thyroid, not the brain. Ginsburg's attorney, Grant Dixon of Corboy & Demetrio in Chicago, says he also represents a man dying of skin cancer who still has not been contacted by Amoco.

Dixon says Ginsburg and the other client sought his help because they were having trouble getting reliable information from Amoco about whether work-related conditions might have caused them to get sick. Ultimately, the potential litigants want to know if Amoco could have done anything to prevent their illnesses. Amoco officials say they are doing everything possible to find the cause of the problem and make it known to employees, even if it does point to mistakes made within the company. Officials also insist they have made every effort to survey former employees and find out how many of them have been diagnosed with tumors.

"Irv is afraid there could be hundreds of other people who have problems related to their work and have no idea this is going on," says Dixon. "We could be standing on a powder keg."

A slurred sentence. Words attempted yet never formed. The powerfully built man rose from his seat to speak, knowing exactly what he intended to say, but only gibberish emerged. Or maybe it made perfect sense. The speaker could not be sure.

Rusins Albertins, now 60, worked for 25 years at Amoco. His friends at the company called him Rus. He spent four years in the 500 complex of buildings. After Karayannis and other chemists developed chemical catalysts to make plastics, Albertins tested them to see if they could be reproduced on a larger scale. He had risen to the rank of senior research supervisor in 1991 before corporate layoffs cost him his job in 1993.

With time on his hands, Albertins began visiting his native Latvia and helping

friends there build the institutions that would guide their new democratic government. He designed a civics course for schoolchildren, and gathered papers to start a new museum dedicated to the years of Soviet occupation. But as he worked, his excitement gave way to a creeping sense of fear. Shortly after his embarassing attempt at public speech, he was working at a computer. When he tried to type, the words on the screen made no sense, as if they were in neither English nor Latvian but in some bizarre language he did not know. One night he spilled a mug of beer and kicked the table involuntarily. Later, he found it impossible to sign his own name. Then he noticed he was limping.

One day he limped into the office of a Latvian doctor. "The doctor ran a simple little test and said, 'You better go home right away," Albertins recalls. He did, and doctors found a glioma the size of a baby's finger in the back of his brain. By now, there would be no moments of grand revelation. He knew right away: "I was number 13."

The tumor was removed more than a

year ago, but Albertins continues to undergo a vicious series of chemotherapy treatments, just as Nick Karayannis did. On a hot day in July, he met his friend and fellow cancer patient Ed Paschke for lunch in Naperville. Both men have asked Mario Karayannis to represent them in possible litigation against Amoco, so Karayannis also joined them for lunch.

Amoco officials have not released the names of any cancer patients, but these two men and several others have formed an unofficial counseling network. They get together to gripe about the company, to compare their health problems, and to empathize about two other Amoco men with gliomas who appear near death. They wonder, too, if Amoco will pay them for their suffering before anyone else dies.

Albertins is a strong, stocky man, and even after the chemotherapy has robbed the hair from his head and arms, he has a rugged and healthy look. Despite the obvious fact that all the other glioma patients are dead or nearly dead, Albertins is upbeat about his condition. "I've lost a little bit," he tells Paschke. "I think my thinking is not as clear. I go to get something, I can't remember what the hell I was going for. I can still drive at least. I guess I'm one of the lucky ones."

Paschke, too, feels lucky-albeit in the same bittersweet way. Two years ago, after Nick Karayannis was diagnosed with cancer, Paschke, who is not related to the artist of the same name, decided to see an Amoco doctor for a routine physical examination. The senior research associate had worked for more than 20 years in Building 503, and he had already seen several of his close friends diagnosed with cancer. The doctor noticed a dramatic loss of hearing in Paschke's right ear. Right away, he requested an MRI. But his personal physician wouldn't authorize it, and Amoco officials took almost six months to approve his request.

The MRI revealed a benign brain tumor the size of a golf ball growing behind Paschke's right ear. If he hadn't caught it, the tumor surely would have killed him. Doctors removed the growth, but the right side of Paschke's face had been permanently paralyzed.

Paschke, now 55, believes Amoco moved too slowly in establishing a pro-

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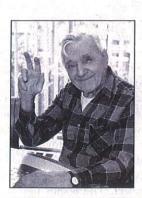
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Building 503

gram by which employees could get MRIs, and that they often made employees wait too long for appointments once the policy was in place. "After 25 years of working for the company, they really let me down," he says. "We dedicated our lives, and when it came to our time of need, they weren't there for us."

But Paschke is still there for Amoco. He continues to work at the company's Naperville facility, though not in Building 503. He's fairly certain that Amoco has cleaned up its problems and that the plant today is safe. He's also fairly certain that the tumor in his brain is gone and that he'll live a long time. His biggest worry is that Amoco has only begun to learn the extent of its problem. Many of his fellow employees say they are afraid to get MRIs. Afraid to get bad news. So it is possible that many more have cancer and don't know it yet.

"Nineteen people, 19 spouses, 19 sets of children," he says. "That's a lot of pain and suffering."

Paschke, who speaks out of the left side of his mouth, tells Albertins he fears he will continue to lose vision in his right eye. Albertins says he has just come from a chemo treatment, and doctors have spotted what may be more cancerous growths. "There may have been a sliver left behind," he says. "It's getting smaller from the radiation. But now they think they might see something else, something different."

They go on for more than an hour about how they have lost trust in their employer, how they fear for their families' financial security should their medical bills mount, and how they have learned to appreciate more than ever the love of their wives. After lunch, Paschke needs to get back to work, Karayannis has a client to see, and Albertins is going home to his wife. Albertins wears a bandage on his right hand to protect the canal doctors use to inject radiation into his bloodstream, but he doesn't let that stop him from giving a round of vigorous handshakes.

As Albertins walks away, Paschke shakes his head and mutters about how sad it is.

"He reminds me of my father at this stage," says Karayannis.

The two men stand in silence for a moment. They watch as their friend walks down a long, windowless hallway, toward the bright afternoon sun.