
LOOKING FOR THE GOOD IN GARBAGE



A Wichita garbage truck dumps trash into a landfill in the 1940s or 1950s. Image courtesy of Wichita-Sedgwick County Historical Museum.

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Bill Compton Builds Wichita a Pyrolysis Plant

by Angie Gumm

In the late 1960s and early 1970s the United States government, concerned over the twin issues of garbage accumulation and oil shortage, funded various resource recovery technologies that it hoped would eventually allow the nation's trash to supply 2 to 3 percent of its power needs.¹ Legislation such as the 1970 Resource Recovery Act and the 1976 Resource Recovery and Conservation Act funded several demonstration plants throughout the decade. The most expensive, technologically difficult, heavily funded, and promising disposal technique was pyrolysis, which cooked rather than burned waste to produce oil, carbon, and gas. But even with the possibility of federal funding, few communities had the financial or intellectual resources to host a pyrolysis plant. Those resource recovery operations that were established mostly failed, and though researchers learned a great deal from their failures during the 1970s, this knowledge was never used to develop new and improved technologies. In fact, once the threat of an energy crisis faded in the early 1980s, the federal government quickly dropped solid waste research and development from its agenda. The government's abandonment of such questions widened the gap between those who saw technology as part of the environmental problem and those who believed in technological solutions to the waste question. In the latter camp was Bill Compton, who, without help from any level of government, gave Wichita, Kansas, its own pyrolysis plant two decades after most hope for resource recovery seemed lost.

Initially resource recovery was more focused on solving the garbage crisis of the late 1960s than the oil crisis of the 1970s. Consumerism and packaging both increased drastically after the Second World

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1. House Committee on Science and Technology, Subcommittee on the Environment and on the Atmosphere, Solid Waste Management and Resource Recovery Hearings, 94th Cong., 2nd sess., 1976, 3. For broader studies of the history of garbage in the United States, see Martin V. Melosi, *Garbage in the Cities: Refuse, Reform and the Environment* (Pittsburgh, Penn.: University of Pittsburgh Press, 2005); Susan Strasser, *Waste and Want: A Social History of Trash* (New York: Henry Holt, 2000); William L. Rathje and Cullen Murphy, *Rubbish! The Archaeology of Garbage* (New York: Harper Collins, 1992). For discussion on environmental hazards and risk assessment, see Joel A. Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (Akron, Ohio: University of Akron Press, 1996). For a look at conflicting environmental values in America, see Donald W. Whisenhunt, *The Environment and the American Experience: A Historian Looks at the Ecological Crisis* (Port Washington, N.Y.: National University Publications Kennikat Press, 1974).

War, just as cities began to abandon and outlaw what had been the two most popular garbage disposal options, hogs and open burning. As these methods were discontinued, in the 1950s and 1970s respectively, trash increasingly became a problem, although, like many other states, Kansas did not pass its first statewide solid waste law until 1970. The lack of previous regulation, the legislature determined, had “resulted in undesirable and inadequate solid waste practices that are detrimental to the health of the citizens of the state; degrade the quality of the environment; and cause economic loss.”² Hardly any states had trash legislation until Congress passed the Solid Waste Disposal Act in 1965 and further solidified it with the Clean Air Act of 1970, which had clearer regulations and better-funded enforcements.³

Sanitary landfills became the newly favored disposal method, but unlike hogs and open burning, landfills did nothing to slow the accumulation of garbage. Fears began to grow that Americans were “in danger of being engulfed in . . . mountains of waste . . . building around the cities.” That littering was a serious problem at the time likely worsened people’s fear of being “engulfed” by trash. In 1969 a *U.S. News and World Report* article described motorists strewing “770 paper cups, 730 empty cigarette packs, 590 beer cans, 100 whiskey bottles and 90 beer cartons” across a one mile section of a two-lane highway in Kansas. Reports circulated that the per capita waste production of Americans would grow from the 1969 estimate of 5.3 pounds to 8 pounds a day in 1980.⁴

In the late 1960s, scientists and entrepreneurs across the country were working on the garbage problem. Their solutions included edible food wrappers, bottles that dissolved upon contact with water, cans that could be converted into building material, and Glassphalt, an asphalt-type substance made of glass. Two Atomic Energy Commission agents even loftily suggested that the government could use energy from a hydrogen bomb to “vaporize” what they predicted would be ten billion tons of garbage in the United States by the end of the millennium. The bomb would cause the garbage to break down so that its component minerals could be harvested and reused. They claimed that all of the natural resources



Consumerism and packaging both increased drastically after the Second World War, just as cities began to abandon and outlaw what had been the two most popular garbage disposal options, hogs and open burning. The first of these methods, pictured here, was once touted by the U.S. Food Administration as an economical and safe way to dispose of waste, though by the 1950s it had largely been abandoned for fear of disease. When in the 1970s open burning was discontinued, trash became an increasing problem. Image courtesy of the Library of Congress, Prints & Photography Division, Washington, D.C.

used in production of material goods, except the hours of human manufacturing, could be recovered.⁵

Bill Compton, a mechanical engineer at Cessna, was struck by the accumulation of trash, including materials that were still useful, which he saw sitting in Wichita’s Chapin Landfill when he toured the facility with his colleagues in 1972. The city had bought Chapin’s hog farm in 1954, turned it into a landfill, and used it for Municipal Solid Waste (MSW) disposal until 1980, when it closed and Brooks Landfill became the city’s main disposal site.⁶ Compton later recalled that he was not aware of the slew of suggestions for trash utilization and disposal that had been bandied about by the government in the late 1960s and early 1970s. Neither, he said, was the landfill’s manager, who responded, “Like what?,” when Compton suggested something needed to be done with

2. *Kansas Laws* (1970), ch. 264.

3. Paul Rogers, “The Clean Air Act of 1970,” *EPA Journal* 16 (January–February 1990): 21–23, available online at <http://www.epa.gov/history/topics/caa70/11.htm>; Larry Luton, *The Politics of Garbage* (Pittsburgh, Penn.: University of Pittsburgh Press, 1996), 127; Melosi, *Garbage in the Cities*, 188.

4. “Why the U.S. is in Danger of Being Engulfed by its Trash,” *U.S. News and World Report* 67 (September 8, 1969): 64.

5. Melosi, *Garbage in the Cities*, 202; “Ingenuity and Determination for Our Ailing Environment,” *Chemistry* 10 (November 1971): 4; Katie Kelly, *Garbage: The History and Future of Garbage in America* (New York: Saturday Review Press, 1973), 110–11.

6. Jean Hays, “People Used to Dump Trash Everywhere and Anywhere,” *Wichita Eagle*, July 8, 1997.



Bill Compton, a mechanical engineer at Cessna pictured here working a flight simulator in the early 1960s, was struck by the accumulation of trash, including materials that were still useful, which he saw sitting in Wichita's Chapin Landfill when he toured the facility with his colleagues in 1972. Eight years later Compton would have a pyrolysis batch plant up and running in his front yard, ready to process pieces of Wichita's trash into energy. Image courtesy of Bill and Kathryn Compton.

the mass of waste.⁷ Though it would be eight years before he would begin to process trash into energy in his front yard, Compton had an immediate response: destructive distillation, a type of pyrolysis, or “the chemical decomposition of a compound that results when it is heated to a temperature high enough (usually between 750–1500 degrees Fahrenheit) to break the chemical bonds that hold its molecules together.”⁸ In the better-known method of incineration, oxygen is introduced to heat, which exposes materials directly to fire, leaving behind ash and steam. Pyrolysis, on the other hand, can more accurately be compared to cooking, where heat causes a change in the construct of a material but, ideally at least, does not burn it. Destructive distillation is the type of pyrolysis used in coking coal and can be used to make tar or pitch. Compton hypothesized that, applied to garbage, pyrolysis could make fuel in the forms of oil, carbon, and gas.

