



**Shop
Online
Now!**

William Orr's quest for better, cheaper gas left him facing prison time

By Alan Prendergast

published: September 04, 2008



Few dreamers believe in their dream the way William Orr did.

He chased his idea, a search for the perfect fuel to put in a gas tank, for three decades. He conducted test after test, applied for patent after patent, and transformed his quest into a business and a cause. He traveled around the world to promote and defend it. He lobbied and borrowed and worked slavishly to keep it running, keep it on track.

But sooner or later, every entrepreneur has to confront a world of disbelievers — people who think the dream is a fantasy and the product is worthless. Orr's brutal awakening came last May, in a federal courtroom in downtown Denver, as he listened to the verdict of a jury of his peers. The verdict form was long and complicated, like the criminal trial itself, but the findings were not. The word "guilty" was uttered 23 times.

Guilty of mail fraud. Guilty of wire fraud. Guilty of making false statements to the Environmental Protection Agency. Guilty of failure to file tax returns. Guilty. Guilty. Guilty. Several of the counts carried potential prison sentences of up to twenty years.

Orr stood silently, trying to process what he was hearing. At the end of the trial, after seven weeks of mind-numbing testimony, he'd been convinced that the prosecution hadn't laid a glove on him. Despite the battery of charges he was facing, much of the fraud case came down to a single issue: whether Orr had misrepresented to investors and to the government the potential of the formula he was trying to market — a fuel blend that he claimed would be cheaper, cleaner and more efficient than conventional gasoline. The government had called dozens of



anthony camera

Tiger in the tank: Bill Orr battled for sixteen years to patent his fuel blend. Then he took on the EPA.



anthony camera

Taking stock: Octane investor Bob Gathers still defends Orr and the "crap shoot" of small business.



anthony camera

More power to you: DU chemist Donald Stedman believes Orr's formula might have environmental benefits — if it could have been properly tested.

Details:
Read more about this case -- including the government's response to claims by Orr's lawyers that prosecutors engaged

prosecutors engaged in underhanded tactics to win a conviction -- head to the [Latest Word blog](#).

Subject(s):

[William Orr](#), [Scott Shire](#), [Bob Schaffer](#), [Natal Alternative Fuels Foundation](#), [Environmental Protection Agency](#), [Internal Revenue Service](#), [Octane](#), [Exxon](#), [Southwest Research Institute](#), [MTBE](#), [MMT](#), [methanol](#), [Ethyl Corporation](#), [Department of Energy](#)

witnesses, including a few disgruntled investors, to testify against him; Orr had fought back with well-respected scientists and experts from the arcane world of alternative fuels. He had taken the stand himself for days, describing how the EPA had shut him down, just when an independent lab was ready to begin rigorous testing of his product that would prove or disprove its value once and for all.

He had told the jury how it was, and he'd thought he'd made some points. As the deliberations stretched into five days, he began to wonder if he'd merely confused them. But he hadn't expected to be judged a fraud and a cheat.

"I was stunned," he says now. "To realize that your life effort, doing what you thought was good for the public and the environment, was being rewarded with a guilty verdict, with a long prison sentence potentially attached to it — I just had this massive disbelief. Were these guys at the same trial I was at?"

Orr has not yet been sentenced; a hearing in the matter is scheduled next month before Judge Lewis Babcock. His trial received scant press coverage, and what ink it got was largely devoted to the passing involvement of U.S. Senate candidate Bob Schaffer, who served briefly on the board of directors of the National Alternative Fuels Foundation, the nonprofit Orr launched to promote his product and others. (After the trial, liberal bloggers conjectured that the former Republican congressman arranged the \$3.6 million federal grant that NAFF received to test Orr's fuel; they were wrong.) Yet interviews with numerous people associated with the Orr case — investors, jurors, chemists, fuel promoters, business partners and others — indicate that Orr's crime isn't quite as clear-cut as the verdict would suggest.

