

TIMBY CONFLICT: Q METHODOLOGICAL STUDY
OF THE CIRCLE DRIVE/CONOCO
CONTROVERSY

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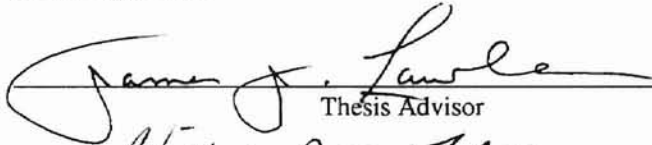
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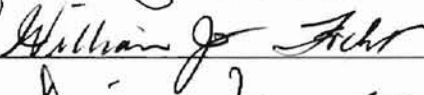
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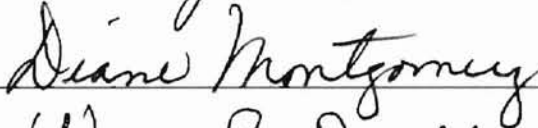
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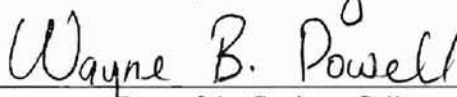
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CHAPTER I

THE NIMBY CONTROVERSY

Introduction

The American public's concern with protecting natural resources can be traced to Theodore Roosevelt's establishment of a national park system in the early 1900's. It was not, however, until Rachel Carson's book *Silent Spring* in 1962 that the American public was awakened to the dangers that modern industrial society poses to the environment. *Silent Spring* introduced the public to the science of ecology, which studies the way the environment is affected and sometimes ultimately changed by actions caused by either man or nature.

NIMBY, "not in my back yard" (Lake, 1987), TIMBY "threat in my back yard" (Focht, 1989), and NIABY "not in anybody's back yard" (Heiman 1990; Portney 1991; Freudenberg and Steinsapir, 1992), are terms that have arisen from the turbulent environmental climate of the years since *Silent Spring*. NIMBY and TIMBY citizens activists groups are the result of the political unrest and often-adversarial confrontations of citizens with government and industry as they attempt to solve the environmental problems in their neighborhoods.

NIMBY and TIMBY groups are quite distinct from the mainstream national organizations such as the Sierra Club. Freudenberg and Steinsapir (1992) found that mainstream national environmental interest groups are dominated by white middle class males, are well funded, and focus on environmental and ecological issues. They also tend to work closely with industry and government in policy making and tend to work for change within the existing power structure. Community-based NIMBY groups tend to be led by females and are composed of a membership that is more representative of the local community's races, classes, and occupations. They focus

their efforts on human health issues and have a high distrust of government and industry, which adds to their willingness to engage in nontraditional protest activities (Focht 1995:20-21).

Freudenburg and Pastor (1992) provide a historical view of NIMBY research. Early research tended to "blame the victim" by charging that NIMBY activists were ignorant and/or irrational. Later stages attempted to "understand the victim" by viewing activists as exhibiting rationally selfish or prudent behavior. The authors suggest that we are entering a new stage in which research attempts to understand the system that creates victims and victimization in the first place (Focht 1995).

Increasingly, citizens have lost trust in government agencies that were formed to protect them. According to Edelstein (1988:125), the "toxic peril has moved people so far up the scale of suspicion that they come to distrust not only public officials and experts, not only the social order and the natural world, but also the very ethos of science and technology." In fact, Bord and O'Connor (1992) showed that people do not trust risk assessments that conflict with well-formed cultural beliefs (e.g., global warming risk information is trusted, hazardous waste facility risk information is not). Scientific risk assessments and technical decision criteria are also distrusted because they effectively isolate the lay public from effective participation in the decision-making process (Bord and O'Connor 1992).

Citizens have learned that by banding together and using the expertise of groups already formed, they can influence the location, operation, and practices of government siting of undesirable facilities and business. Environmental groups are not interested in tokenism; they not only want to be invited to the party, they want a place at the table. According to one environmental activist, they want to be heard and their opinions considered and included in the final decision.

Grassroots environmental protest groups are usually formed to meet a local problem and then disbanded when a settlement or solution is reached. As Oklahoma has witnessed multiple environmental crises, individuals have learned they have the talent as well as the burning desire to protect the state's land, water, air, and people from pollution. As grassroots groups formed across the state, they began to form coalitions and alliances to share experiences. As

environmental awareness grew so did their desire and determination to share with other citizens. NIMBY, "not in anybody's backyard," and environmental justice grew from this movement (Focht 1995). The citizens wanted sound environmental practices and justice for everyone.

Probably nothing has both rallied the Oklahoma citizens, and split them apart, as the siting of hazardous waste incinerators and injection wells, nuclear waste repositories, and attempts to dispose of New York sludge in rural locations in the state. These attempts have divided the townspeople, destroyed business in local communities, and pitted family members against each other as they take sides in hazardous waste siting and cleanup disputes. From these ashes came a determination to demand accountability from both government and industry.

Oklahoma, with wide open spaces, has been described as a backward state with friendly, helpful, but environmentally uneducated people, who are often viewed as an easy target for bearers of all types of wastes that no one else wants (Environmental activist). The sovereign nation status of the Indian lands has lured many undesirable projects that promise quick and easy money to an impoverished but proud Indian people. City fathers in many small towns, in a desperate struggle to lure new industry, have often looked through rose-colored glasses at the projects proposed. They are often seen as selling their city's soul for the price of a few minimum wage jobs as they struggle with a declining oil based economy.

Previous Studies of Siting Controversies in Oklahoma

A team of researchers made up of faculty and graduate students from Oklahoma State University from multiple academic backgrounds conducted a study of seven controversial waste management disputes in Oklahoma under the direction of Dr. Will Focht (see Adams (1993), Allenbach (1994), Harney (1994), Focht (1995), Bosma (1996), and Lacy (1998). These disputes were chosen because they represent typical NIMBY and TIMBY type controversies. Of the seven communities, Ponca City and Cushing represented the TIMBY controversy and were considered "brownfield communities," already having contamination in their communities and facing controversial cleanup operations. Boise City, Ramona, and Haystack were NIMBY controversies, communities facing hazardous waste siting proposals. Alva and Pryor were included as

“greenfield communities” because contamination was not present, so the fields were green. The results obtained from the study of the seven communities (including Ponca City) has been published (Focht, 1995). This study will focus on Ponca City, a “brownfield” TIMBY community with contamination already present.

NIMBY/TIMBY conflicts arise because citizens refuse to accept the involuntary imposition of uncertain risk without due consideration to all salient criteria. Perceived illegitimacy of the decision-making process results from the failure of elite decision-makers to include non-technical criteria in the decision calculus. Since these criteria involve cognitive, political, social, cultural, and ethical values, direct and substantive citizen participation in the decision-making process is necessary to resolve environmental disputes and stalemates.

Previous approaches to solve the NIMBY/TIMBY problem have met with little success. We believe they have been unsuccessful because they fail to address the root causes of NIMBY/TIMBY resistance—widespread institutional distrust and associated “crises of legitimacy” (Focht, 1995).

Research Goals of This Project

We believe that the solution to the NIMBY phenomenon requires citizen empowerment. A solution to the problem must increase the public’s perception of the legitimacy of the decision-making process and, therefore, the decision itself. Decision legitimacy can be defined as the willingness of citizens to voluntarily accept the decisions of its government, even when they go against self-interest. NIMBY seems to represent an obvious rejection of government claims of legitimacy in its locational claims. Any solution to NIMBY, we believe, must address perceived decision legitimacy.

Our research is based on the premise that the crisis of legitimacy is based on two factors: (1) the failure of decision-makers to adequately consider non-technical criteria and (2) the pervasive public distrust of government and industry. These factors work in synergy to escalate citizen opposition in what Renn et al. (1992) refer to as “the social amplification of risk.”

Trust is the other ingredient necessary in designing a solution to the NIMBY phenomenon (Mitchell 1992; English 1992). Trust is a complex concept that includes perception of competence, credibility, openness, predictability, and acting in the "public interest." Decision-makers may not be trusted if they fail to consider criteria that the public deems salient or fail to consider them in a manner that reflects the public interest.

The goal of our research is to (1) identify the decision criteria salient to disputes and (2) identify the political participation strategy that can foster consensus.

With our research analysis, and why one town (Cushing) reached a settlement without confrontation and the other (Ponca City) didn't, the researchers hope to add to the body of the literature on NIMBY/TIMBY. With this knowledge, understanding may follow that may allow us to be attuned not only to our differences but also to our commonality.

The National Resource Council (1992) states that knowledge often fails to resolve controversy. It frequently raises new disputes or calls old beliefs into question. And even when new knowledge reduces uncertainty, controversies persist because not only facts, but also important interests and values are at stake. Informed people disagree because the remaining uncertainty leaves room for judgment, because they may assume different scenarios about the future of society, and because an outcome that harms what one person values may enhance what another values. In short, the debates are not only about the workings of human and environmental systems, but also about political and economic interests, conflicting values and faiths, differing assumptions about the future, and different judgments about resiliency in the face of the unexpected (Focht 1995:1). This observation about environmental controversy captures the tone and substance of this study of NIMBY conflict. The NIMBY phenomenon is about controversy, uncertain knowledge, clashing values and interests, and differing paradigmatic views about what is best for society and its future (Focht 1995:1).

By discovering the nature of citizen activists' concerns in these communities, the environmental decision-making criteria they believe to be important, and the public participation strategies they prefer, we hope to determine if and how present decision-making methods can be modified to facilitate legitimacy.