Compton was forty-nine-years-old when he toured the landfill in 1972. A fighter pilot in World War II, he had gone to Kansas State Teachers College (now Emporia

State University) on the G.I. Bill and studied chemistry, physics, math, and industrial technology while getting his Bachelor of Science degree in 1950.⁹ Compton recalled the idea for destructive distillation from his high school studies in Redfield, South Dakota, but it might also have been on his mind because in 1971 the Wichita City Commission had begun to seriously consider a similar technique in the form of a coal gasification plant. The city wanted to allow the Panhandle Eastern Pipeline Company to use the process of gasification to turn Kansas's abundant supplies of coal into a “clean” energy source. Gasification (a term Compton sometimes used interchangeably with pyrolysis) is different from pyrolysis in that it introduces enough oxygen into the process to turn the final product into a gas; as with pyrolysis, materials undergoing gasification never combust. The eagerness with which the city commission pursued the gasification plant, which was projected to cost \$1.25 billion, is illustrative of the willingness of companies and local governments to take technological risks before the 1980s. In response to President Jimmy Carter's request for “National Energy Policy Recommendations,” Wichita's economic developer, Grover “Skip” McKee, wrote Secretary of Energy James Schlesinger, “The City of Wichita has, for the past six years, undertaken at the local level what

7. Compton, “Solid Waste Conversion Project,” 1, Bill Compton Collection (all materials from the Bill Compton Collection are currently in the possession of the author, who intends to donate them to the Special Collections at the Haysville Community Library, Haysville, Kansas).

8. Steve Coffel, *Encyclopedia of Garbage* (New York: Facts on File, 1996), 216; C. Heermann, K. J. Whiting, and F. J. Schwager, *Pyrolysis and Gasification of Waste: A Worldwide Technology and Business Review* (Gloucestershire, England: Juniper Consultancy Services Ltd., 2000), 1:16.

9. Bill Compton Resume, Bill Compton Collection; Bill Compton, interview by author, November 30, 2004, tape recording, partial transcript in Bill Compton Collection.

the United States has sadly, failed to do—formulate a rational energy policy.”¹⁰ Despite McKee’s confidence in the city’s “rational energy policy,” Wichitans voted against the gasification plant in March 1978.

Compton’s idea to use destructive distillation to make use of landfill-bound waste materials was also in line with the thinking of professional engineers, universities, and the federal government in the 1970s. The year he visited the Chapin Landfill was the same year federal demonstration projects started to receive funding. Despite the 1970 Resource Recovery Act (RRA), which set guidelines for states to develop conservation, recovery, and disposal systems and supplied financial support for research and development recovery programs for solid waste, Environmental Protection Agency (EPA) Director William Ruckelshaus said in 1972 that states and local governments were best suited to deal with common MSW, while the EPA was more suited to deal with hazardous wastes.¹¹ Nevertheless, through the mandates of the RRA, the EPA funded several resource recovery demonstration grants in the hopes that state and local governments could learn from the models and report their experiences to a solid waste clearinghouse. Wittingly or not, Compton had come to the same conclusion as other players on the scene, some of whom possessed the funds to implement their ideas: that pyrolysis held the most promise for dealing with waste accumulation and serving as an energy supplement.

Two such well-funded groups were chosen by the federal government to construct demonstration pyrolysis plants in the 1970s: Garrett Research and Development Company, Inc., in San Diego County, California, which experimented with flash pyrolysis, and Monsanto Enviro-Chem Systems, Inc., in Baltimore, Maryland, which operated its Langard pyrolysis plant. The San Diego County Utilities Department received a federal grant in 1965 through the Solid Waste Disposal Act to study the economic feasibility of pyrolysis. The department concluded pyrolysis was beneficial for three main reasons: it would extend landfill life; the process could be self-sustaining once it was started, because the fuel it produced could also be used to run it; and the byproducts of pyrolysis “might have some commercial value.”

10. Grover E. McKee to James R. Schlesinger, “Re: National Energy Policy Recommendations,” March 14, 1977, Coal Gasification Plant box 4, file 5, Department of Special Collections, Wichita State University Libraries, Wichita, Kansas.

11. Luton, *Politics of Garbage*, 129.

By mid-1967, San Diego County was seeking bids for a company to build a pyrolysis pilot plant, which would be the first one to process municipal solid waste in the United States and would operate as a demonstration plant for other communities interested in developing the technology. Describing the process in *American City* magazine, the utilities department coordinator emphasized, just as Compton would repeatedly do in the future, “We lay no claim to discovering anything new—except the proposed application to municipal wastes.”¹²

The county eventually chose Garrett, a subsidiary of Occidental Petroleum Corporation, to construct and operate the plant. Garrett received a \$2.96 million grant in 1972 for the project, which was originally projected to cost \$4 million with expected revenues of \$200,000 to \$300,000 a year. Six different sites were proposed before community opposition to the project was quelled and construction could begin, delaying the project for three years and raising the price from \$4 million to \$9 million by the time ground was broken on the plant in 1975. The EPA and Garrett each paid \$3.5 million of the cost, while the county was responsible for \$2 million.¹³ The Garrett plant performed flash pyrolysis, which was unique in that it sprayed oil onto the gas produced in the process, cooling it very quickly, creating an oil with a high-heat value called “pyrol.” Although the Garrett system was “one of the more advanced (pyrolysis) processes,” it did not succeed. The plant never ran continuously and shut down in 1979, ultimately having cost \$15 million.¹⁴ Although not as big, two other pyrolysis (non-demonstration) plants also operated in the 1970s. South Charleston, West Virginia, hosted a 180-ton per day Union Carbide plant from 1974 to 1978, and the seventy-five-ton per day AndoTorrax Systems’ plant in Orchard Park, New York, operated from 1971 to 1977. Like the Garrett system, the West Virginia and New York plants eventually failed.¹⁵

12. Donald A. Hoffman, “Burns’ Refuse without a Flame,” *American City* 82 (February 1967): 102.

13. Hearings before the Subcommittee of Government Operations, 94th Cong., March 23–31, 1976, especially Steven J. Levy, “San Diego County Demonstrates of [sic] Pyrolysis Solid Waste to Recover Liquid Fuel, Metals and Glass,” 156; “Can Pyrolysis put Spark into Refuse as Fuel?,” *Chemical Week* 115 (December 11, 1974): 53.

14. Bernard Baum and Charles Parker, *Solid Waste Disposal*, vol. 2, *Reuse/Recycle and Pyrolysis* (Ann Arbor, Mich.: Ann Arbor Science Publishers, Inc., 1974), 22.

15. Howell H. Heck and Marwan E. Jubran, “Civil Engineering Research,” Florida Institute of Technology, http://coe.fit.edu/civil/heck_research.html.



Compton, pictured here with his sisters Phyllis Pribble (center) and Ruth Schroeder (right), had been a fighter pilot in World War II. Upon his return he enrolled in the Kansas State Teachers College (now Emporia State University) on the G.I. Bill. Compton studied chemistry, physics, math, and industrial technology, and received his Bachelor of Science degree in 1950. He recalled the concept of pyrolysis from his high school studies in Redfield, South Dakota, though his idea to use the process to make use of landfill bound waste materials was in line with the thinking of professional engineers, universities, and the federal government in the 1970s. Image courtesy of Bill and Kathryn Compton.

At roughly the same time that San Diego County was experimenting with pyrolysis, the state of Maryland and the city of Baltimore undertook a similar project. The plant, constructed by Monsanto Enviro-Chem Systems, Inc., would become the paragon example that warned state and local governments against investing in large-scale, high-tech resource recovery systems. Monsanto received one of the largest pyrolysis demonstration grants ever disbursed by the EPA. With it they built a resource recovery facility more expensive than any undertaken until that time: the Baltimore Pyrolysis Plant. Monsanto was sure its “Langard system” could process one thousand tons of waste per day—half of Baltimore’s waste—with the “first full-scale pyrolysis solid-waste disposal and resource-recovery system in the world.”¹⁶ The Langard system did use a form of pyrolysis in its initial stages of processing, but a second wave of air was then pushed through the kiln holding the heated waste and the pyrolyzized gas was combusted—a step not taken in true pyrolysis. This gas was then converted to steam, a byproduct not produced by pyrolysis.¹⁷ The plant was

16. “Turning Trash into Energy: More Cities are Trying it; the Way One City Plans to Make Use of its Wastes,” *U.S. News and World Report* (October 20, 1975): 68.