The jury, of course, had a very different impression of what was going on at NAFF and Orr's investment venture, Octane International, than he did. "It seemed like he scammed everybody," says Walter Roberts, one member of the panel. "If I had the money, I probably would have invested in it myself. But a lot of things didn't look right. I think [Orr] was his own worst enemy."

Yet even some jurors don't believe that Orr set out to swindle anyone; they say they were simply following the letter of the law and their specific jury instructions when they found him guilty of making false statements. "He was making bold statements on some pretty slim tests," says one, who asked not to be identified by name, "but I don't think he intended to commit a crime."

Many white-collar fraud prosecutions begin with complaints from the victims of the scam. In the case of William Orr, government investigators had to practically recruit investors to testify against him. Several investors, including some of the prosecution's own witnesses, still defend Orr, saying that his product could be worth millions or even billions of dollars if the government would quit putting roadblocks in its path.

"The pressure to pursue this was always from the government, not the investors," says Scott Shires, a Republican political consultant who worked closely with Orr at NAFF and helped to recruit many of the investors in Octane. Shires, who pleaded guilty to misdemeanor charges of

failing to file corporate tax returns and testified as a prosecution witness at Orr's trial, earning praise from Babcock for his honesty, has since received a year's probation and a small fine. "Based on what Bill is facing, I consider myself exceptionally lucky," he adds.

Orr and his attorney, Paul Grant, contend that his prosecution is the result of an EPA vendetta. Orr had been involved in a legal challenge of EPA standards for several years, claiming that new sulfur regulations for gasoline were based on bad science, increased the price of gasoline significantly and actually hurt air quality. Testing his product and its supposed benefits might have demonstrated that the costly new standards weren't truly necessary — hence the motive, Grant suggests, for shutting down Orr's operation before further tests could be conducted.

"Had the tests been run, Bill Orr would have been vindicated or proven wrong," Grant says. "Had Orr been proven right, the EPA would have been terribly humiliated. Government agencies don't want naysayers proving them wrong. They had a lot to lose, and I think they would have lost had the tests been run."

The vendetta theory has been strongly embraced by Orr's supporters. That's the only explanation, they say, for how an audit that found some minor irregularities in the administration of a federal grant mushroomed into a lengthy criminal investigation involving the EPA, the IRS, postal inspectors, the Securities and Exchange Commission — even, at one point, the Department of Homeland Security. A motion for a new trial filed by Grant accuses federal prosecutors of misrepresenting evidence in the case, smearing Orr with unproven innuendos and lying to the jury. "The trial tactics of these prosecutors offer a primer in how to convict a defendant without evidence," the motion states.

Federal prosecutors have declined to comment on Grant's allegations, pending a formal response filed in court. But U.S. Attorney Troy Eid has defended the prosecution as a welcome deterrent to the kind of snake-oil schemes foisted on consumers and investors in response to soaring prices at the pump. "With increased focus on alternative fuels," he said, "this conviction is a reminder: Always check under the hood."

Orr compares himself to Preston Tucker, the visionary automaker whose revolutionary "Tucker Torpedo" was quickly sunk by unfounded fraud allegations. "I was told years ago by people in Congress that it was suicide to get involved in alternative fuels," he says. "There's a lot of lip service in support of it, but you're up against an entrenched, big-oil mentality. It's a multibillion-dollar mature industry that isn't going to let any share of its market go to outsiders."

At 56, with short-cropped hair and mild eyes, Bill Orr doesn't seem cut out for the part of mad inventor or conspiracy theorist. His apartment is crowded with stacks of canned goods and files, giving off that lonely air of the middle-aged entrepreneur, definitely single (divorced ten years, two sons), in need of more storage space. It's only when he begins to talk, at length and with great authority, about patent law, fuel recipes and global warming that he reveals the eclectic nature of his obsessions.

Friends describe Orr as frugal, eccentric and brilliant, with the organizational skills of a small child. They say he correctly predicted, more than a year in advance and within 1,500 miles of its

epicenter, the 2004 Indian Ocean earthquake and tsunami. But he's also been known to show up for a meeting with the royal family of Bahrain wearing mismatched shoes. "I have joked that he would have a hard time falling out of a wet paper bag," says Shires, who first met Orr eighteen years ago while working on the John Andrews gubernatorial campaign. "But he's also a near genius in many regards."