Opponents in brownfield communities, especially those that live in or near contaminated areas, are concerned with the presence of an environmental threat (actual or perceived) already existing. Controversies tend to concern remediation of the contamination; i.e., if, how and when to remove the threat, and how much. Supporters, on the other hand, argue, often quite convincingly, that the entire community is benefited economically by the polluting industry. This 'love-hate' reaction among community residents aggravates the conflict. A reservoir of trust often exists in brownfield communities based on familiarity and recognition of compensating benefits (Looney, 1997:3).

What went wrong in Ponca City? Could the cleanup have proceeded without the turmoil and unrest that tore the town apart and made headlines across the nation? Could Ponca City have avoided the negative publicity and title of "Ponca City's Own Love Canal" (Environmental activist).

This paper focuses on Ponca City, a company town that experienced a problem with hydrocarbon contamination traced to earlier refinery practices of the oil industry that made this town such a success.

CHAPTER II

CASE HISTORY

The Circle Drive Controversy

Ponca City grew from a small town settled on the prairie in the Cherokee Run in 1893 to a town with a high income, well-educated population of 26,359 in 1990. Located in north central Oklahoma 102 miles north of Oklahoma City, Ponca City is the largest city in Kay County.

In 1911 E.W. Marland discovered oil and began to store it in tanks around the city. By 1916, he had constructed the area's first petroleum refinery. By 1925 Marland had amassed a vast oil empire worth over 100 million dollars. On April 30, 1929 he purchased the Continental Oil Company from J. P. Morgan in exchange for Marland Oil Company stock, and moved its headquarters to Ponca City. He built the Marland Mansion, a "Palace on the Prairie," modeled after the Devananzatti Palace in Florence, Italy. The mansion was the scene of some of the most lavish social functions where dignitaries and royalty dined, were entertained, attended lavish balls, and rode horses on fox-hunts on the prairie. The mansion cost 5.5 million dollars and took three years to complete (The mansion and estate were purchased by the city of Ponca City in 1975 and are now open to the public. The mansion has been placed on the National Register of Historic Places).

Marland's employees enjoyed the benefits of secure high-income jobs with a company that offered security until retirement. Marland believed employees should be paid not just a living wage but a saving wage, and he declared he intended to "water the people like flowers, water them with money and watch them bloom" (John Joseph Mathews, 1951). In addition to funding a hospital, an orphanage, lands for public schools, the city's civic auditorium, and a free golf course with free lessons, he built housing for his employees, which they could rent or buy on terms they set themselves. Some of these houses, both for workers and managers, were constructed in the

southeast section of Ponca City, over a mile east of the Marland refinery. At that time, a substantial buffer zone separated the inhabitants from the small refinery.

The Company was, and still is, the largest employer in town, the backbone of the city, and the benevolent force of the town. Marland would lose, regain, and lose his fortune again over the years due to his spending, gambling, and bad investments. By Marland's death in 1941, he had transformed Ponca City into one of the wealthiest cities in Oklahoma with beautiful homes on stately tree-lined streets. The economic success of the town was such that public bus transportation has never been economical, and a lone taxi company today supplies all public transportation necessary. There were too many cars in the garages. Marland and succeeding oil companies contributed stability, money, and prestige to the small community.

Ponca City still is a company town dependent on the current refinery owner, Conoco, for economic viability. Many of the citizens and city government officials believe that without Conoco (purchased in 1978 by DuPont), the economic base of the town will be destroyed.

Circle Drive Community

The Circle Drive community lies on the southern, lower geographically end of Ponca City and is bordered on the west by the Conoco Refinery and the east by open fields, a highway and the Arkansas River. The Circle Drive area is the oldest part of town, having been built during the operation of the Marland Oil Company.

The Circle Drive residents were older, many retired, poorer, and more ethnically diverse than the citizens in the rest of the town. The community was close knit; multiple generations resided only a few houses from each other, sometimes three generations, on quiet tree-lined streets. Doors were often left unlocked and children rode their bikes, roamed free and played under the light of Conoco's flares. "You didn't worry about the kids, everybody looked out after everyone else. If your child fell off his bike someone would care for him and bring him home" (interview with a former Circle Drive resident). The community was a large extended family with most of the homes owner-occupied. The education level was from grade school to graduate school. A grocery store, exercise room, and laundromat supplied necessary services. There

were churches and a local school. The community had a playground that bordered on a cement lined creek known as Hoover Ditch or Hoover Creek but more popularly known as "Acid Creek" because of the odor and color of the drainage at times. While Circle Drive was a part of Ponca City it was actually a community unto itself. Many of the residents had worked or were still working for Conoco or its predecessors. All had family or friends that had worked for Conoco. Their ties were strong to both their community and the company.

There had been problems in the past but in general the Circle Drive residents' relationship with Conoco was good. During times of strong odors wafting over the community, most Circle Drive residents considered it part of living next to a refinery. "We have lived with that stuff for years. It's just part of the deal of living in a refinery town" (interview with former Circle Drive resident). One who enters the town from the south is often greeted with offensive refinery odors. Nevertheless over time the Circle Drive residents had become acclimated to the smells, and often, other town residents would say "it smelled like money."

One of Ponca City's attractions for early settlers was the abundant supply of fresh water. The refinery is located upon an ancient alluvial terrace (created by the accumulation of sediments in the flood plain due to frequent flooding) that lies between the Salt Fork of the Arkansas River, the Arkansas River itself, and the Bois D'Arc creek. These alluvial terrace deposits are sources of ground water in this area. The aquifer is comprised of saturated sands and gravels from two to twenty-five feet thick and lies between ten and sixty feet below ground surface under the Conoco refinery. The aquifer outcrops (comes to the surface) in and to the east of the Circle Drive neighborhood. The groundwater flow velocity through the formation is 85 to 115 feet per day. Groundwater wells completed in this formation can yield 50 to 150 gpm (Conoco, 1988). The exact locations of discharge to the surface depend upon the water table elevation, which in turn depends upon the amount of rainfall recharging the aquifer. Following periods of heavy rainfall, the water table rises so high as to discharge at ground surface at several locations in the Circle Drive area (Focht 1989, paper presented at the Oklahoma Academy of Sciences). Even in dry periods, seepage occurs at the surface in isolated areas, resulting in marshes and wet patches that cannot be mowed, and into the ditches in the neighborhood.

The first evidence of serious hydrocarbon contamination in Ponca City was discovered in about 1959. By that time, a second refinery had been built on land that had once separated the Circle Drive community from the old Marland refinery. The newer east refinery operated under a number of owners, including Pioneer, Sequoia, and Cities Service, until its eventual purchase and annexation by Conoco. In 1959, no one in the Circle Drive area objected when Conoco and Sequoia started voluntarily pumping refined oil products from the city sewer system passing under their homes. Apparently, no one knew. A well at Circle Drive and five other wells reportedly pumped until the city well was dry, then the project was abandoned. Later when the Ponca City Toxic Concerned Citizens, (PCTCC) examined the Oklahoma Water Resources Board's files they learned of the pumping and it became general knowledge in the community.

In July 1968, at the residence 113 Mercer Street, gas vapors had risen from the basement, ignited and caused a "minor" explosion, which in turn had started a flow of oil from a nearby spring at the 7th Street Bridge. A neighbor remembers the fire trucks that came to the residence hosing down the streets in the neighborhood causing a massive flooding of Acid Creek. "The sewers were flooded and vented. Fire hydrants were left running all summer" (interview with former resident of area). Within a week wells were drilled in the Circle Drive area on Sequoia property and, according to a Hydrocarbon Recovery Report filed with the state by Conoco and Sequoia, the magnitude of oil where found was considerably more than what was found in 1959.

Other Circle Drive property owners were also experiencing seepage of contaminated water into their homes. Complaints about odors and fumes were lodged with city and county officials and were reported in 1969 to the Oklahoma Corporation Commission, which at that time had sole jurisdiction over oil matters in the state. As a result of the complaints Conoco and the city installed a network of recovery well that yielded enough good petroleum products that the city sold half a million barrels to Conoco between 1969 and 1972. The recovery process was halted due to, in Conoco' words, "lack of recoverable hydrocarbons and the increasing depth of the groundwater caused by the effects of massive pumping" (Conoco, 1972).

The following year, Conoco settled a class action suit filed by almost 200 Circle Drive residents for \$265,000 for compensation for medical bills and property damage. Conoco denied any responsibility, attributing the problems to "earlier refinery operations."

March 1974: Just as lunch recess was beginning a cloud of vapors from an airborne discharge at the refinery drifted over McKinley Elementary School. Both students and teachers began feeling unwell. Fire trucks and ambulances were dispatched to the scene and transported a number of students, teachers, and local residents to the hospital, where some were admitted. The Ponca City News reported assurances from the Conoco plant manager that the "odorant" released from one of their west plant operations was harmless, a claim verified by Conoco's Industrial hygienist. The paper also printed speculation that the incident was the result of mass hysteria and sub-headed its second installment of three reports, "Odor Excitement Ebbs." Shortly thereafter McKinley school was closed, officially for reasons of low enrollment (*Tulsa World*, March 15, 1976).