17. In support of Compton’s claim that this was a misnomer, see David B. Sussman, *Baltimore Demonstrates Gas Pyrolysis: Resource Recovery from Solid Waste* (Washington, D.C.: U.S. Environmental Protection Agency, 1975), 5, 7, 8, 9, 10; E. T. Bielski and A. C. J. Ellenberger, “‘Langard’ for Solid Wastes,” paper presented at 1974 National Incinerator Conference, in *Resource Recovery Thru Incineration: Papers* (New York: American Society of Mechanical Engineers, 1974), 331, 335, 336; Baum and Parker, *Solid Waste Disposal*, 18, 19; Robert C. Brown, e-mail message to author, March 22, 2006, Bill Compton Collection.

a failure almost from the start: by the time it opened in 1974 it did not meet Maryland’s new air quality regulations, and the technical problems were constant. Besides putting the city in dire garbage straits for half a decade, the plant ended up costing Baltimore a significant chunk of the final \$26 million bill. Despite the misnomer—the facility was in actuality an incinerator, not a pyrolysis plant—the project would be detrimental to the future of pyrolysis, leaving the Maryland Environmental Services Director to state that, “Just the word pyrolysis makes people nervous.”¹⁸

The flash and Langard processes of pyrolysis failed because of technical problems. Individually, these problems proved to be surmountable, but they were costly and new problems continuously arose. “Development of the technology can be envisioned as an endless number of technical and mechanical problems and short- and long-term shutdowns,” engineers Howell H. Heck and Marwan E. Jubran reflected on the early experiences of pyrolysis. “In most cases, redesign or modification of the system solved the problem, but other problems continued to appear. Even during periods when the plants were operating, there were problems in developing markets for the products produced. All of these factors worked together to increase processing costs to the point that other management options were chosen.”¹⁹

18. Joanne Omang, “Maryland Trying to Squeeze Usable Energy from Waste,” *Washington Post*, November 25, 1977.

19. Heck and Jubran, “Civil Engineering Research.”

To someone such as Bill Compton—who had a strong faith in technology, believed in solving problems by using time instead of money, and who was willing to donate all of his time to develop a workable process—these kinds of problems were not sufficient reason to abandon pyrolysis. The Baltimore Pyrolysis Plant was a great vexation to Compton, especially when trying to promote his process to officials, who were well-read enough to have heard of Maryland’s disastrous plant, but not enough to know that the Langgard process was closer to incineration than pyrolysis. In 1972, not long after his visit to Wichita’s dump, Compton founded the Institute for Resource Recovery (IRR) to promote “scientific investigation and advancement for relieving our Nation’s waste disposal problems.”²⁰ Besides its leader, the group consisted of a small bunch of supporters who backed Compton in his work on the problem of trash disposal, including his efforts to think through, discuss, teach, lobby for, and experiment with various solutions. After he had done years of research, corresponded with numerous experts, developed plans for a pyrolysis process, and received encouragement from friends, Compton decided in 1980 to build his own pyrolysis plant, capable of processing one hundred pounds of waste in eighteen hours.

He set to work assembling the plant’s pieces and parts in his front yard. Despite their support, most of his backers did not understand the technical details of what Compton was doing. His friend Gary Gibbs had convinced his employer, Belger Cartage Services of Wichita, to donate a gas tank from one of the company trucks, a central piece of equipment for the batch plant. Years later Compton would recall Gibbs’s support: “To this day, I still remember your response—‘Bill, I don’t know what the ___ you are talking about but I will help you.’”²¹ Compton wanted the batch plant to conduct experiments, but equally important he wanted to have something on hand to show his supporters and the public that pyrolysis would work.

The gas tank could hold one hundred pounds of organic solid waste. A wood fire underneath the tank heated it to the optimal temperature of 650 degrees Fahrenheit. An outlet on the bottom allowed carbon (char) to escape. Materials that did not become carbon, turned

into gas, which rose up through a pipe containing water, cooling in the process. The gas then went to a condenser, where it separated into one of two areas. The gas that did not convert to liquid after it cooled went to a low-pressure gas recovery area. From there it was put through a pressurizing pump and then stored in a high-pressure gas storage container. The gas that did turn into liquid product (oil) after cooling went through a trap, after which it could be held for further refining without re-gasifying. The entire process took eighteen hours and produced carbon, industrial gas, methyl alcohol, acetic acid, asphalt cement, and organic ash from trash. Anyone who saw the hodgepodge of tanks, barrels, pipes, and hoses must have been impressed with the products that came out of it—products Compton weighed on his wife Kathryn’s bathroom scale. Compton operated his batch plant until August 1984, when he was convinced he had learned all he could from it.²²

Compton had filed as a candidate for the Wichita City Commission primary race in 1983, campaigning on a trash conversion program. After he lost the primary, he continued to study the solid waste issue and lobby the Wichita (by this time) City Council, to switch from a landfill to a pyrolysis plant to dispose of its trash. Compton was also making plans to build a bigger model plant to prove the workability of a more complex pyrolysis system. Compton’s certitude continued to increase, and he believed the only thing that kept him from building a plant able to process thousands of tons of waste was his “lack (of) financial resources to put such a plant together.” In 1987, after reading Frederick Jackson’s *Energy from Solid Waste*, Compton wrote Jackson about the flash pyrolysis process that the Garrett Company had used in San Diego in the 1970s. Compton told Jackson that he had provided “ample information for the casual reader. However, I need to know more specific [details] of the plant.”²³ A year later Compton wrote to local leaders to inform them of his willingness to help the city develop a pyrolysis plant, including Wichita City Councilman Gregg Ferris and Sedgwick County Commissioner Bud Hentzen, as well as Donna Hinderliter of the Plains Keepers Society, who had recently written a letter to the *Wichita Eagle and Beacon* titled “Trash Burning

20. “The Institute for Resource Recovery,” handout, n.d. (ca. 1990), Bill Compton Collection.

21. “Wichita man’s trash machine could be alternative to landfill,” *Newton Kansan*, August 19, 1995; Bill Compton to Gary Gibbs, November 22, 1998; Compton, “The Institute for Resource Recovery,” 5, Bill Compton Collection.

22. Institute for Resource Recovery, “Resource Recovery Pyrolysis Project Experimental Batch Plant,” February 1992, 10, fig. 1EX, 11, fig. 1AEX; Compton, “Solid Waste Conversion Project,” 2; Compton, “Institute for Resource Recovery,” handout, 5; Compton interview, Bill Compton Collection.

23. Bill Compton to Frederick R. Jackson, August 24, 1987; Compton interview, Bill Compton Collection; Frederick R. Jackson, *Energy from Solid Waste* (Park Ridge, N.J.: Noyes Data Corp., 1974).



After years of research and planning, Compton decided in 1980 to build his own pyrolysis batch plant, capable of processing one hundred pounds of waste in eighteen hours. He set to work assembling the plant's pieces and parts—many of which were donated by friends—in his front yard. Compton operated his batch plant until August 1984, when he was convinced he had learned all he could from it. In November 1992 Compton constructed a larger pilot plant, which, like the batch plant, was able to process one hundred pounds of material—this time in a ten-hour period. This plant, a section of which is pictured above, operated for a total of 350 hours over a series of years, successfully producing combustible gas, carbon, and oil. Image from the Bill Compton Collection.