An Air Force brat, Orr was born in Ohio but traveled widely as a child. His family put down roots in Colorado long enough for him to finish high school in Aurora. He returned to the state after studying science and engineering at the U.S. Coast Guard Academy and earned a degree in business from the University of Colorado. Then he went to work as a CPA, but only for a short while. "I couldn't stand accounting," he says now. "I got headaches."

In 1979, another accountant introduced him to a tax shelter that involved the use of methanol in gasoline. Orr became fascinated with the economics and chemistry of the product. Better known as wood alcohol, methanol has a long history as a high-powered automotive fuel, from the days of the Model T to the modern Indy 500. It has drawbacks, including its corrosive effects on aluminum engines and rubber seals, but Orr saw huge potential for blending methanol with other alcohols as an octane-enhancing additive. At the time, the government was in the process of phasing out the use of lead in gas, and refiners were searching for an alternative octane booster. Methanol extracted from natural gas cost a fraction of the price of gasoline even then, and Orr realized that even a modest piece of the growing market for gas-alcohol mixes could be worth millions.

Over the next few years, Orr organized the American Synthetic Fuels Company, later known as Energos Systems. The company obtained the very first waiver for a methanol-unleaded gas blend from the EPA, then under the direction of former Colorado lawmaker Anne Gorsuch. Orr began working with refineries in the Southwest seeking a cheap source of octane, while giant Arco started selling its own methanol-laced gas on the East Coast. The market seemed poised to take off.

But like many miracle fuels, methanol blends had a short run. According to Orr, other promoters entered the game with lower-quality formulas; reports about methanol eating up car engines showed up in the national press — planted, Orr suggests, by Arco's competitors; and the price of unleaded gas collapsed, making the blended fuel less attractive. The final nails in the coffin were hammered into place by the 1990 amendments to the Clean Air Act, which set new emissions standards that methanol couldn't meet.

Although the amendments did permit certain types of reformulated gasoline, Orr calls the legislation "a back-door mandate for MTBE" — methyl tertiary-butyl ether, an additive manufactured from methanol that can enhance octane and also happened to meet the new standards. Orr strongly objected to the process that gave MTBE favored status. His concerns weren't environmental; no one foresaw the havoc the new additive would soon cause. Yet the website for the trade group he started takes credit for being "the only environmental and scientific organization to question the fundamental science used by EPA to mandate MTBE."

"We knew if you had bad science on the front end, you're going to get unintended consequences at the back end," Orr says now. "And we were right."

During the 1990s the use of MTBE in oxygenated fuels soared. Domestic production of the stuff, which has been known to cause cancer in lab rats, reached over 300,000 barrels a day. By 2000 MTBE could be found in almost one third of the nation's gasoline. But state officials across the country began to discover that the highly soluble chemical was leaking from underground storage tanks and contaminating groundwater at record speed. Colorado was one of the first states to ban its use in gasoline; California, New York and dozens of other states soon followed.

The bans left refiners scrambling for another source of oxygenated fuel that met EPA standards. Midwest corn farmers and politicians, who'd been pushing corn-based ethanol (and its lucrative subsidies) for decades, found that their time had come. For Orr, the ascendancy of ethanol presented certain opportunities, too.

Starting in the early 1980s, Orr had set about developing patents for a variety of alcohol and gasoline blends that also included MMT, a manganese compound considered to be one of the best octane boosters available. One of the primary patents, which became the basis for launching Octane International and NAFF, is for unleaded gas, ethanol and MMT. From what Orr knew of the components involved, he was convinced that such a blend could increase octane, boost fuel economy and reduce harmful emissions better than conventional gas or a "gasohol" blend of gas and ethanol alone. Research on the use of MMT indicated that it reduced nitrogen oxide emissions and that its octane kick could add as much as 200,000 barrels a day to the gasoline pool, fuel otherwise lost through processing for octane enhancement.