November 1985: Orange, sludgy water began leaking into Charles Holick's basement. His finished basement rooms were ruined by the "foul smelling," sticky oily residue. Knowing the history of the neighborhood, Holick contacted Conoco with his concerns. He had at one time worked for Conoco and was sure the problem would be satisfactorily resolved. Conoco's early replies to Holick suggested "the problem was caused by rotting juniper berries and the orange color was rust and the smell stagnation." Upstairs a black residue was collecting on the ceiling and dripping to the floor. A brown moldy substance gathered on the walls. Holick continued to correspond with Conoco and they in turn suggested he pump out his basement and try to rehabilitate his house with better maintenance. Conoco offered to supply Holick a sump pump if he would sign papers releasing Conoco from all liability for the problem. Conoco insisted the water in the basement was harmless but the U.S. EPA would not allow him to pump the water into the street and the city would not allow him to pump it into the city sewer system. The fumes coming from the basement caused the Holick family to spend many nights elsewhere and eventually to move (interview with Holick).

Almost a year after Holick complained of contamination, Ponca City had a record rainfall of over 22 inches in the months of September and October 1986 (Ponca City Municipal Airport Month and Yearly Precipitation and Temperature Report). Hoover Ditch, which drained outfall 003 with its bright orange drainage, exhibited an oily sheen. A cup of the liquid flared brightly when ignited with a match (interview with area resident). A black gooey mass oozed up in the basements of some of the low-lying homes. On the playground water puddles collected the black ooze. The residents were fearful for the children playing near Hoover Creek next to the school. However, "Conoco and Ponca City officials noted that the U.S. EPA and Oklahoma State Health Department determined the smelly, chemical-laced water is not a health hazard" (*The Daily Oklahoman*, 11/09/86). State and local governments, Conoco, and the majority of the townspeople denied the threat. The Circle Drive residents felt desperate, alone, isolated and ostracized, by the larger community (interview with former Circle Drive resident).

Time Line of Events 1978 to 1990

- 1978 January: Attorney General opinion gives state permitting authority over refineries to Oklahoma Water Resource Board (Attorney General office records #77-295, January 31, 1978).
- May: OWRB conducts its first NPDES inspection: no problems found (OWRB records).
- September: OWRB conducts its second NPDES permit inspection: no problems were found (OWRB records).
- 1980 August: OWRB conducts its third NPDES inspection: no problems found (OWRB records).
- 1981 July: OWRB conducts its fourth NPDES inspection: notes oil in sediments in Hoover drainage ditch. Inspector recommends removal of sediment (OWRB records).
- September: Conoco responds to July 18, 1981 NPDES inspection. Conoco agreed to clean up oil in ditch by September 25, 1981 (OWRB records).

- 1983 August: OWRB conducts its fifth NPDES inspection; notes problems with outfall 003 and an unpermitted discharge from the 66" storm sewer; oil residue in Hoover ditch reported by inspector (OWRB records).
- November: Conoco responds to August 23, 1983 inspection. Conoco installed a sump pump in the 66" storm sewer to prevent oil in the sewer from discharging into the ditch. Also sides of ditch will be cleaned (OWRB records).
- December: OWRB issues State Waste disposal permit to Conoco (OWRB records).
- 1984 February: U.S. EPA conducts NPDES inspection at Conoco-- notes oily discharge below outfall 003 (OWRB records).
- March: U.S. EPA summarizes problems with ditch below outfall 003 and proposes Administrative Order if oil and grease problems below outfall 003 are not corrected (OWRB records).
- June: Conoco submits letter and photos showing action taken to address oil in ditch below outfall 003 and from 66" storm sewer (OWRB records).
- August: OWRB complaint investigation initiated by informal telephone report from Kay County Health Department. Report complained of hydrocarbon contamination in Hoover ditch and possible groundwater contamination. Investigation report noted that Conoco was currently recovering hydrocarbon adjacent to the east side of property fence and that groundwater seepage was entering the storm sewer. Hydrocarbon contamination was also detected discharging from the old abandoned sanitary sewer in the Circle Drive area. A compliance letter was scheduled for September to verify facts in complaint investigation (OWRB records).
- 1985 February: The OWRB sent Conoco a compliance letter requiring hydrogeologic assessments of the area affected by outfall 003 (OWRB records).
- April: OWRB conducts its seventh NPDES inspection; notes problems with outfall 003. Conoco provides OWRB with data on historic hydrocarbon recovery operations and with generalized geologic and hydraulic information at the refinery (OWRB records).

November: Hydrocarbons surface in Holick's basement (south Ponca City); he writes a letter of complaint to Conoco (OWRB records).

1986 January: Holick again contacts Conoco by letter and asked for help with seepage into his house and voices his concern of a possible health hazard (Letter to Conoco dated 1/14/1986).

January: Conoco replied to Holick's letter by stating they "do not have pipe lines in the area and are unable to help him" (Letter dated 1/22/1986).

February: U.S. EPA refers letter of complaint to OWRB. Complaint regards smelly sludge water seeping into basement. OWRB investigates and finds low level hydrocarbon contamination (0.0031) ppm benzene. Complaint closed with city allowing water in basement to be pumped into sanitary sewer. Contamination in groundwater to be addressed in on-going investigation by Conoco (OWRB records).

July: OWRB conducts ninth NPDES inspection-notes problem with outfall 003 and once again with groundwater seepage (OWRB records).

October: Holick writes a letter to the Vice President of Conoco asking for help with water contamination problem in his house (Letter dated 10/1/1986).

October: Conoco replied to Holick's letter by suggests he install a sump pump and pump out his basement to a "discharge point approved by the city of Ponca City" (Letter dated 10/24/1986).

October: Holick writes a letter to Conoco asking if, "according to their test, is it safe to live in the house?" (Letter dated 10/27/1986).

October: Conoco replied by letter to Holick stating that they do not believe "it appropriate" to answer the question, "is it safe to live in his house?" (Letter dated 10/29/1986).

November: OWRB issues compliance letter to Conoco concerning petroleum discharge into Omaha Creek, various surface spills, freeboard (possible spillage) problems in lagoons, contaminated soils, and elevated benzene levels at outfall 003. OWRB requires

Conoco to conduct hydrologic study of area (with goal of possible remediation by Conoco) (OWRB record).

November: The Ponca City Fire Department received a call from the Oklahoma State Health Department concerning gas vapors at 113 Mercer. The Gas Trac Instrument was taken to the resident and explosive levels of vapors were detected. They then proceeded to 1501 South Sixth Street where volatile (not explosive) vapors were detected in the basement. The Fire Marshal recommended that both buildings be vacated (Fire Department Alarm report #441 dated 11/3/1986).

November: "Ponca City officials have detected volatile levels of gas pockets in residential basements in south Ponca City. Hydrocarbons, apparently seeping into basements through ground water systems, have been detected in homes on Mercer and Sixth Street. Officials from the Oklahoma State Health Department are analyzing samples taken from the area. Officials say the area has suffered the same problems from time to time for several years" (*Ponca City News*, 11/3/1986).

November: City officials "investigating a gas leak in the circle Drive area speculated it was part of an ongoing problem that had plagued the area since 1969" (*Ponca City News*, 11/4/1986).

November: The Ponca City Fire Department received a call from the Oklahoma State Department of Health concerning gas vapors at 113 Mercer. After investigation and use of the Gas Trac Instrument volatile (not explosive) vapors were found in the basement. The Fire Departments recommended that the houses at 113 Mercer and 1501 South Sixth be evacuated (Letter dated 11/4/1986).

November: Holick contacts his local attorney requesting legal advice, and possible representation by the law firm, against Conoco. His attorney advises Holick to "attempt to settle with Conoco." He also tells Holick that the firm cannot represent him in the case because they will probably represent Conoco" (Letter from attorney to Holick dated 11/13/1986).

November: Holick writes a letter to the Conoco Ponca City Refinery manager explaining the problem he is having with the contamination in his house and requesting a settlement for the problem within 20 days. "Thereafter, I will employ an attorney and file suit" (Letter dated 11/13/1986).

November: Holick receives a letter from Oklahoma State Health Department with results of water samples taken from a drain leaving Holick's basement that show "weathered gasoline of unknown origin present" (Letter to Holick from Oklahoma State Health Department dated 11/26/1986).

December: A Conoco letter to Holick states that he has had water in his basement for over a year that he "could have cured by installing a sump pump." Conoco again offers the use of a sump pump. "In connection with the installation of a sump pump, Conoco will of course require that you sign a release of any and all claims against Conoco with respect to the house or your occupancy of the house" (Letter dated 12/2/1986).

December: A private lab in Oklahoma City ran tests on water samples from the basement of the residence at 113 Mercer, findings indicate contamination by gasoline, and aromatic constituents of gasoline. Chloroform, benzene, toluene, ethylbenzene, and xylenes were found in the sample (Report from lab dated 12/17/1986).

1987 January: Conoco responds to OWRB compliance letter with a plan to map area geologically and hydrogeologically. No remediation addressed by Conoco (OWRB record).

February: OWRB sends Conoco a letter following agency review of groundwater hydrocarbon assessment workplan. OWRB requests more information (OWRB record).

March: Conoco provides OWRB with supplemental data for Phase I and product recovery program (OWRB record).

April: OWRB conducts tenth NPDES permit inspection of Conoco-notes problem with outfall 003 and groundwater (OWRB record).

May: Phase I report submitted to OWRB/OSDH. Study addresses hydrology of area and extent of hydrocarbon contamination inside Conoco property. For Phase II, Conoco proposes four areas of remedial activities:

- source definition and control
- Hydrologic controls
- groundwater and hydrocarbon levels; and
- monitoring of surface water.