Not Best Disposal Option.” In his letter Compton stated, “I propose to draft a prospectus of how a conversion plant might be built . . . I will provide my services at no charge. All I would ask is that funds be provided to underwrite the expenses that would be incurred to put it all together. Some additional basic research may be required.”²⁴

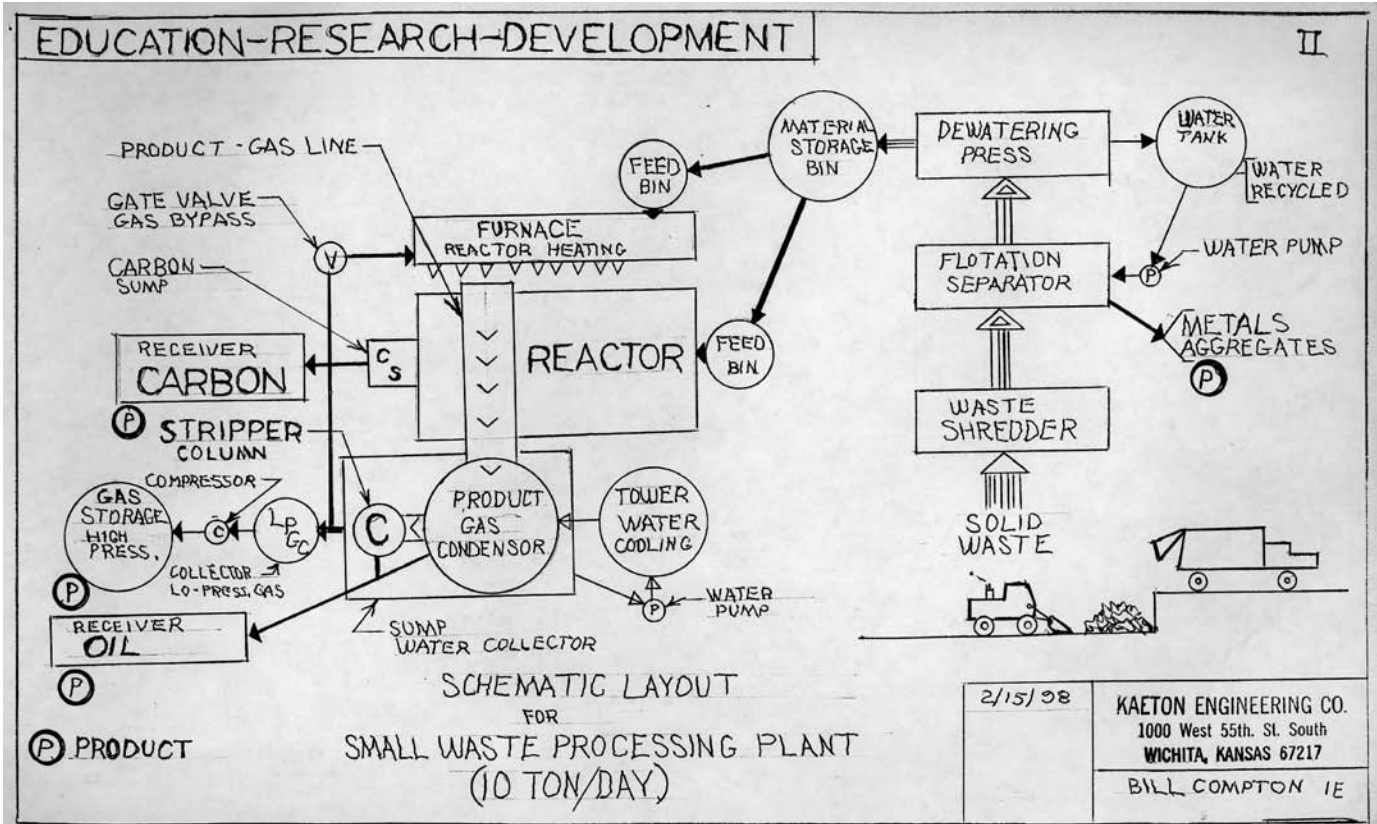
He also wrote to Governor Mike Hayden, asking for support. Hayden’s secretary Stanley Grant responded that the Kansas Department of Health and Environment (KDHE) was interested in “a number of approaches to the handling and treatment of solid waste,” adding that the KDHE—like most other environmental departments in the nation at the time—was looking into “waste minimization” via “recycling and the use of returnable containers.” Grant wrote that to develop and build a pyrolysis pilot plant “would require the expenditure of a

considerable amount of funds,” which the department did not have. “Should the department receive funds,” the letter continued, “for research or development projects of this type in the future, proposals would be [solicited] from all interested parties. However, such funding is not likely in the near future.” Even if it were, Grant made clear, Kansas was interested in recycling, not pyrolysis.²⁵

By 1992 Wichita had hired waste consultants to help deal with its trash problem. They suggested a materials recovery facility (MRF, or “murph”), where recyclables (in some cases only metal and glass) would be separated from other trash by trained professionals and the rest of the waste turned into something useful like fuel pellets, fertilizer, or compost. The *Wichita Eagle* called the proposed facility, which the city’s consultants estimated could divert 38 percent of Wichita’s trash, a “high-tech”

24. Bill Compton to Gregg Ferris, Bud Hentzen, and Donna Hinderliter, December 15, 1988, Bill Compton Collection.

25. Stanley C. Grant to Bill Compton, January 30, 1989, Bill Compton Collection.



Compton put years into refining his pyrolysis plants. Pictured is one of many drawings he made detailing the construction of his 1992 pilot plant, part of the plans he used not only to help build his plant but also as an educational tool to show his supporters and the public that pyrolysis would work. Plans from the Bill Compton Collection.

solution to the city's mounting waste problem. The idea did not catch on, however, probably because a facility that big was estimated to cost between \$40 million and \$100 million to construct. Wichita had already seen a small MRF close in 1990 after operating for only three months. Another Kansas MRF, located in Galena, closed within six months of the publication of a story about it in the *Wichita Eagle* in 1992.²⁶

Recycling appealed to environmentalists, governments, and, eventually, citizens. But recyclers and resource recovery proponents had been rivals since the 1970s, when they competed for materials like paper and cardboard that were success stories for recycling centers and valuable to recovery plants that used them to help maintain hotter temperatures in the recovery process.²⁷

26. Jean Hays, "Dirtying our own Nest: Wichita Looks for Alternatives to Landfill, but Costs and Politics Complicate Choices," *Wichita Eagle*, October 4, 1992; Jean Hays, "Home on the Range Running out of Room to Take out the Trash," *Wichita Eagle*, February 25, 1990; Jean Hays, "Panning for Gold in the Muck: Processors Try to Make a Buck out of Your Garbage," *Wichita Eagle*, February 23, 1992.

27. Rathje and Murphy, *Rubbish!*, 244.

Environmentalists heavily favored recycling, because it helped instill an "environmental ethic" in people. Resource recovery facilities, on the other hand, did not require any kind of change in behavior or give people much pause about the waste they produced or its effect on the environment. If waste did not accumulate and technology helped provide more resources to exploit, then consumption and materialism would carry on unabated. This would defeat a goal of environmentalists in the 1970s and today, namely to encourage people to develop a relationship with the earth, caring for it rather than appropriating its resources with disregard for the consequences.²⁸ Additionally, environmentalists and citizens living near resource recovery plants increasingly worried about the dioxin emissions associated with the facilities. Ironically, as the technology got safer and came under stricter regulation, the public became more

28. Roger Starr, "Recycling Myths and Realities," *Public Interest* 119 (Spring 1995): 28-41; also see Whisenhunt, *The Environment and the American Experience*.

environmentally aware and concerned with the risks posed by the plants. As historian Joel Tarr has noted, "In an historical reversal, society has begun focusing on the costs of new technologies rather than only on benefits. Public attention is now occupied with the risks and hazards associated with technology rather than its potential for progress."²⁹ Although waste disposal technology had gotten much safer, people were more hesitant than ever to trust it.

This risk aversion and the very public and polemical debate about the danger of dioxin emissions, primarily caused by the burning of plastics, would prove detrimental to the waste-to-energy (WTE) plants of the mid- to late-1980s. WTE opponents blamed emissions on "increases in cancer, birth defects, psychological damage, liver damage, cardiovascular deterioration, and degeneration of the endocrine system," among other illnesses.³⁰ People such as Bill Compton, who had a strong faith in technological solutions, saw the risk from dioxin emissions as "very small compared to the risks of everyday activities such as smoking, drinking, exposure to sunlight, driving a car, or the burden of naturally occurring toxic compounds that are found in food."³¹ Moreover, as Compton and other proponents of pyrolysis repeatedly pointed out, the process itself produced no emissions of any kind. It was only the use of gas, oil, or carbon produced through pyrolysis of plastics and chemicals that produced emissions, though the risk these posed was, in the minds of pyrolysis advocates, debatable. Some WTE proponents were fond of saying that eating a peanut butter sandwich everyday would expose a person to more carcinogens than living next door to a WTE plant. These types of responses made WTE supporters seem "blithely dismissive" of pollution, as well as people's fears, and probably had a hand in making recycling the more popular method of waste disposal.³²

29. Tarr, *The Search for the Ultimate Sink*, 30.

30. Louis Bloomberg and Robert Gottlieb, *War on Waste: Can America Win its Battle with Garbage?* (Washington, D.C.: Island Press, 1989), 98.