But MMT is regarded with great suspicion in some quarters. Despite the fact that it was used in Canada for many years in almost all of the gas produced, auto manufacturers worry about its effect on their emission-control systems. Environmental groups have denounced its potential for neurological damage if inhaled in sufficient quantity, even though studies suggest it poses no health hazard at the minute levels used in gasoline. The Ethyl Corporation battled the EPA for years, trying to get a waiver to introduce a 32nd of a gram of MMT per gallon of unleaded gas; in 1995 a federal appeals court finally ruled in favor of Ethyl, saying the EPA had exceeded its authority.

Frank Cox, a former research chemist for the Department of Energy and one of the pioneers of alternative fuels, remembers testing MMT for the EPA decades ago and ending up with manganese oxide deposits gapping the spark plugs. "We got the octane boost," he recalls, "but we found that the oxides were retained in the combustion system. The EPA said, 'The hell with this, we're not going to allow it' — rather than cut down the concentrations or use alcohol as a scavenger of the oxides."

"The real problem is that the auto industry was very adamant that they didn't want it," adds Terry Higgins, executive director of refining for Hart Energy Consulting. Like Cox, Higgins testified for the defense at Orr's trial and believes that an ethanol-MMT-gas mixture such as the one Orr patented would be a boon to the American consumer. "There are hurdles to overcome, sure, in terms of approval and acceptance. But technologically, there are a lot of benefits — octane, cost savings and environmental benefits."

At the outset, Orr's quest didn't appear to be a difficult one. Ethyl had managed, through

litigation, to win approval for the use of MMT in unleaded gas, and ethanol had become the winner by default in the race to develop oxygenated fuels that would reduce air pollution. Ethanol would surely reduce the combustion problems that occurred when MMT was put in unleaded gas. Given all that, how hard could it be to obtain an EPA waiver for the combined use of MMT and ethanol?

But the path ahead turned out to be more complicated than he could imagine. Simply to obtain the patent for his formula required reams of paperwork stretching from 1984 until 2000. There were side battles with other patent-seekers, including Ethyl, and a maze of bureaucracy and expensive tests to negotiate before he could even apply for the EPA waiver.

Orr put together a brain trust. He launched Octane, teamed up with Shires and, over a period of years, raised more than a million dollars from dozens of investors. Some of the money went to Orr's personal expenses; a great deal went to patent battles and lobbying efforts. "The independent refiners were saying, 'Where the hell is your product? We need octane,'" Orr recalls. "But it took sixteen years to get the patent. I kept wondering, 'Is this innocent? Am I being blocked here? What the hell is going on?'"

The logjam seemed to break in the fall of 2000, when NAFF obtained a \$3.6 million grant from Congress to test Orr's patented product. Bob Schaffer had nothing to do with the coup, Orr says; the earmark was put into an appropriations bill by a congressional staffer at the urging of other lawmakers who thought Orr's technology should be investigated.

There was one catch: The grant was to be administered by the EPA, an agency Orr had battled time and again. Just a few months earlier, Orr had sued the EPA over a new round of emissions rules that he believed would be ruinous to his product and to the independent refineries most likely to use it. As in the MTBE controversy a decade earlier, Orr accused the agency of bad science and fraud — but he admits that the lawsuit was about economic survival as much as anything.

"The EPA had been jerking me around a long time," he says. "I'd had enough."

The EPA initiative that prompted Orr to file suit, the Tier 2 Vehicle and Gasoline Sulfur Program, has been touted by the agency as a groundbreaking approach to automotive pollution control. It requires automakers to implement tougher emissions standards between 2004 and 2009 that will make their vehicles run 77 to 95 percent cleaner than 2003 models. Because the manufacturers complained that the sulfur in gasoline would damage the new wave of sensitive emission-control systems, it also requires refiners to remove 90 percent of the sulfur found in their product.