June: Conoco meets with OWRB to discuss Phase I report. Conoco predicts Phase II (remediation) will take six months (OWRB record).

November: A Circle Drive resident holds a meeting in her home that leads to the formation of Ponca City Toxic Concerned Citizens, (PCTCC), (interview with PCTCC member).

December: Member of PCTCC files a complaint with OWRB against Conoco (complaint referred to Department of Pollution Control) (OWRB record).

December: Holick invites public to tour his contaminated residence at 1501 S. 6th, Ponca City, Oklahoma (Letter dated 12/11/1987).

December: Conoco reports they have a solution to the groundwater pollution but are awaiting approval from state agencies. "U.S. EPA states that there are no long term health dangers from exposure to the situation. Oklahoma State Department of Health states fumes from diluted gasoline collecting inside homes can cause respiratory ailments" (*Ponca City News*, 12/31/1987).

December: "The U.S. EPA ruled last year that the present situation in the Circle Drive area does not create long-term health dangers to local citizens, and recently issued an informal denial of Superfund requests to buy out homes affected by the problem."
"However, the Oklahoma Health Department Waste Management Services chief said fumes from the diluted gasoline collecting inside homes can cause respiratory ailments" (*Ponca City News*, 12/31/1987).

1988 January: The Environmental Protection Agency agrees to take air samples to determine if the hydrocarbon-laden water poses any health dangers to people living in affected houses (*Ponca City News*, 1/15/1988).

January: Oklahoma Department of Pollution refers Holicks' letter of complaint to the Oklahoma State Department of Health (Letter dated 1/19/1988).

January: A New Hampshire laboratory, hired by the residents, tests a sludge sample from Holick's basement and finds benzene, toluene, and xylene. U.S. EPA standards for drinking water require no toluene or xylene, and benzene is limited to 5 ppb. (Report from laboratory, 1/20/1988).

January: Preliminary state tests show petroleum products in the ground are old and diluted, possible gasoline that was spilled 30 to 50 years earlier, and could cause respiratory ailments. However, the Oklahoma State Health Department says the samples do not indicate "immediate or significant health risks" (*Ponca City News*, 1/20/1988).

January: "The city's proposal to buy two homes affected by polluted groundwater was refused by leaders of the Ponca City Toxic Concerned Citizens group last week." The citizens group refused the offer "because it did not help the overall problem." If the city can purchase the two properties, "Conoco will install equipment to lower the rising groundwater table" (*Ponca City News*, 1/26/1988).

January: Calling the offer a "quick fix" for a problem that has plagued the neighborhood for 20 years. Circle Drive residents refused the city's offer to buy two homes that are contaminated with groundwater pollution and to establish a pumping program for lowering the ground water table in the area (*Ponca City News*, 1/27/1988).

January: Conoco ran a full page ad in the local paper explaining their position in the ground water controversy. The ad stated the controversy started when more than 20 inches of rain fell in the area in late 1986. Conoco felt that they and the city had a good plan to remove excess ground water from the Circle Drive area and solve the problem (*Ponca City News*, 1/31/1988).

January: The plan (groundwater removal) had been presented to the Circle Drive residents who turned the proposal down. The residents instead wanted Conoco to "buy them out" (*Ponca City News*, 1/31/1988).

February: Holick again invites the public to an open house to view his contaminated residence at 1501 South Sixth Street all day Saturday and Sunday (*Ponca City News*, 2/4/1988).

February: Conoco groundwater assessment submitted to OWRB. Groundwater assessment technical meeting held between OWRB, OSDH, DPC, EPA, and Conoco. Remediation of aquifer contamination proposed on Conoco property as well as off-site remediation (OWRB files).

February: Holick receives a letter from Oklahoma Governor Bellmon stating he is aware of the problem and has forwarded a copy of Holick's letter to the Oklahoma State Department of Pollution Control. The letter states that several state and federal agencies are working to solve the matter (Letter dated 2/11/88).

February: A sign in the front yard of a PCTCC member said "For Sale Buy 'n Die." The house is vacant, the residents moved out about 15 month ago. "I can't sell it, I can't rent it, I can't live in it." Stated the former resident (*The Daily Oklahoman*, 2/22/1988).

February: "Ponca City may be the test case that will clarify gray areas in federal law governing the use of Superfund money allocated to clean up America's hazardous waste sites." Adrienne Anderson, western district director of The National Campaign Against Toxic Hazardous, said today her organization hopes Ponca City will become a national test case that will resolve an ambiguous clause in the Superfund law that excludes its use when the pollutant is a derivative of "petroleum and fractions thereof." "It will be a test case and the eyes of the nation will be on Oklahoma and Ponca City," said Anderson (*Ponca City News*, 2/23/1988).

February: Despite citizens demands for a full buy out of southeast Ponca City homes, state and Ponca City officials endorsed a less expensive plan engineered by Conoco experts (*Ponca City News*, 2/24/1988).

February: An overflow crowd of 500 people attended the Ponca City Toxic Concerned Citizens meeting in the Ponca City High School auditorium. Chanting "we want out" the group also blasted Governor Bellman for not personally honoring their request for his attendance (*Ponca City News*, 2/24/1988).

February: Adriene Anderson, regional director of the National Toxics Campaign, a non-profit environmental group, proclaims the Circle Drive neighborhood the worst situation she has ever seen and calls for an immediate evacuation (*Ponca City News*, 2/24/1988).

February: Chanting "we want out" at a Tuesday meeting more than 700 people called for immediate evacuation of residents whose homes are inundated with contaminated groundwater and rejected the city's second offer to accept Conoco's plan to drain the neighborhood. "Residents want the area to be evacuated immediately based on findings of a hydrologist they hired. Those tests found chemicals in the groundwater which can cause cancer and birth defects" (*Daily Oklahoman*, 2/24/1988).

February: Governor Bellmon makes a surprise visit to Ponca City. He states the pollution problem is "unfortunate," but indicated further state action will be delayed until testing information is complete. Bellmon said the state will respond as soon as all the facts are determined. Ponca City Toxic Concerned Citizen spokeswoman said the group is disappointed. "They are putting us on a prolonged hold while we're dying," she said (*Ponca City News*, 2/25/1988).

February: The Ponca City Commissioners accepted Conoco's plan to clean up the ground water problem in the south side of Ponca City. Most of the south side citizens missed the meeting because they were unable to get into the meeting room because of the packed house. John Lee was one of only two members of the concerned citizens organization that got into the meeting room before police closed its doors. Lee indicated he thought residents should be evacuated at least temporarily until tests are complete or conditions are improved. About 50 concerned citizens gathered outside; some held signs that read, "Too little too late" (*Ponca City News*, 2/28/1988).

A resident complained "the city meeting was packed with Conoco employees that was let off work early (to attend) so the local Circle Drive residents would be unable to get in" (Interview with former Circle Drive resident).

February: Holick and Daniel agree to sell their houses to the city for \$25 square foot ½ value for new construction in town (Letter to City of Ponca City from Holick, 2/25/1988).

February: Ponca City Commissioners voted to buy the two Circle Drive homes (Ponca City Commissioners Meeting minutes, 2/ 26, 1988).

February: Officials of the city and state approved the proposed clean up plan for the Circle Drive area. Acceptance by local Circle Drive residents uncertain (*Ponca City News*, 2/28/1988).

February: Holick and Daniel sign papers to sell their homes to the city for \$52,200. and \$64,000 respectively (Contract with the City of Ponca City, dated 2/ 29, 1988).

February: Holick sells his home to the city for \$52,200; well above market value. His neighbors insist they deserve equal treatment (*Business Week*, 6/27/1988).

March: Conoco submits new workplan for the assessment of groundwater and related contamination in the Circle Drive area (OWRB record).

March: Governor Bellmon spent about three minutes visiting with a 13 member group that paid a surprise visit to the state Capitol. A member of the group said the people wanted to be evacuated while Conoco tries to lower the ground water in the area. "Well you are welcome to evacuate any time you like," Bellmon said. He told the group the state did not have any money to relocate the people (*Ponca City News*, 3/1/1988).

March: "Many of the residents are scared and frustrated because they can't afford to pay for their own evacuation, as Governor Bellman had suggested" (*Ponca City News*, 3/2/1988).

March: "An environmentalist says his group will push to have the residents of a Ponca City neighborhood evacuated. The director of the National Campaign Against Toxic Hazards said Ponca City will be the rallying cry for groups nationwide and vowed to push

for classifying the southeast neighborhood as a Superfund cleanup site" (*Journal-Tribune*, 3/4/1988).

March: "In a poor neighborhood on Ponca City's south side retirees are wearing arm bands and posting protest signs in their yards: "Enter at your own risk." "Ponca City is Toxic City." "All houses guaranteed poisoned." "It is killing us," said one of PCTCC members. "We see people die and have miscarriages. There are extreme amounts of cancer. All the politicians want to do is make it an economics issue. It's not an economic issue: It's a life and death issue" (*Wichita Eagle-Beacon*, 3/5/1988).

March: A letter in the local paper from a citizen tells of the many wonderful things about Ponca City and attributes many of these to the Marland Oil Company and Conoco. The writer states he is a retired Conoco worker. "They put bread on my table and there are thousands like me that appreciate the many benefits." "In this time of economic trial for our community, we had best act in a responsible manner, appreciating our many blessings and discontinuing our efforts to kill the goose that laid the golden egg" (*Ponca City News*, 3/6/1988).