31. Walter M. Shaub, "Disposing of Waste-to-Energy Facility Ash," in *Waste-to-Energy as a Part of Municipal Solid Waste Management: Selected Papers from the Proceedings of SWANA/GRCDA Meetings 1987-1990*, by Solid Waste Association of North America and Governmental Refuse Collection and Disposal Association, SWANA Publication no. GR-WTE 0401 (n.p.: Solid Waste Association of North America, 1991), 99, 100.

32. Rathje and Murphy, *Rubbish!*, 185.

Government at all levels also came to favor recycling as a far less politically controversial and more economically feasible choice than either a resource recovery plant or a landfill. This was also a reversal of 1970s attitudes, when politicians may not have understood or cared about all of the technological or bureaucratic details involved in resource recovery, but they embraced it nonetheless. In 1976 California Congressman Leo Ryan rebuked the EPA, the Federal Energy Administration (FEA), and the Energy Research and Development Administration (ERDA) for not cooperating with each other or getting much accomplished. "We're trying to turn garbage into energy," Ryan said. "If there is nothing else than a simple page or two that explains what the three of you are doing, I could use it. And perhaps every member of this Congress could use it. Nobody knows. You may know, but we don't know."³³ It took until 1979 for the EPA and the Department of Energy (DOE), which replaced the FEA and ERDA in 1977, to sort out responsibilities and submit the statement Ryan requested. That same year the General Accounting Office reported that the agencies were not adequately disseminating information, funding projects, providing funding or assistance, or working on tests to fix the technological issues that scared off investors.³⁴ Soon after the report, resource recovery would be a moot issue anyway. After the 1979 oil crisis ended, the DOE lost interest in solid waste. The EPA had never been very enthusiastic about MSW management, and the funding priorities of President Ronald Reagan's administration allowed the EPA to remove the responsibility from its agenda, cutting the solid waste budget from \$29 million in 1979 to \$16 million in 1981. Just one year later only \$320,000 was allocated for solid waste management.³⁵

State and local governments still had to deal with garbage accumulation, however, and recycling programs, which did not require much special technical knowledge to operate, were something they could generally afford. The number of recycling centers in Kansas

33. Subcommittee on Government Operations, Solid Waste Management and Resource Recovery Hearings, 100th Cong., 2nd sess., March 23, 24, 26, 31, 1976, 331.

34. U.S. General Accounting Office, *Conversion of Urban Waste to Energy: Developing and Introducing Alternative Fuels from Municipal Solid Waste, Report to Congress* (Washington, D.C.: General Accounting Office), 4-1.

35. Martin V. Melosi, *The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present* (Baltimore: Johns Hopkins University Press, 2000), 419, 360, 359, 409.



Compton recorded in photographs a run of his pilot plant on August 18, 1993. Seventy-five to eighty pounds of waste, composed of the sorts of wood chips, newspaper, and plastic bottles pictured here, spent ten hours in the plant. Image from the Bill Compton Collection.

went from forty-three in 1983 to four hundred in the fall of 1991.³⁶ Wichita came late to the recycling game, with a program it implemented in the summer of 1990. Despite this, Mayor Bob Knight hoped Wichita would be “an eco-city by the turn of the century, a model for other metropolitan areas.” As the *Wichita Eagle* remarked, “Wichita has some catching up to do.” By that time, there were already fifteen hundred cities across the country that had curbside recycling and one thousand that had community composting.³⁷

In 1989 a twenty-seven-member recycling task force on solid waste, which would become the Citizen’s Recycling Committee, developed a three-part recycling plan for Wichita. The plan suggested a three-month public awareness campaign; ten drop-off sites that collected plastics, glass, aluminum cans, and paper; and, eventually, a city-sponsored curbside recycling program.³⁸ Compton served on the task force but was frustrated that the committee was bent on traditional recycling. “My suggestions and motions to recycle all solid waste were completely [opposed]—rejected,” wrote Compton a few years later. In an April 1991 speech at the local Recreation Vehicle Industry Association (RVIA) meeting, Compton said of the task force, “every time they talk about saving

the landfill I propose eliminating it. . . . Recycling to me is just a high class way of spending a lot of money for nothing.”³⁹ The recyclers proposed diverting some of the waste stream to extend the life of Brooks Landfill, which by 1991 contained 7.8 million tons of trash and was growing at a rate of sixteen hundred tons a day.⁴⁰

Compton had agreed to serve on the recycling committee at the request of one of its members, Roger Grund, director of Home Owners Trust, a local anti-tax, government watchdog group funded by Wichita businessman Willard Garvey.⁴¹ Although Garvey never offered to help finance Compton’s pyrolysis project, the inventor’s anti-regulatory, pro-technology ideals probably meshed well with the interests of the economically libertarian Grund, who proposed that a business arrangement between his boss and Compton might be possible. It was Grund who introduced Compton at the RVIA meeting, stating that the Institute of Resource Recovery had applied for tax-exempt non-profit status so Compton could “get a study completed and get funding for a \$50 million resource recovery plant.”⁴² This was cheap in comparison to the city’s proposal to increase the capacity of Brooks Landfill, a plan estimated to cost over \$92 million. The curbside collection proposed by the recycling committee would cost taxpayers an additional \$12 million besides the cost to expand the landfill, a problem that would need to be addressed by the middle of the decade.⁴³ Compton said that the purpose of the Institute, which had been a vehicle to discuss solid waste and educate the public about pyrolysis, was “to generate funds to underwrite the cost of developing a detailed engineering plan for a resource recovery plant to dispose of all our solid waste (including refrigerators, mowers, wood, etc.) and eliminate the landfill.”⁴⁴ He asked the speech attendees for contributions of up to \$200 apiece, in hopes that he could raise \$6,000 to develop a detailed draft plan.

39. Wichita Recreational Vehicle Industry Association, Agenda 117, “Speaker: Bill Compton—Topic: Put an End to Landfill,” April 30, 1991, 3; Compton to Gibbs, November 22, 1998, Bill Compton Collection.

40. Jim Lynn, “Landfill Presses for Solution,” *Wichita Eagle*, February 7, 1991.

41. Bud Norman, “Roger Grund Tried to Keep Politicians’ Feet to the Fire,” *Wichita Eagle*, March 17, 1992.

42. The minutes of the RVIA note “Speaker: Bill Compton—Topic: Put an End to Landfill.” See minutes, Wichita Recreational Vehicle Industry Association, April 30, 1991, Bill Compton Collection.

43. Jean Hays, “Earth Day Isn’t Over for Wichita Officials,” *Wichita Eagle*, May 14, 1990; Jim Lynn, “Landfill Presses for Solution,” *Wichita Eagle*, February 7, 1991.

44. Minutes, Wichita Recreational Vehicle Industry Association, April 30, 1991, Bill Compton Collection.

36. Jean Hays, “Recycling Faces Two Daunting Hurdles,” *Wichita Eagle*, November 10, 1991.

37. Jean Hays, “Earth Day isn’t over for Wichita Officials,” *Wichita Eagle*, May 14, 1990.

38. Stan Finger, “City Tackles Trash Problems: Task Force Finds Ways to Simplify,” *Wichita Eagle*, December 29, 1989.

Compton had gained practical experience in pyrolysis during the four years he operated his batch plant and continued to work and rework his ideas after he took it out of use in 1984. In March 1990 he took his project ideas to Wichita State University design engineer Russel Pinkerton, who, after evaluating Compton's plans, concluded that Compton's pyrolytic process of trash disposal had benefits over other methods such as incineration. His process, Pinkerton stated, "does not require a large amount [of] material to go to the landfill [and so] it has a great deal of value when compared to the combustion processes that are being used . . . by having a variety of end products your process will have a more stable source of income as compared to a combustion process that has only one end product." He also said, however, that like "all technical processes" Compton's plan had some negative aspects. Unlike the designers of the 1970s, who were caught off guard when their full-scale disposal plants did not work as smoothly as the pilot plants, Pinkerton advised that Compton had to expect difficulties if the plant were to be made big enough to process all local waste. "Even if your pilot plant has been quite successful further scale up difficulties will occur. Anytime a project such as this is built on a large scale problems will occur and the question that I would ask is what size of facility is appropriate for your next unit." He noted that Compton's pyrolysis process was untested and suggested that it would be best to utilize an already investigated process. He also questioned Compton's prediction of easily available markets for the sale of the inorganic materials that would be taken out before pyrolysis, including scrap metals and glass aggregate. Pinkerton did say, though, that he did "not think that the negative aspects should be considered as sufficient reason to not proceed on your pyrolysis project but rather as points that should be investigated and eliminated or accepted."⁴⁵ The report did not make any comments or speculations about dioxin emissions or other pollutants, perhaps illustrating a pro-technology attitude that a certain amount of risk was a given.