Refiners were understandably alarmed by Tier 2. Unlike lead, which was added to gas to boost octane, sulfur is a natural component of gasoline. Taking it out of the fuel supply would require an investment of billions — industry sources estimated the cost at \$5 billion to \$20 billion — and could drive some smaller operations out of business. The removal process would shrink the overall gas pool and lower the octane of the resulting product; in addition, some foreign refiners would be unable to meet the standards. The overall effect of a shrinking pool, less capacity, lower octane and less available imports would be an inevitable increase in the price of gas, although industry

and government estimates of the actual impact of the program varied widely.

Orr had other objections. On a purely economic level, Tier 2 would devalue his product, which he believed worked better with sulfur in the gas than without it. In fact, one of Octane's selling points was that the MMT additive "grabs" sulfur and produces manganese sulfate — that it was cheaper to remove the sulfur in the combustion chamber rather than the refinery. Orr also maintained that the new rules would contribute to global warming (sulfur may be the only component of car exhaust that actually serves as an atmospheric coolant) and have other harmful environmental effects.

His most basic objection, though, was also the most intriguing one. Orr claimed that the EPA had never adequately demonstrated that sulfur would damage the new emission systems. Melvin Ingalls, an engineer at the Southwest Research Institute, a widely respected nonprofit facility that specializes in emission issues, prepared a detailed analysis of the EPA's test data and found it badly flawed — or, in his words, "a forced manipulation to meet a pre-ordained conclusion." In a report that became an integral part of Orr's lawsuit, Ingalls explained that the EPA had relied on data from only four vehicles to study the effects of high sulfur fuel; that data from one of the cars, an SUV modified to meet the Tier 2 regulations, was assigned disproportionate importance in the final results; and that there had been no reported failures of Tier 2 vehicles that could be blamed on sulfur. In short, Orr charged, the EPA cooked the science to justify a costly new regulation.

EPA officials have never responded directly to Orr's allegations. (A request from *Westword* for comment received no response.) The legal challenges to Tier 2 by refiners' groups eventually faded away. In testimony before Congress, EPA officials have maintained that the health and environmental benefits of Tier 2 have far outweighed the cost to the consumer, which they insist has been only a few pennies per gallon of gas. Other analysts have disputed that figure, saying it fails to take into account such factors as the decline in refining capacity in the United States over the past two decades due to ever-stricter regulations, which have a direct effect on the price of gas.

Ironically, it's not even clear that the new regs have had a positive impact on pollution, especially ozone levels. While the tighter controls have lowered nitrogen oxide (NOx) emissions, some scientists contend that the ratio of NOx to hydrocarbons is what matters, since it's the interaction between the compounds in the atmosphere that generates ozone.

"They say the emissions have been dramatically reduced," says Donald Stedman, a chemistry professor at the University of Denver, "but where's the evidence? Ozone hasn't gone down in the last decade, and that means we've done something wrong. Until you get rid of the hydrocarbons almost completely, you shouldn't reduce NOx. If you reduce NOx first, you're just going to make ozone worse where most people breathe. That's what we've been doing in Denver."

Orr's lawsuit challenging Tier 2 dragged on long after the refiners had given up the fight. The battle certainly didn't help his relationship with the agency that was administering his federal grant. With funds from the grant, NAFF had set up a modest screening lab in Golden to try to determine which fuel recipe would work best for the kind of costly, long-term testing in multiple engines that would be needed to prove the value of Octane's patent. Yet the preliminary data from the lab was confusing and unrepeatable; one researcher dubbed it "the frustrated fuel club." Orr's anxiety is evident in an e-mail he sent to a lab supervisor in 2003.

"Our data doesn't confirm anything," he lamented. "It seems we have become a 'never ending' R&D effort with a 'never ending' learning curve with a lot of detours. The EPA sees us as being a garage operation and thinks we are amateurs...They want real data and they want it now!"

In the spring of 2004, the EPA informed NAFF that it would require much more extensive testing of the fuel and its toxicity than had been previously indicated. The agency also launched an audit focusing on how grant money had been spent. Shires, Orr and others involved in NAFF say they received no indication at the conclusion of the audit that anything was amiss. But EPA internal e-mails indicate that people involved in defending the agency from Orr's lawsuit had begun to take an interest in the grant research. "I'd be curious [to know] where he is in terms of getting his product out," reads one communication.