March: "A city buyout of two homes - the first step in Conoco's Circle Drive cleanup plan - has the support of a citizens group" (*Ponca City News*, 3/6/1988).

March: Oklahoma State Senator tours the Ponca City south side. "I would encourage everyone to work with Conoco and the city to solve this problem" (*Ponca City News*, 3/7/1988).

March: U.S. Senator tours area at community residents' request. Senator writes to U.S. EPA asking that they do air sampling of the area (Letter dated 3/15/1988).

March: Workmen start drilling on the first well for Conoco and Ponca City's ground water remediation plan to lower the water table under the Circle Drive area in south Ponca City. The study should be complete this summer and will be followed by the remedial program already approved by the state (*Ponca City News*, 3/16/1988).

March: Vandals, focusing on the south side, slashed dozens of car tires. Police first hear of the tire slashings from PCTCC. Police said many of the tire slashings have occurred in

the parking lot where the concerned citizens hold weekly meetings every Tuesday night (*Ponca City News*, 3/17/1988).

March: "State Health Department officials say a team from the U.S. EPA will be in town next week to take air samples from homes in the contaminated Circle Drive area. A private hydrologist, hired by the residents of the neighborhood said tests showed high levels of dangerous chemicals. A hydrologist for Conoco said the ground water contains traces of hydrocarbons and isn't contaminated with dangerous levels of toxic chemicals." "The state has said the area is not an immediate health hazard" (*Ponca City News*, 3/20/1988).

March: A six-member committee was formed to work on the southside pollution problem. The city attorney, city public safety director, two members of the PCTCC group and two representatives from Conoco will meet "as needed." Communication between Conoco, the residents of south Ponca City and city officials has been a problem since widespread concern was caused when polluted groundwater began seeping into neighborhood basements (*Ponca City News*, 3/25/1988).

April: "Governor Bellmon announced the creation of the Hoover Creek Ad Hoc Steering Committee to assist residents in an area of Ponca City that has been hit by hydrocarbon-laced water." The committee will be chaired by the Governor's Natural Resource Secretary and will be composed of U.S. EPA, state and local government officials (*Ponca City News*, 4/1/1988).

April: PCTCC proposed a buyout of homeowners who want to move at a minimum of \$50 sq. foot plus moving expense and compensation for alleged damage caused by ground water pollution in the Circle Drive area (*Ponca City News*, 4/1/1988).

April: After Conoco turned down last Thursday's complete buy out offer from PCTCC the group met and proposed litigation against Conoco, Ponca City's main employer (*Ponca City News*, 4/6/1988).

April: A community-wide petition drive and a statement of concern from area legislatures have provided moral support for Conoco. A group of Ponca City area residents organized to show support for Conoco, Ponca City's largest employer.

Area legislatures issued the following statement: --"If this problem is going to be solved, it is going to take the joint cooperation of Ponca City, Kay County, and the state of Oklahoma" (*Ponca City News*, 4/8/1988).

April: About 2,000 red-shirted, sign waving residents gathered for a "Ponca Pride" rally organized by Poncans for Progress, a group formed to counter negative publicity, and to show support for Conoco. The high school pep band played music as the crowd gathered in downtown Ponca City. Television stations from across the state and the Associated Press covered the event as supporters for Conoco attempted to show "Ponca City is a good place to settle, to work, to play and to live" (*Ponca City News*, 4/22/1988).

April: "Conoco repeated its long standing offer to provide and install free sump pumps to residents and business persons in certain Ponca City neighborhoods who are experiencing problems with seepage into their basements." Conoco is conducting a program on behalf of the city to lower the groundwater table in the area, using a system of pumps and gravity drains. That plan has been approved by state and federal agencies (*Ponca City News*, 4/26/88).

April: A petition, with 8,000 signatures, supporting the efforts of the city and Conoco to clean up the Circle Drive area is submitted to Governor Henry Bellman (*Ponca City News*, 4/26/88).

May: Two state health officials met with members of the PCTCC to answer questions about recently released tests results of the groundwater in the Circle Drive area. They stated the drinking water is safe (*Ponca City News*, 5/4/1988).

May: Twenty residents set up camp on the state Capitol grounds in an effort to get the state to buy out and relocate the Circle Drive residents in south side Ponca City, Oklahoma (*Ponca City News*, 5/10/1988).

May: A small group of Ponca City residents interrupted Governor Bellmon's news conference today, calling him a "murderer" and a "child abuser". The group wanted the state to evacuate the residents of Circle Drive in Ponca City because of the groundwater contamination (*Ponca City News*, 5/10/1988).

May: PCTCC members are told they can camp "indefinitely" on the state Capitol grounds in Oklahoma City (*The Daily Oklahoman* 5/11/88).

May: Governor Henry Bellmon paid a surprise visit this morning to Ponca City residents camped on the Capitol lawn, and no one mentioned the pollution that brought the campers to town (*Ponca City News*, 5/11/ 1988).

May: "A state Health Department report on the preliminary results of the U.S. EPA tests of the groundwater and air in homes in the Circle Drive neighborhood shows no immediate health hazard from the material" (*Ponca City News*, 5/1/ 1988).

May: Governor Bellmon writes a letter to the U.S. EPA Administrator asking if Superfund assistance is available to residents of Ponca City (Letter dated 5/12/1988).

May: Letter from U.S. EPA Regional Administrator states residents do not qualify for Superfund relief because petroleum and petroleum fractions are excluded from the Superfund (Letter to Governor Bellmon, 5/21/1988).

May: Ponca City residents camped on the capitol grounds say officials are harassing them by making them move their tents and belongings every other day. "We have to pick them up and put them back down every other day. It's just a way to make us leave, but were not leaving. We'll just move the tents" (*The Daily Oklahoman*, 5/22/1988).

According to the Oklahoma City Zoning Commission a hearing will be held Friday to determine whether the tents should be allowed on the Capitol grounds (*Ponca City News*, 5/23/1988).

June: A final consent order has been approved by a federal judge in Oklahoma City that allows Conoco Inc. to pay a \$250,000 fine for alleged clean air violations at its Ponca City refinery in exchange for the payment, the U.S. EPA agreed not to prosecute Conoco for Clean Air Violations. The U.S. EPA alleges for 1975 and 1980 Conoco burned fuel

higher in hydrogen sulfide than permitted by U.S. EPA standards. Conoco did not deny or admit it violated federal regulations (*The Daily Oklahoman*, 6/07/1988).

June: "We have a problem but we don't have an emergency in Ponca City" stated the State Fire Marshal (*Ponca City News*, 6/12/1988).

June: Ponca City Commissioner Gary Bower joined a member of the PCTCC for a tour around McKinley Park in the south side Circle Drive area Tuesday. After stomping on the spongy ground a match was lit which caused small gas flares. The largest was a four-inch flare that lasted for several seconds. Later the Ponca City Fire Chief returned, stomped on the ground and produced a flame four inches high and 12 inches across the ground before going out. The State Fire Marshall was contacted and was to make a investigation later on in the week (*Ponca City New*, 6/15/1988).

June: Conoco paid the cost of tearing Holicks' house down and in its place appeared a sign stating "Circle Drive Groundwater Removal Program. A Ponca City Improvement Project" (*Ponca City News*, 6/18/1988).

June: "Their health is important but so is my job," stated a Conoco employee and a member of the Poncan's for Progress, a pro-Conoco support group (*Business Week*, 6/27/1988).

June: Poncan's for Progress pass out bumper stickers and buttons with slogans supporting Conoco. "Many wear red T-shirts, paid for by Conoco, which read: "Conoco is Ponca City's Best Neighbor." Local businessman states he "would lose half of his business if Conoco closed their plant" (*Business Week*, 6/27/1988).

July: Residents of Ponca City who have been camping on the state Capitol grounds since May to protest pollution in their homes plan to hold a rally to draw public attention back to their problem (*Ponca City News*, 7/17/1988).

July: "I could not believe there was a place in the United States where people lived with levels of benzene this high." "There should be a fence placed around the entire south part of this town to keep the people out... This place makes Love Canal look like a health

spa," stated the Western Director of the National Toxic Campaign (*Ponca City News*, 7/21/1988).

July: The PCTCC, a citizens group from Ponca City, that has been camped on the capitol lawn for several months protesting the hydrocarbon contamination of their homes states they will end the camp out and take their complaints elsewhere (*Tulsa World*, 7/21/1988).

July: A letter from the director of the state Office of Public Affairs Executive Office requesting Ponca City Toxic Concerned Citizens to remove their signs and structures from the capitol grounds received angry replies. We've been here since May 19 and they issued us a permit to be here for an indefinite period and it's our constitutional right to assemble and protest. They say now that we are in violation of zoning. How could it take them two months to decide we are in violation of the zoning? (*Ponca City News*, 7/25/1988).

July: "I feel like we have been stabbed in the back" stated a PCTCC protester after being ordered to dismantle their camp at the state capitol because of zoning violations (*The Daily Oklahoman*, 7/25/88).

August: State officials say there has been no increase in cancer in Ponca City or Kay County, despite a recent report from the group protesting polluted groundwater in south Ponca City (*Ponca City News*, 8/5/1988).

September: "We assist in linking up groups fighting similar problems and facing the same difficulties in state and federal environmental standards. We unite grassroots citizens groups that want more enforcement of state and federal laws. We are looking for a stronger, more common sense approach to this national crisis," stated the director of the Western Director of National Toxic Campaign (*Ponca City News*, 9/29/1988).