The line between attention to detail and micro-managing can be a fine one, but Compton seemed to approach his pyrolysis plans with an increasingly autocratic attitude. In October 1991 Compton sent Governor Joan Finney an eight-page "Resource Recovery Project Bill," in which he argued that in landfills "there is not material recovery—monetary or other, from this buried



At the end of its August 18, 1993, run Compton's plant had produced the materials pictured here: fifteen to twenty pounds of carbon and three and a half gallons of AAA crude oil. Compton weighed his products on his wife Kathryn's bathroom scale. Image from the Bill Compton Collection.

waste material. This is a debit to our economy." The goal of the project was to "receive all waste generated and convert it to useable industrial materials that have free market value." In a letter sent with the resource recovery bill, Compton identified the people who would likely be dealing with the project, including project engineers, cost engineers, finance managers, bond counselors, trustees, paying agents to redeem bonds and bond interest coupons, and a certified public accountant, all of whom, he advised, should be "well-versed on the matter of resource recovery." The facility, moreover, should be built in close proximity to highways and railways. Compton said that a pyrolysis plant that could process two thousand tons of waste per day would cost about \$45 million. He estimated that revenue from the carbon, oil, and gas that would be produced, along with an \$8 per ton user fee, would generate \$20 million annually. Speculating that it would cost upwards of \$13 million a year to operate the plant, at least \$7 million would remain to pay for construction costs and loan interest.⁴⁶ The bill allowed for private sources to fund the project with the endorsement of the state, so that waste disposal would no longer be the responsibility of individual city and county governments, transcending the bureaucracy. It also gave all local governing bodies the power to authorize land use for the operation of the resource

45. Russel Pinkerton to Bill Compton, "Re: Analysis of Pyrolysis Proposal," April 23, 1990, Bill Compton Collection.

46. Bill Compton to Governor Joan Finney, October 21, 1991, 1-3, Bill Compton Collection.

PROJECTIONS
KRRR (PROP.)

METROPOLITAN AREAS SERVED BY COUNTY (PROJECTED)

AREA 1 KINGMAN
COWLEY
SUMNER
SEDGWICK
HARVEY RENO
BUTLER

AREA 2 JOHNSON
LEAVENWORTH
DOUGLAS
JEFFERSON
SHAWNEE

AREA 3 MONTGOMERY
LABETTE
CHEROKEE
WILSON
NEOSHO
CRAWFORD

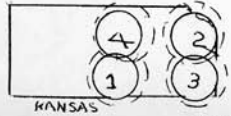
AREA 4 SALINE
MC PHERSON
LINCOLN
OTTOWA
DICKINSON
GEARY

AREA 1 COST: \$60,000,000
FINANCED: RESOURCE RECOVERY BONDS (20YR.)
AUTHORITY: RESOURCE RECOVERY ACT (PROPOSED LAW) 1991

PARTICULARS: PLANT INPUT: 2,000 T/D RDW (AVERAGE)

RECOVERY: (DAILY)	REVENUE
* SCRAP STEEL - MP. (#130/TON) · 140 TON/D	\$18,200
* SCRAP ALUMINUM 40,000#/D (.30¢/LB)	12,000
* AGGREGATE 140 T/D (#4.00/T)	560
** CARBON - 323 T/D (#32/TON)	10,336
** CRUDE OIL (PYRO) - 1,705 BBL (#6.30/BBL)	10,741
** LO-GAS (550 BTU/FT. ³) - TO BE USED IN HOUSE. (HEAT VALUE - 2.8X10 ⁸ BTU)	-
DUMP FEE - \$7.00/TON	14,000
DAILY REVENUE	\$65,837
ANNUAL REVENUE	\$23,964,668.00

INFORMATION SOURCE:
* PUBLISHED DATA
** PILOT PLANT PRODUCTION DATA



BY: IRR
WICHITA, K.S.

9/21/95
B. COMPTON

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Compton was constantly working and reworking the financing of his plants. In October 1991 he sent Governor Joan Finney a proposal outlining the operations at a plant that could process two thousand tons of waste per day, to be built at a cost of \$45 million. He estimated that revenue from the carbon, oil, and gas that would be produced, along with an \$8 per ton user fee, would generate \$20 million annually. Speculating that it would cost upwards of \$13 million a year to operate the plant, at least \$7 million would remain to pay for construction costs and loan interest. Compton updated his proposal in this 1995 sketch, in which the cost of the plant would rise to \$60 million and the yearly revenue would come in at \$23,964,668.00. Image from the Bill Compton Collection.

recovery project.⁴⁷ He closed his letter by stating, "It is hoped that this meets with your approval. Such a project, or projects, would go a long way toward bringing Kansas into the 21st Century."⁴⁸ The bill apparently did not meet with the governor's approval. Although Compton did eventually succeed in providing the state with a pyrolysis plant in the mid-1990s, it was short-lived and Kansas would enter the twenty-first century without an operational pyrolysis facility.

Despite twenty years of work, Compton had not gathered much public support, though there were those who were interested in his project. Compton called a meeting of "Contributors and Interested Parties" on May 28, 1992, at American Legion Post 401 to determine how

the Institute could fund a portable pyrolysis pilot plant. "I laid out the plans of what I planned to do and how I was going to do it," Compton later recalled, "and the cost to build it was around \$100,000 or so."⁴⁹ Supporters, all men who had seen the batch pyrolysis plant work and wanted to know more about it or believed that the pyrolysis of MSW was something the public ought to see, came that night to hear what Compton had to say. The men supported the construction of the pyrolysis plant, but knew that \$100,000 was probably not a reasonable financial goal. After a "lengthy, inspirational, give and take discussion," they decided that the plant could be built out of salvaged materials for \$8,000 to \$10,000.⁵⁰

This informal planning committee envisioned that the pilot plant would continually process waste material

47. Ibid., 4; "Proposed Enactment for a Resource Recovery Bill," November 1991, 6, Bill Compton Collection.
48. Compton to Finney, October 21, 1991, 4, Bill Compton Collection.

49. Compton interview, Bill Compton Collection.
50. Compton interview; American Legion Announcement Memorandum, Bill Compton Collection.

and would be used “to conduct research and give public demonstration as to the viability of the process and application for remedy of our massive solid waste disposal problems.”⁵¹ Like the batch plant, the pilot plant would be able to process one hundred pounds of material—this time in a ten-hour period—and it would also be constructed of a variety of salvaged pieces, barrels, and pipes, a collection Compton would eventually call his “Rube Goldberg thing.” It was to be much larger and far more complex than the batch plant, however, and it could be used to conduct a wider range of experiments. Construction started on November 9, 1992, and the plant was finished and ready for its first run in Compton’s front yard on August 12, 1993. Compton concluded that the first run of the plant was “reasonably satisfactory in that the basic principle-Physical-Chemical process, worked. Mechanical problems encountered were not severe as to stop the test.”⁵²

The next test run, performed the following spring, would become Compton’s favorite story in his pyrolysis repertoire, demonstrating as it did the bureaucratic inefficiency that had for so long blocked his efforts to establish pyrolysis as a solution to Wichita’s waste problem. During the run a faulty valve caused black smoke to pour out of the plant, and although Compton said he stopped the smoke within a couple of minutes, one of his neighbors had already called the fire department. After firemen drove into Compton’s yard asking if there had been a fire, Compton explained pyrolysis to them, providing them with handouts on the process. Compton said when the men got back to the fire station they must have decided that he was operating an incinerator, because they notified the Sedgwick County Health Department, which immediately sent out an inspector even while Compton was still trying to fix the valve problem. The inspector asked Compton if he was running an incinerator, and Compton said no, that he was running a pyrolysis plant.