That December, Orr filed a document claiming that the testing he was about to do would demonstrate not only that his fuel worked, but that the Tier 2 sulfur regulations were unnecessary. Around the same time — not so coincidentally, in Orr's view — the director of the EPA's grants administration division, Richard Kuhlman, was conferring with other staffers about pulling the plug on the grant before NAFF could enter into a contract with the Southwest Research Institute for independent testing of the fuel. "We may have to work hard to issue the stop work order," Kuhlman wrote. "They are soon to sign a \$1 million contract that I would prefer they not start."

In the next few weeks, Orr's efforts suffered two fatal blows. His lawsuit against Tier 2 was thrown out on a technicality; a federal judge in Washington, D.C., ruled his trade group didn't have standing to bring the suit. And the EPA notified him that it was withholding future payments under the grant, citing various financial irregularities ranging from NAFF's bookkeeping to Orr's foreign travel to the use of Orr's son David as a consultant.

Shires remembers leaving his house one afternoon in January 2005 and seeing a man and a woman coming toward him in the suburban cul de sac, their hands ducking into their suits. For a moment, he thought they were reaching for guns and wondered "who I pissed off so much to get killed." Instead, the pair produced badges. One was an IRS investigator; the other was from the EPA Inspector General's office. After being assured that he wasn't the target of a criminal investigation, Shires agreed to talk to the agents about Octane and Bill Orr.

It soon became obvious to Shires that the government was probing well beyond the "financial irregularities" cited as the reasons for suspending the grant. The EPA agent, Cory Rumble, seemed openly contemptuous of Orr's patent and declared that it would never go anywhere. When Shires asked why, Rumble said something so startling that Shires took pains to write it down.

"Not in my lifetime," Rumble allegedly said. "Over my dead body and when hell freezes over will manganese come into the U.S. gas market."

Shires was badly shaken. NAFF had already sent a six-figure down payment to Southwest Research to begin the crucial tests. Shires was one week from purchasing the vehicles to use in the tests. After years of wrangling with Orr over his eccentric management style and chaotic recordkeeping, he'd finally persuaded him to step down as NAFF's executive director and bring in a professional to take charge of the organization. He'd felt so confident about the company's

direction that he'd recently invited Bob Schaffer to join its board of directors.

Schaffer had not yet attended a single board meeting. He never would. After his conversation with the agents, Shires called up the ex-congressman and urged him to resign from the board immediately.

A globe of the earth sits on Bob Gathers's desk in his airy home outside Castle Rock. The globe spins freely in space, suspended in the middle of an electromagnetic field — except when Gathers slaps his palms on the desk for emphasis. Then the globe bumps into one of the magnets, and the earth stops.

One of Colorado's most experienced entrepreneurs, Gathers has formed dozens of companies over the past thirty years, including Cybernetics and Gathers Software. He launched his first company at age 31, shortly after an eye-opening association with John Vincent Atanasoff, the inventor of the first electronic digital computer. He's had his share of triumphs and failures, but nothing has got him into earth-stopping mode more than the prosecution of his friend Bill Orr. Gathers is an investor in Octane and testified for the defense at Orr's trial; he's also studied the case like a fine-print contract drawn up by a Philadelphia lawyer.

"I spent several months full-time on this," he says. "I've written a lot of letters. I think somebody in the EPA got really upset with Bill."

Gathers first met Shires and Orr during the 1990 John Andrews campaign for governor. He knew he was getting involved in a high-risk venture when he invested in Octane and loaned Orr money. "It's a crap shoot," he says. "Most small businesses don't work. Bill does things in a different way than I would do it. But I believe he's fundamentally honest. When you invest in a small business, it's not like investing in GM. I was investing in Bill. The government people don't understand this."