November: Dr. Fredric E. Gerr, Mount Sinai Medical Center in New York, reviewed water sample data obtained from a basement in the Circle Drive area noted the "potential for serious health effects" from benzene alone and called for a reduction in exposure to a substance considered dangerous at any level (*The Washington Post*, 11/7/88).

November: "You go to your local officials and they refuse to help you because they are afraid to get in a fight with Conoco." "Your state officials won't help you because Conoco pays into their campaign funds." "The U.S. EPA says we don't qualify." "It leaves you no where to go," stated a PCTCC member (*The Washington Post*, 11/7//88).

November: "The refinery manager for Conoco states we do not have a pollution problem in Ponca City. The oily odors probably result from "swamp gas" not petroleum wastes and the ground water pollution are from "unknown sources." Nevertheless Conoco acting as a "good neighbor" has agreed to lower the water table to reduce the threat of flooding" (*The Washington Post*, 11/ 7/1988).

December: By the end of the year several more homes were abandoned by their owners without compensation, the house at 200 Lucas, the one across the street and the house at 444 Lawrence (Interview with former Circle Drive resident).

1989 February: The City of Ponca City /Conoco, Inc. filed a petition with the Oklahoma Water Resources Board for an application to discharge treated ground water which has been produced during aquifer remediation into the Arkansas River (Legal Notice Published in *Ponca City News*, 6/1/1989).

April: PCTCC protesters receive city citations for having protest signs in their yards. The signs offer free tours of their "toxic" homes. They claim their homes are contaminated with hydrocarbon sludge and seepage (*The Open Spaces*, 4/1989).

April: Ponca City residents upset with foul smelling and possible toxic chemicals oozing into their basements filed a civil lawsuit in federal court to prevent city officials from removing protest signs from their yard. Protesters say the city is violating their First Amendment rights to freedom of speech. City officials have threatened the protesters with fines of \$200 per sign if they are not removed (*Stillwater News Press*, 4/25/1989).

May: A group of Circle Drive area residents filed a class action suit May 17, 1989, in federal district court, against Conoco claiming damages from groundwater that in some cases entered the basements of their homes (*Ponca City News*, 5/2/1990).

May: Co-chairman of the PCTCC pointed out in a meeting Tuesday night "no one has sat down and talked to us one-to-one. That's all we ask" (*Ponca City News*, 5/4/1989).

July: Opposition from local and state groups against Conoco's application for ground water removal has developed (*Ponca City News*, 7/17/1989).

October: Greenpeace and National Toxic Campaign toured Ponca City to show support for local environmental groups. Conoco refinery manager states "Conoco realizes there is a ground water problem and is well on its way to solving the problem. That solution is the city of Ponca City and Conoco ground water lowering plan that has been approved by the Oklahoma Water Resource Board" "In light of this progress, we are disheartened that a few local residents, with the encouragement of outside activist groups, continue to focus on the problem with no desire to be part of the solution. As for any concerns for health effects, we remind these people that the Oklahoma Department of Health states there is no health threat to the South Ponca City residents" (*Ponca City News*, 10/18/1989).

October: Efforts to lower the groundwater in the Circle Drive area to begin soon (*Ponca City News*, 10/23/1989).

November: In a letter published in the Ponca City News a member of PCTCC said "This pseudo-solution (ground water remediation plan) is the cheapest out-of-sight-out-of-mind attempt to quiet down, not solve, the problem." The writer questioned if the city would be responsible for any violations of the NPDES permit. The writer notes that the citizens had no part in the solution suggested (*Ponca City News*, 11/13/1989).

November: The U.S. EPA conducts a ground water public hearing. Conoco refinery manager states "the U.S. EPA has before it a plan to help the high groundwater problem that has been jointly developed by Conoco and Ponca City and approved by the city commission and the Oklahoma Water Resources Board. It is up to the U.S. EPA to determine whether or not to approve a portion of that plan. That part of the plan involves the discharging of treated groundwater into the Arkansas River" (*Ponca City News*, 11/14/1989).

November: A public hearing was held by the U.S. EPA in Ponca City to discuss the ground water remediation plan offered jointly by Conoco and Ponca City officials to discharge treated contaminated ground water into the Arkansas River. Most of the 250 people that attended the meeting either worked for Conoco or supported the company's plan. Many in the crowd wore red, the company color, or red t-shirts that said: "Conoco--Ponca City's Best Neighbor."

Residents of the south-side Circle Drive area asked U.S. EPA officials to deny the plan over concerns the water contains toxic chemicals that would threaten fish and wildlife (*The Daily Oklahoman*, 11/16/1989).

December: U.S. EPA approves the permit for Conoco's plan to lower the ground water by pumping (*Ponca City News*, 12/24/1989).

1990 April: "Six month's of negotiations came to an end Monday with the announcement of a multi-million dollar settlement agreement between Conoco and a group of Circle Drive residents over the on-going groundwater situation in south Ponca City. Conoco said today it is offering to buy nearly 400 houses and residential lots alongside its refinery here as part of the proposed lawsuit settlement. A federal judge in Oklahoma City must approve the plan before it can take effect. A hearing will be held on June 5" (*Ponca City News*, 4/2/1990).

April: The Conoco refinery manager stated, "The settlement can mark the beginning of the end of a situation that has fueled a public controversy pitting neighbor against neighbor and friend against friend for too long" (*Ponca City News*, 4/2/1990).

April: A full page notice in today's Ponca City News, signed by the refinery manager said in addition to the purchase of homes and properties, a \$5 million settlement fund would be established "to be divided under certain established formulas among people who have lived in property within the area since 1966 that is roughly bordered by South Avenue, Highway 77, Highway 60 and the refinery's eastern border" (*Ponca City News*, 4/2/1990).

April: A summary notice was published concerning proposed settlement between Conoco and the Circle Drive residents (*Ponca City News*, 4/6/1990).

April: "We did the right thing," Conoco President Constant "Dino" Nicandros said about the proposed buyout of south side Circle Drive residents. Nicandros said "We all feel very strongly about Ponca City and to have this kind of thing dividing the people, making the national news in a very negative way wasn't good." He said he had not had negative reactions from within the industry, but some of the Conoco employees felt the company should "fight back." The proposed settlement is based on a no-fault agreement.

Nicandros said "as long as the issue was around, and it is still around, it would have been difficult to position the company where it wanted to be in regard to the environment" (*Ponca City News*, 4/10/1990).

April: Approximately two weeks after a tentative settlement was reached with Conoco nearly 300 of the possible 400 homeowners had agreed to accept the Conoco buyout offer of a \$23 million settlement (*Ponca City News*, 4/10/1990).

April: Groundwork was laid Thursday for the Southside Alliance, a self-help organization for those who will be living in the Conoco settlement areas south of South Avenue after the buyout is completed. Although set in motion by Conoco, the Southside Alliance is intended to be an organization of residents of the area which will give them a vehicle to improve property values, give input about Conoco's green belt development, and help solve other problems common to the area (*Ponca City News*, 4/20/1990).

May: "Local banks announce low interest loans for residents not included in the Conoco purchase area, but still within the class action lawsuit" (*Ponca City News*, 5/7/1990).

May: The class-action settlement is the subject of a meeting Tuesday at the East Junior High school. Attorney for the class action members and attorney for Conoco will address questions regarding the interpretation of the proposed class-action settlement agreement (*Ponca City News*, 5/20/90).

May: "More than 6,000 Ponca City residents filed claims, seeking to be included in Conoco's proposed \$23 million settlement of a dispute over allegedly tainted ground water" (*Ponca City News*, 5/25/90).

June: A splinter group of Circle Drive residents objected in federal court to Conoco's buyout offer stating the buyout area was not expansive enough. The group objected to the requirement that anyone bought out or accepting buyout terms must move completely out of the affected area, and thirdly, argued that families accepting the terms might be "compromising the future health and welfare of their children" (*Ponca City News*, 6/6/1990).

July: "After three years of controversy, accusations and negotiations, the end is in sight for the ongoing groundwater pollution situation in south Ponca City."

"Tuesday Federal District Judge Ralph Thompson approved the settlement agreement between Conoco and the plaintiffs in a class action lawsuit, paving the way for the possible buyout of some 400 properties in the Circle Drive area" (*Ponca City News*, 7/4/1990).

July: "I think this is a great day for the people of Ponca City and a great day for all environmentalists. All the people involved, including our clients, are in hopes that this will set an industry standard and that refineries will begin creating green belts to protect citizens residing near their installations," stated the plaintiffs attorney.

Judge Thompson's order says that of the 8,000 residents represented by the lawsuit, only 79 opted out of the settlement and only eight filed formal objections to the settlement (*Ponca City News*, 7/4/1990).

September: Representatives of OWRB met with officials from the city of Ponca City and Conoco recently to review the progress and operation of the ground water management program in the Circle Drive area (*Ponca City News*, 9/11/90).

Conclusion

After the Conoco buyout of Circle Drive was completed and the homes of those who chose to leave were removed, one business building (used for storage), an abandoned school building, a church and six homes were still in the area. The homes that remained were on high

ground and had not received actual groundwater contamination. The area is now a greenbelt for the Conoco refinery.

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CHAPTER III

SITING CONTROVERSIES AND POLICY GRIDLOCK

Introduction

This chapter reviews the topics related to conflict resolution between citizens groups, industry and government concerning siting issues. A major problem facing the nation is the inability of the government to site undesirable facilities and the citizen's backlash that has developed from these attempts.