51. Bill Compton to the Consortium, “Re: Pilot Plant Project for Destructive Distillation of Trash (Pyrolysis) and History in the Making,” November 19, 1994, 1, Bill Compton Collection.

52. Compton Interim [sic] Report to the Consortium, August 26, 1993, 4; “Announcement Memorandum,” handwritten notes on flier, May 28, 1992; 69th Werewolves Reunion Association, “Update on Bill Compton’s Pyrolysis Project,” *Werewolves Newsletter* 8 (May 1995): 10, Bill Compton Collection; “Wichita man’s trash machine could be alternative to landfill,” *Newton Kansan*, August 19, 1995.



Recycling appealed to environmentalists, governments, and, eventually, citizens. But recyclers and resource recovery proponents had been rivals since the 1970s, when they competed for materials like paper and cardboard that were success stories for recycling centers and valuable to recovery plants that used them to help maintain hotter temperatures in the recovery process. Environmentalists heavily favored recycling, as demonstrated by this poster put out by the Environmental Action Coalition in the 1970s, because it helped instill an “environmental ethic” in people. Resource recovery facilities, on the other hand, did not require any kind of change in behavior or give people much pause about the waste they produced or its effect on the environment. Image courtesy of the Library of Congress, Prints & Photographs Division, Washington, D.C.

“I asked him, ‘Do you know about pyrolysis?’ And [he said] ‘Oh sure! I know all about it.’ Turned out to be a crock. Anyway, I explained it to him, and he didn’t cite me or anything.”⁵³

Despite the tutorial, the Health Department official called the KDHE, which wrote Compton a letter saying he needed to apply for an incinerator permit and send

53. Compton interview, Bill Compton Collection.

\$25 with the application. Compton replied that he had a pyrolysis plant not an incinerator. According to Compton, the KDHE responded that they were going to “fine him and send him to prison” for running an incinerator without a permit. They finally sent J. A. Kater, the chief fire inspector, to look at the “incinerator,” and he witnessed Compton’s third run of the plant on June 15, 1994. Compton never heard back from any of the parties involved in the fracas. Finally, he called Kater and asked him what he had told the KDHE. Kater responded, in Compton’s recollection, “I told them I didn’t know what you had, but you didn’t have no incinerator!”⁵⁴

Compton was all too aware of the obstacles he encountered during the test runs, though they did not deter him from moving forward with the project. In a letter he sent to over sixty people, including *Wichita Eagle* columnist Bob Getz, local millionaire Charles Koch, and District Attorney Nola Foulston, Compton stated, “There is no doubt; when one is learning, or teaching himself, [an] operation of this kind, there are problems that are to be encountered. This is completely a new method for applying an ancient process for a useful purpose. However, knowledge is being gained and the project is going forward.”⁵⁵ By the plant’s tenth run, Compton was beginning to sound weary. Although nine people had come out to watch the latest demonstration he said that he hoped more people would come in the future and that, “All this work will come to naught if nobody knows about it.”⁵⁶ Compton got his wish during his fourteenth run on October 28, 1994, when the local television station KWCH, channel 12, sent reporter Andy Abbott to cover the event for a news feature that evening. Compton was disappointed “that a more comprehensive personal interview was not achieved,” but he was clearly pleased with the coverage and made a list of the thirty people who had come out to see the plant thus far. He noted that up to the present, the cost of the pilot plant had exceeded \$4,000 and donations had amounted to less than \$3,000. Even so, the tone of his post-run re-

port was much more optimistic than the previous account of his progress.⁵⁷

His optimism was short-lived, however. On November 10, 1995, Compton wrote, “This Pyrolysis Project needs more, much more, public interest and involvement. . . . The Institute for Resource Recovery is extremely short of support funds to sustain operations. This is a sad state of affairs. The work needs to be done. It needs financial support from any public or private source from which help can be obtained.”⁵⁸ Compton ran the plant only twice more before he decided he had gotten all the information from it that he could. During its runs the plant processed metals, glass, paper (including phone books), cardboard, garbage, wood, all kinds of plastics, tire rubber, and car fluff (or that material from automobiles that cannot be recycled). The plant ran for a total of 350 hours and successfully produced combustible gas, carbon, and oil with a best ratio of 13 percent combustible gas, 34 percent carbon, and 53 percent oil, all of usable quality.⁵⁹

In October 1995 Wichita’s Technical Applications Group (TAG), an informal local think-tank made up of semi-retired men with experience in technical, business, and investment fields, evaluated Compton’s pyrolysis project. A member of the TAG and friend of Compton, Leland Johnson, then submitted a description of the pilot plant—titled “A System for Salvaging All Refuse Derived Waste (RDW) Material from Municipal, Industrial Suburban, and Agrarian Sources”—to the National Institute of Standards and Technology’s (NIST) Office of Technology Innovation for consideration under their Energy Related Inventions Program. NIST, a non-regulatory federal agency under the U.S. Department of Commerce, rejected the content of the application, which

57. *Ibid.*, 4, 5.

58. Compton Report to the Consortium, “Test Run #18 and #19,” November 10, 1995, 2, Bill Compton Collection.

59. Compton interview; Bill Compton, letter to the editor, “Landfill—Needs to be eliminated,” *Haysville Times*, March 19, 2004; Compton Report to the Consortium, “Test Run #9,” 1, 2, Bill Compton Collection. A BTU/Btu, or British Thermal Unit, is a standard energy measurement signifying the amount of energy required to raise the temperature of something by one degree Fahrenheit. BTUs are used to measure how much energy can be produced by fuels. The oil produced by Compton’s pyrolysis pilot plant was 19,000 BTU per pound. A gallon of crude oil weighs 7.21 pounds, and there are 42 gallons in a barrel of oil, meaning that the oil generated from Compton’s pyrolysis plant contains 5,753,580 BTU per barrel, which is 99% of the amount of BTU in conventionally refined oil (5,800,000 BTU). Compton’s natural gas had 500 BTU per cubic foot, which is about half the BTU of conventionally processed natural gas (1,031 BTU per cubic foot). The standard carbon BTU depends on the application; Compton’s carbon was 9,000 BTU per pound.

54. *Ibid.*; Compton, who is nearly always willing to point out strange bureaucratic behavior, was quick to note the irony of a January 11, 2006, letter he received from KDHE Secretary Roderick Bremby, stating that, “It is KDHE’s opinion that research is unneeded because this technology is well-understood.” Roderick Bremby to Bill Compton, January 11, 2006, Bill Compton Collection.

55. Compton Report to the Consortium, “Test runs #3, #4 & #5 of the Pilot Plant—Demonstration and Research Project,” July 4, 1994, 3, Bill Compton Collection.

56. Compton Report to the Consortium, “Test Run #10,” September 19, 1994, 3, Bill Compton Collection.

in their estimation “lacked a complete engineering analysis; . . . a material and energy balance, comparing the proposed system to competitive systems, was not provided. Also, no economic comparison was made.” Ultimately, the office wrote that they did not consider the invention promising enough for continued evaluation for three key reasons: first, based on his predictions for his plant’s performance Compton could not ensure that his process was superior to past pyrolysis projects that had been plagued by mechanical problems; secondly, even if his plant did succeed, the project’s energy advantage over its competition was “insufficient or questionable”; and thirdly, the plant’s operating costs might be “excessively high.” Under the technical comments section of the evaluation the department wrote, “The inventor’s process could probably be made to work. However, we see no new technology in the proposed process that would give either a technical or economic advantage over other processes.”⁶⁰ The department attached a story about the Siemens Company getting ready to operate its first pyrolysis plant in Germany.