As Gathers sees it, the reasons cited by the EPA for suspending NAFF's funding were petty quibbles about Bill Orr using a home office and charging the grant for part of his rent, not seeking bids for his office furniture, David Orr using his MBA to do some consulting work for the project, and a few thousand dollars in trips related to the project — operational expenses that Orr had no problem defending as legitimate. But the issues raised in the suspension notice had nothing to do with the criminal charges handed down by a federal grand jury a year later. Now Orr was being accused of defrauding investors and misrepresenting the science behind his product.

Gathers doesn't see how Orr could be found guilty of fraud if he was actually spending the money on research, regardless of the results. "It's the biggest travesty I've ever seen," he says. "This was R&D. You can get brilliant, honest guys who happen to disagree on an R&D issue. That doesn't make them criminals."

Yet part of the government's case is that money intended for research went for other purposes. Orr drew a six-figure salary from NAFF during the course of the federal grant — more than half a million dollars in three years. Money that investors poured into Octane went from company accounts to Orr's personal account. That didn't look right to government investigators; to make

matters worse, Orr hadn't filed a tax return since 1988.

Orr attorney Grant responds that the EPA approved his client's salary, and that more than \$300,000 of it ended up back in the project in services and costs that he paid for personally. His dealings with investors were more complicated, involving promissory notes and shares in Octane as collateral, but Grant insists that Orr saved the company a great deal of money on overhead and taxes through the arrangements. Orr didn't pay taxes himself for several years because he had net operating losses, he adds, and had documentation from the IRS stating that he didn't have to file a return.

"I didn't live lavishly," Orr says. "It doesn't mean that I didn't have beer in the refrigerator and went to Central City once in a while and spent a hundred bucks gambling. But everyone who knows me knows I don't spend money foolishly and I work like a dog."

Several investors say that the government agents who interviewed them insinuated that Orr was spending their money frivolously, that the screening lab in Golden didn't even exist. Grant says the agents tried to "poison" the investors in an effort to induce them to testify against Orr. "The special agent was telling them that Bill Orr had cheated them and was spending their money on foreign travel, women and gambling," he says.

Some investors didn't need much poisoning. They already had hard feelings about Orr and Octane, having waited for years for the golden payday when the new fuel hit the market. They had read Orr's upbeat newsletters, detailing his meetings with top officials from companies such as Enron, Exxon and Prudential Bache and their interest in investing in his technology. Some of these "confidential updates" suggested that a major infusion of cash was just around the corner.

"I thought they were moving forward, but it just never happened," says Charles Routh, who met Orr through Shires and invested a total of \$80,000. "Any investment is a gamble, but I feel a lot of information was withheld. I didn't know what was a lie and what was real."

Routh began by loaning money to Orr. He was promised shares of Octane stock but didn't receive the certificates until nearly a decade later. He never received a prospectus. "They didn't know how many shareholders there were or how many shares they had," he sighs. "I was dealing with some narcissistic personalities. Sometimes I wonder if we were just paying for Scott to have a job and for Bill to pursue his fantasy. I don't think they were working for the investors at all. It was all about them and their dreams."

Toward the end, Routh says, Shires told him that he could afford to lose his investment. "I thought that was kind of callous," he says. "I have been damaged. I haven't seen any remorse."

Orr acknowledges that he's left some angry investors in his wake, many of them brought into the deal by Shires. "A lot of these guys had money in this for more than a decade," he says. "They had every reason to be pissed at me." But he insists that investors such as Routh could still reap a windfall if his fuel ever makes it through the maze of the EPA's fuel waiver requirements.

Orr may have been overly optimistic — and flat wrong — in his reports to investors about major corporate interest in his patent. But documents show that he did have meetings with Exxon,

Enron, Prudential and other potential funding sources. His defenders insist that Orr's sin is naiveté rather than fraud. "A researcher should be completely unbiased, but Bill is also a salesman," says Frank Cox. "I don't think he was lying to people. He believes what he tells them. He's very dogmatic about it. And that's what the government used to get him."