A Closer Look at the Problem

Trust

Many people lack trust in the ability or desire of the government (federal, state and local) to protect them from harm. They believe the government is unwilling or unable to enforce environmental and health standards (Morell and Magorian 1982). They believe the government is often "in bed with industry" and the citizen's rights will be the last to be protected (interview with environmental activist). Many that do believe the government attempts to help citizens often feel the laws protect industry and hamper the efforts of the government to protect citizens from major long-term risks (Bacow and Milkey 1982).

Collins et al. (1985) describe why institutions are distrusted: government is distrusted due to its past failures to protect citizens from threats to human health, safety, welfare, and the environment. Business and industry are distrusted because of their legacy of irresponsibility, absence of care, and liability shifting. Scientific and technical expertise is distrusted because of contradictions, discrepancies, and disagreements in analysis of risks and impacts.

Fishhoff, Slovic and Lichtenstein (1983), Lawler and Focht (1989), and Lawler, Focht, and Hatley (1994) provide evidence that government agencies share a technical orientation with industry in permit/remedial decisions. Wynn (1992) and Trauth (1994) found that citizens often believe that siting procedures are biased in favor of the developer. Distrust, as Kraft and Clary (1991:322) argue, is what "fuels emotion, which heightens fear of the perceived risks."

Trust is often considered a precondition for negotiations, especially on environmental issues. Focht (1995) points out that the belief that trust makes good agreements possible, though widespread, is not shared by all. Some argue instead that one should think of trust as a product of successful negotiation rather than as a necessary precondition. People and countries negotiate with those they do not trust, even enemies, though they do so carefully, with due attention to verification and enforcement. Agreements worked out between these distrustful parties contain provisions to satisfy each side that the other side will comply with the terms of the agreement. If these arrangements work, the parties may gradually develop mutual trust (Schmeidler and Sandman 1988; Focht 1995).

Schmeidler and Sandman (1988) state the point that people have to stop asking each other for trust and start making sure every side is at the table protecting its own interests.

Even those who downplay the importance of trust in negotiations acknowledge that a minimal level of trust is needed. If one doesn't believe that the other party will be consistent in what it says or does, negotiating will be nearly impossible (Schmeidler and Sandman 1988).

The disagreement among experts over acceptable exposure levels to toxic substances further undermines social trust (Krimsky and Golding 1992). If the experts cannot agree, how can citizens have confidence in their decisions?

Risk

Experts define risk in a narrow technical way, whereas the public has a richer, more complex view that incorporates value-based considerations such as equality, controllability, and catastrophic potential (Krimsky and Golding 1992). How people perceive adverse impacts has been shown to be a motivating factor in NIMBY opposition (Poutney 1991).

Another basis of citizen's distrust is that most citizens perceive risks in terms of consequences while experts emphasize probabilities (Kimsky and Golding 1992). Lowrance (1980:6) defines risks as the mathematical product of the probability and severity of the consequences of exposure to a toxicant. Thomas (1981:27) defines risk perception as "an idiosyncratic process of interpretation, which involves a subjective probability judgment about the occurrence of an unpleasant event, or an interpretation by the individual that reflects how he or she defines and feels about the outcome." While experts may weigh risk probabilities as well as consequences, Rubin (1986) found that laypersons were primarily concerned only with consequences.

Decision Making Criteria

Edelstein (1988) states the criteria by which decisions are made do not reflect social values expressed through the political process, but rather political decisions hidden behind the rational of technical standards made by experts. Thus, the question of acceptable risk has little to do with people's values, but much to do with the economic and political forces concerned with the costs of environmental standards. Adams (1993) comments that the continued focus on objective, rational considerations in environmental decision-making, and the continued inattention to subjective, non-technical considerations, has resulted in an increasing deterioration of trust on the part of citizens toward decision-makers.

Loss of Control Theory

The inability of a community to stop a threat affects people's sense of well being. Threatening events can shatter people's basic assumption about the world, giving way to new perceptions marked by threat, danger, insecurity, and self-questioning (Edelstein 1988). Edelstein (1988:181) adds that people may experience "feelings of depression and a sense of being helpless and disabled." These feelings and perceptions lead people to get involved in order to maintain a sense of control over the force affecting their lives (Bachrach and Zautra 1985). Empirical evidence supports the loss of control theory. Edelstein (1988) found in his case

study of Legler, a contaminated community in Jackson, New Jersey, that loss of control was a dominant theme for residents.

Citizen Power

In the late 1960's and early 1970's, citizens came to realize by forming citizens groups and banding together, they had the power to delay and often stop the siting of unwanted facilities. Resistance to siting by citizens groups is considered by many to be one of the most significant obstacles to facility siting (Duffy 1984; Mitchell and Carson 1986; Lake 1987; Focht 1995). Those opposing a facility have a strong aversion to living next to the kind of facility being proposed and are predisposed to reject it (Armour 1991; Focht 1995).

Community Concerns

Studies such as those by Armour (1991) and Duberg, Frankel, and Niemeczewski (1980) have shown that community resistance to siting proposals is linked to four important concerns. These include inequities in the distribution of costs and benefits, perceived risks, feeling of loss of control over forces affecting the quality of one's life and community, and lack of trust in proponents and regulators.

Communities are affected even when the rumor of an unwanted facility is unleashed. Community lifestyle is disrupted and trust begins to erode even before the proposed facility is a reality.

Costs to the Community

Morell and Mogarian (1982) have identified four types of local costs that are the basis for public objections to proposed hazardous waste facilities: health and safety risks; nuisance costs and "quality of life" concerns; property value and other monetary losses; and increased need for community services (depletion of community budget). In contrast to the costs, the benefits are rather limited, for example, increased tax revenues and the creation of a few (often low paying) jobs.

Bridging the Gap identifying factors that contribute to risk involving technical and scientific issues

The solution to the problem of citizen opposition to unknown risk involves bridging the gap between technocracy and democracy, between objective facts and subjective values, between scientific risk assessments and lay risk judgments, between conflict and cooperation (Focht 1995). Hill (1992) found the next logical question would be, how do political institutions close the gap between those who have the most complete understanding of the means – the technical experts – and those who are the final arbiters of value – ordinary citizens? Bord and O'Connor (1992) and Focht (1995) found that scientific risk assessments and technical decision criteria are distrusted because they effectively isolate the public from effective participation in the decision process.

Several excellent ethnographic studies on the sociological and psychological impacts on citizens who have been exposed to threats from hazardous substances in their communities have been reported as early as 1969 by Barton, Levine (1982), Edelstein (1988), and Couch and Kroll-Smith (1985). In addition the social science literature includes several studies of the subjective aspects of risk perception and risk management (Slovic and Fischhoff 1984; Wildavsky 1990; Slovic 1986). Results of these studies show two important components of successful public acceptance of risk: the provision of a meaningful opportunity for public input into the risk management process, especially with respect to defining acceptable risk, and the provision of substantive public participation in decision making.

Community expressions of NIMBY indicate that the sole reliance upon objective criteria to choose among alternatives in natural resources or risk management often fails to obtain public acceptance. It can be argued that attempts to effectively exclude public participation in decision making will also fail to lead to public acceptance (Focht, Lawler, and Noltensmeyer 1988; Lawler, Focht and Dickson 1989; Focht 1995).

Solutions

Solutions to these issues must incorporate factors such as openness, communication, and empowerment (Edelstein 1988). Solutions must include strategies for direct and substantive citizen participation in the decision making process (Focht 1995).

The idea of including factors other than those involving technical and scientific issues in environmental decision-making processes is not new. A panel reviewing health studies conducted by the New York Department of Health scientists for the controversial Love Canal cleanup, expressed the opinion that, "the state (of New York) may also wish to include non-scientists, local residents, and others in future deliberations" (Levine 1982). However, Adams (1993) noted that the prevalence of NIMBY and TIMBY conflicts today indicates that even though these approaches were promoted in one of the earliest of the United States remediation controversies, the lessons were not learned.

CHAPTER IV

METHODOLOGY

Introduction

Multiple methodologies, both qualitative and quantitative, and subjective and objective in nature, are being used in this case study to address validity challenges that are common in the social sciences.

Initial Survey Design and Pretest

The survey instrument used in the research was initially developed by members of the research team and pre-tested on a group of citizen activists from a “brownfield” community. Two versions of the pretest were given to the “brownfield” activists, a total of 16 respondents. The pretest questionnaire was composed of four parts and was administered in a group setting. The responses obtained from the pretest survey indicated the need to administer the survey in a personal interview, rather than a group setting, in order to ensure that the respondents clearly understood the questions or the task.

The pretest results were analyzed qualitatively to determine whether the questions were unambiguous, and whether the responses were consistent. The final survey instruments were developed to overcome the problems found in the pretest version.

The instruments were made flexible enough that they could be used in different types of controversies and still give constant data for comparison purposes.

Design

A multi-instrument survey was used in this research project. The survey consisted of 1. a structured questionnaire with an open-ended personal interview, 2. Q methodology, and 3. two

card sorting ranking exercises. The three methods combine to create triangulation in the research design.

Stakeholder Sampling

Only stakeholders that were knowledgeable about the controversy were selected to participate in the survey. A total of 22 stakeholders, including local citizen activists, Conoco officials, state employees, an attorney, and other citizens of the community were included.