The following spring the newly founded non-profit Institute for Resource Recovery, Inc. (IRRI), applied for numerous grants: \$500,000 from Chrysler; \$50,000 from Wichita Greyhound Charities, Inc.; \$300,000 from the Hallmark Corporate Foundation; and \$250,000 from the Victor Murdock Foundation. Compton had letters of support and recommendation from an eclectic group of people, including Wichita car dealer Rusty Eck and Compton’s fellow WWII U.S. Air Force fighter pilot and friend, Ned Ailis. One supporter, Russ Campbell of Wichita, compared Compton’s pyrolysis developments to Neil Armstrong’s walk on the moon.⁶¹ Compton tried to get funding from the Department of Agriculture, writing to its secretary, former Kansas Congressman Dan Glickman, that he had received “considerable help from others (including your dad).”⁶² Even with its newly acquired tax-exempt status, the IRRI

60. George P. Lewett to Leland Johnson, June 20, 1996, enclosure, “Energy-Related Inventions Program Report of First-Stage Evaluation,” 1, 2, Bill Compton Collection. Leland described the TAG as believing “that our experience and vision, having lived here in the community and with the background that we have, have endowed us with a certain amount of wisdom in [community] matters,” including Compton’s “solid waste program.” See County Commission meeting minutes, March 12, 1997, Bill Compton Collection.

61. Copy of Prior Grant Application, April 7, 1997, 1; Wichita Greyhound Charities, Inc., Grant Application 1997, April 7, 1997, 1; Bill Compton to Lori Wentz, May 5, 1997, 1; Bill Compton to Richard B. Chambers, April 28, 1997, 1, Bill Compton Collection.

62. Bill Compton to Dan Glickman, November 18, 1997, Bill Compton Collection.

did not receive any of the grants for which it applied, and its financial situation did not improve. On New Year’s Eve 1997, Compton wrote a letter to the IRRI and those who had helped him, stating regretfully that the corporation would dissolve at midnight and thanking them for their support.⁶³

Although the IRR/IRRI ceased to function and there was no indication that Sedgwick County had plans to change its trash policy, Bill Compton continued writing letters to promote pyrolysis. In 1998 he wrote William Allen, editor of *National Geographic Magazine*, in response to a small article in the publication’s May issue reporting on efforts to extract soap from cooked tires. He enclosed information about the pilot plant and wrote, “The information presented herein is for whatever use that you can put it to. Conditions—lack of funds and age, prevent me from constructing the plant described. However; that does not prevent me from showing somebody else how to build such a plant to operate it.”⁶⁴ In 2000 Compton discovered Conrad Industries, a pyrolysis company in Washington that had been successful in marketing and establishing its process, ART (Advanced Recycling Technology), which they applied only to specific industrial feedstocks rather than a heterogeneous waste stream like MSW. Unlike Compton, who wanted to solve the problem of municipal garbage, the company’s developer, William Conrad, had been able to form a partnership with KleenAir Products, an already established private company. Conrad’s plant seemed to give Compton new hope. Finally finding a peer, Compton wrote Conrad with a host of questions, and concluded the letter by saying, “It is felt that your method is much the same as ours and has merit. Yours is the first process, of the many that I’ve been able to study, that gives true Pyrolysis processing and demonstrates economical advantages.”⁶⁵

In 2002, with a new name for the former members of the IRRI—Citizens for Gasification Recycling—Compton wrote a letter about pyrolysis to President George W. Bush.⁶⁶ He also wrote letters to newspapers and state and local officials and approached businesses that he thought might be interested in pyrolysis, such as

63. Bill Compton to numerous recipients, December 31, 1997, attachment; Compton to Glickman, November 18, 1997, 1, Bill Compton Collection.

64. Bill Compton to William L. Allen, April 24, 1998, Bill Compton Collection.

65. Bill Compton to William Conrad, March 20, 2000, Bill Compton Collection.

66. Bill Compton to George Bush, Pat Roberts, Sam Brownback, Todd Tiaht, Chuck Hagel, and Tim Johnson, January 2, 2002, Bill Compton Collection.



Compton saw the risk from dioxin emissions associated with pyrolysis facilities as very small compared to the risks of everyday living. Some waste-to-energy (WTE) proponents were fond of saying that eating a peanut butter sandwich everyday would expose a person to more carcinogens than living next door to a WTE plant. These types of responses made WTE supporters seem dismissive of pollution, as well as people's fears, and probably had a hand in making recycling the more popular method of waste disposal. The fight against pollution also had a strong lobby and was represented to the American public in campaigns such as Woodsy Owl's "Give a Hoot, Don't Pollute!" and Iron Eyes Cody's "crying Indian" of the Keep America Beautiful public service announcements. Image of the USDA's mascot alongside Secretary of Agriculture Clifford Hardin in September 1971 courtesy of the Library of Congress, Prints & Photographs Division, Washington, D.C.

Wendy's International and TRICON Restaurants International, which owns KFC, Pizza Hut, and Taco Bell. No one he solicited was interested in or willing to adopt the process. Age and arthritis began to wear on Compton; in September 2001, he had heart bypass surgery, and the following year he decided it was time to give up his pyrolysis plant. He donated the pilot plant to the Haysville Community Library, which hosted a raffle for it that cost \$5 per entry. There were six entries, five of which were submitted by the winner, Paul Rhodes. Rhodes had been

participating in area solid waste discussions since 1996 and wanted to carry on Compton's work. In 2003 Rhodes co-founded (with Compton) the Compton Conversion Consortium (CCC), with the goal of educating the public about pyrolysis, or what they now called "thermal conversion."⁶⁷ Since the CCC's founding, Compton and Rhodes have continued their letter writing and lobbying efforts and have presented demonstrations about pyrolysis, trying different approaches to carry on Compton's work.

Compton's fight for his pyrolysis plant mostly took place after federal, state, and local governments had abandoned all interest in the process. By the early 1980s governmental agencies were no longer investing in resource recovery research and development, and at the end of the century WTE plants were accepted only in areas with exorbitantly high land prices where communities could not afford large landfills. Where there were markets for the materials collected, recycling did offset varying amounts of waste going into landfills in communities with programs. The ultimate solution for trash in the 1990s was to send it to someone else's backyard. By the middle of the decade, all states were either importing or exporting trash, and by the turn of the century 32 million tons of trash were being transported out-of-state for disposal.⁶⁸ After nearly a decade of debate, Wichita's solid waste plan ended up being based on transfer stations. Wichitans were sending 70 percent of their waste to Topeka and Meno, Oklahoma, until 2006 when Waste Connections opened its Plumb Thicket Landfill in Harper County, which now takes most of the area's trash. As gas prices and concerns over carbon dioxide emissions both continue to rise, it is hard to say how long it will be before people will object to transporting their trash to distant landfills at increasing costs. Most Americans have not lessened their consumption as environmentalists had hoped, but many seem to be developing a "green consciousness," which has the potential to offset some of the risks of consumption. Such matters did not concern Compton, who, although he was interested in all types of technological improvements, was not motivated in his

67. Bill Compton to Hon. Ben Sciortino, October 4, 2003; Bill Compton to Mr. William Biden, May 30, 2003; Bill Compton to Senator Paul Feliciano, November 21, 2000; Roderick L. Bremby, Secty. Kansas Department of Health and Environment, to Bill Compton, May 22, 2003; Pat Roberts to Bill Compton, February, 7, 2000; Jim Ryun to Bill Compton, February 18, 1999; Bill Compton to Clyde Graeber, June 19, 2001; Bill Compton to Todd Tiahr, April 20, 2003; Bill Compton to David C. Novah, July 23, 2001; Paul Rhodes Resume, Bill Compton Collection. *Haysville Times*, August 16, 2002.

68. Melosi, *Garbage in the Cities*, 215.

own work by environmentalists' concerns. Like other resource recovery proponents he minimized the disadvantages of technology and liked to point out that seemingly innocuous activities like recycling produce a lot of waste as well.

It seems that the ideological divide, between those who see the earth's resources as something to be utilized and those who see humans as stewards of the earth, has halted progress towards solutions to our trash problems. By the 1980s, once the federal government had stopped funding the development of solutions other

than recycling to the problem of MSW, dedicated resource recovery proponents such as Bill Compton had largely adopted a defensive position in their attempts to find local methods of treating local trash. They sought to protect their efforts to recover good from garbage and, at least in Compton's case, became less and less willing to yield to legitimate environmental concerns. As a result, communities such as Wichita were left without an adequate home for their solid waste and the technological gains made in MSW disposal in the 1970s were largely abandoned. KH