"Bill wore too many hats," adds Chuck Thomas, a retired Denver schoolteacher and Octane investor. Thomas had his own problems with Orr's management style but defended him in court, even though he was summoned as a prosecution witness. "He was trying to keep everything alive, and I think it was overwhelming for the guy."

Shires calls his former boss a "North Korean negotiator" — meaning that negotiations with him could stretch on seemingly forever. "There were always people interested," Shires says of the meetings Orr had with major corporations about his fuel. "But the minute Bill got someone close to striking a deal, he upped the ante and asked for more."

At trial, an Exxon executive testified that his company was never all that interested in Orr's patent. Yet the name of the same executive, who met with Orr at Exxon's corporate research laboratory in 1997, is listed on a patent filed in 1999 by Exxon dealing with a fuel process that shares several characteristics with Orr's "vapor phase combustion" technology. To Orr, the implication was clear: The Big Oil boys were so not interested in what he had to offer that they signed a non-disclosure agreement with him, then developed a similar patent.

For some people, the Orr case was about how money was spent, what was promised to investors, and dubious tax practices. For Donald Stedman, though, the case represents something much more important: a lost opportunity to find out if a simple modification in the fuel supply could have wide-ranging environmental as well as economic benefits.

Stedman has impeccable credentials as an emissions expert, going back to his early career as a research scientist for Ford. The DU professor is the father of remote sensing for on-the-road emissions monitoring, as opposed to the costly stationary monitoring program Colorado was plagued with for years — an innovation the EPA strenuously resisted. He has no financial stake in Orr's product, and while he doesn't know if it's the answer, he says it raises interesting questions.

"He has preliminary data that are encouraging, but not extensive enough for me to jump on the bandwagon," Stedman explains. "He's done very few engines under very limited conditions. If you want to show that your additive can solve all these problems, then you have to do a series of expensive tests, which is exactly what he had proposed to do at Southwest. The fuel might have been a failure, but the tests should have been done. That's how you should find out — not in court."

The question of whether Orr's fuel worked was never settled (and scarcely addressed) in court. The critical issue behind multiple fraud charges was whether Orr had misrepresented to the EPA and others the results of testing of MMT fuel blends in his lab and elsewhere. Prosecutors called no expert witnesses. Instead, they brought in former employees of Orr's Golden lab, who said they were unimpressed with their test results, and a witness who testified that Orr had misrepresented the results of tests conducted years ago by NIPER, the National Institute for Petroleum and

Energy Research.

Defense attorney Grant responded with the testimony of Stedman, Cox, Higgins and other experts, who insisted that Orr had correctly interpreted the NIPER data and that even the troubled Golden tests showed some slight benefits. Given that the EPA's own research shows undeniable octane improvement and nitrogen oxide reductions with MMT, Grant was bewildered by the verdict.

"The whole process was improper," he says. "The jury convicted him of misrepresenting the science, but there were no qualified experts who expressed any negative opinions about that. They must have believed the prosecution witnesses, even though they weren't experts and I wasn't allowed to cross-examine them as experts."

Grant says he was hamstrung by several of Judge Babcock's rulings in the case. He wasn't allowed to question the executive from Exxon about the similar patent developed after his confidential meeting with Orr. He wasn't allowed to introduce the Melvin Ingalls report on the dubious methodology behind the Tier 2 program. He wasn't allowed to go into details about the way the investigation was conducted, the way witnesses were "poisoned" against Orr.

Members of the jury say they thought Judge Babcock was quite fair and that Orr's government-vendetta theory simply didn't fly. "I think the EPA bent over backwards to help him," says one. "He had plenty of opportunity and money to do more research and never did it."

Orr says he regrets some of the optimistic, "sloppily prepared" reports he sent investors, and never meant to deceive anyone. He just isn't that detail-oriented, he admits, and sometimes he gets immersed in his enthusiasm.

"In my mind, they were not lies," he says. "I really thought we could make this work. I still do."

Orr has resigned as the chairman of Octane. The new chairman has called a shareholders' meeting this month, to discuss the future of the company and its product.