Archival research and information gathering interviews were conducted to obtain an understanding of the history of Ponca City and the South-side Circle Drive Controversy. Library records, interviews with Ponca City Toxic Concerned Citizens (PCTCC) and Ponca City Conoco personnel, newspaper clippings, articles from national magazines, U.S. EPA reports, Oklahoma Water Resource Board reports, Oklahoma State Health Department records, personal and professional letters, and previous scholarly papers written on the Ponca City controversy provided a historical background for the events surrounding the controversy.

Interviews with citizens involved in the controversy and archival research provided names for further interviews and sources of information.

Instruments

Structured Questionnaire

The survey instruments were revised and adapted to address the multiple important issues in the Ponca City Circle Drive controversy. The structured questionnaire was administered as two parts: closed and open-ended questions.

Closed-Ended Interview

The questionnaire administered at the beginning of the interview consisted of 11 questions concerning the situation that existed in south Ponca City from late 1986 until late 1990 regarding the contamination of the Circle Drive area alleged to have been caused by the Conoco refinery. The questions were multiple choice or closed-ended questions that sought to identify the extent to which the respondents were involved in the Ponca City controversy, their

relationships with the various groups involved in the situation, and the sources from which they received their information about the controversy. This information was also used to interpret the Q factors and is discussed in the results in Chapter 8. Each participant was given a copy of the initial questionnaire and asked to complete it.

The last section of the closed-ended interview consisted of eight questions regarding demographic characteristics of the participant. This questionnaire addressed customary demographic data such as age, gender, education level, and primary occupation, as well as, how close the respondent lived to the controversial site, and whether or not the participant was a member of any citizen's groups or service organizations (see Appendix A).

Open-Ended Interview

The second section of the survey consisted of open-ended questions designed to elicit elaborated answers (see Appendix B). The citizen's interview consisted of 23 questions concerning the individual's role in the controversy, reasons for getting involved in the situation, concerns about the cleanup of the area, changes in attitude and business climate since the buyout, what went wrong and what went right, and how the situation could have been handled better. A similar but separate list of questions was given to Conoco and government officials (See Appendix B). Due to the length of the responses, all open-ended interviews were recorded and eventually transcribed.

Analysis of the open-ended interview facilitated interpretation of the Q sort and rank order card sorts. The open-ended interview allowed participants free expression of their views. Participants were encouraged to express their feelings and concerns honestly and to clarify any potential misinterpretation.

Q Methodology

Q technique and its methodology, invented and advanced primarily by William Stephenson (1953), was designed to assist in the orderly examination of human subjectivity. Although the Q sort technique and associated statistical methods have been employed primarily

in psychology, they are also of great importance to political theory in both normative and empirical respects.

William Stephenson, in his forward to Steven R. Brown's book *Political Subjectivity* (1980, 6), states:

Simply stated, Q technique is a set of procedures whereby a sample of objects is placed in a significant order with respect to a single person. In its most typical form, the sample involves statements of opinion (Q sample) that an individual rank-orders in terms of some condition of instruction; e.g., from "most agree" (+5) to "most disagree" (-5). The items so arrayed comprise what is called a Q sort. Q sorts obtained from several persons are normally correlated and factor-analyzed by any of the available statistical methods. Factors indicate clusters of persons who have ranked the statements in essentially the same fashion. Explanation of factors is advanced in terms of commonly shared attitudes or perspectives. Q methodology is the body of theory and principles that guides the application of technique, method, and explanation... All factors are subjective, yet grounded in concrete behavior, are usually reliable and easily replicated, and are subject to statistical summary, which facilitates more careful description and comparison.

Q Sort Technique

The Q technique is a set of procedures where a sample of statements about a subject is placed in a significant order by a single person. The Q sample consisted of forty-seven statements derived by the research team from comments, discussions, and opinions about various environmental activists and groups (see Appendix E). The Q sample involved statements of opinions, recollections, or reactions to other stimuli relating to the topic under study. The participants were asked to spread the cards out, reread the statements, and place each statement on the form board (see Appendix E), according to their beliefs from Most Agree (+5) to Least Agree (-5) working from the ends toward the middle. The form board was constructed as a pyramid of 47 rectangles arranged in a quasi-normal distribution (eleven piles with frequencies of 2, 3, 4, 5, 6, 7, 6, 5, 4, 3, 2) (See Appendix E).

Q items were placed on the form board as constructed, forcing participants to identify the few statements about which they felt most strongly and which therefore played the greatest role later in the analysis. Each participant was free to rearrange any statement on the form board at any time, and was encouraged to examine the arrangement when finished to make sure it reflected his/her beliefs. Each statement's unique number was recorded on a score sheet by the researcher.

The Q sort configurations were factor-analyzed at Oklahoma State University using PC QUANAL, a statistical factor analysis program specifically designed for Q methodology (Van Tubergen 1975). PC QUANAL correlates the Q sorts and the correlation coefficient matrix is factor analyzed using the principal components method and orthogonal varimax rotation to reveal commonly shared perspectives, opinions, values or attitudes. PC QUANAL outputs factor score arrays for the common factors retained following rotation. After analysis, the researcher attempts to interpret each common factor based on the factor score arrays and on other relevant information, including prior interviews. These interpretations are then reinterpreted by interviewing again the person whose Q-sorts have the highest and purest load(s) on each factor. The highest load is the sort that correlates most highly with the common factor. The pure loader is the sort that represents a common or shared perspective by loading most "cleanly" on a common factor. In some cases, the highest and the purest loads might be the Q-sort completed by the same person.

Q methodology results are discussed in Chapter 7.

Rank-Order Card Sort

Following the Q sort exercise, two rank order card sorting tasks were given to the participants. The first card sort task involved a set of thirteen cards (see Appendix C) on which were described decision criteria typically used by policy makers when proposing construction of hazardous waste management facilities and clean-up of environmental contamination. After the cards were shuffled and placed in no particular order, the respondents were asked to read through the cards, ranking them from "most to least" important, in order to reveal their beliefs about which criteria should be most important in making environmental decisions. After ranking

them ordinarily, the respondents were asked to group the cards in groups such as "highly important," "somewhat important," and "not important," to indicate the relative importance of each card to the others.

The second set of rank order cards consisted of nine different citizen participation strategies that varied in the extent to which citizens can provide input to the decision process and their power to influence decisions (see Appendix D). This sort was intended to determine the decision process that participants believed was best suited to averting decision gridlock.

After the cards were shuffled, the participants read through them, ranking them in the order of preference, and grouping them according to "highly preferred," "somewhat preferred," and "not preferred," strategies.

The frequency distributions were calculated for each of the items on the cards, for both decision factor cards (sort #1), and public participation strategy cards (sort #2). Additionally, Q methodology was used to interpret the rankings given to the items in the card sorts through the use of factor analysis. The data obtained through these analyses are compared to responses given in the in-depth interview questions and to the results of Q sorts completed by participants. The differences and similarities between responses, and preferences of the group as a whole and individually are also evaluated and discussed in Chapter 8.

Procedures for Administering the Interview

Participants were allowed to choose the place for the interview; most chose their residence. The interview began with the presentation of research credentials, brief introductions, and a complete explanation of the study. All the participant's questions were answered. Participants were then asked to sign a consent form confirming that their participation was voluntary, that interview results would be held in strict confidence, and that the participants would remain anonymous to anyone outside the research team. The survey was presented in the following order: initial and final questionnaires, open-ended interview, Q sort, and rank-ordered card sort. Before administering each instrument, participants were informed of its purpose and given appropriate instruction. In addition, participants were invited to take breaks and informed that they could terminate the interview at any time. At the conclusion of the interview, participants

were thanked for their participation, and given a proposed date for completion of the research report.

Methodological Considerations

There are several potential limitations with the approach and methods used in this case study. Because this research did not take place during the time the controversy actually occurred, reliance on second-hand, archival, and verbal information is necessary in order to understand the historical and contextual atmosphere surrounding the controversy. The objectivity of sources used to obtain this type of information must be evaluated.

The selection of interview subjects depended to some degree on their availability, both physically and temporally. Some individuals had moved away from the community, and some had tired of the subject and refused to participate in the study.

Another concern is the ability of individuals interviewed to accurately recollect their experiences, thoughts, and feelings as they existed at the time of their involvement with the situation. Several questions in the open- and close-ended interview sections ask respondents to remember the original reasons they got involved, how they felt about a certain situation, etc. This task is frequently difficult for the respondent to do in light of what they may have learned about the situation or the issues involved since that time. Strategic bias can also enter into answers to questions when the individual wishes to give what he/she perceives to be the "correct" answer to interview questions.

Due to the length of the entire interview process (an average of 1½ hours), respondents sometimes felt tired by the end of the interview when the card sorts were presented. This situation, possibly combined with distractions occurring at the interview location, could result in inaccuracies in card sorts. A lack of understanding of terms and/or concepts used in the descriptions of the decision factors and participation strategies can also act to impede accurate data collection.

CHAPTER V

QUESTIONNAIRE AND INTERVIEW RESULTS

Results of the Questionnaires

Twenty-two stakeholders participated in this case study. Fourteen were citizens involved in the controversy supporting the Circle Drive residents. One citizen was not involved with the controversy in any way and was considered a control subject. Four government people were involved, with three being neutral and the fourth supporting the citizens' group. Three industry people were interviewed, with two being against the citizens group and one being neutral.

TABLE 1

DEMOGRAPHIC PROFILE OF STAKEHOLDER PARTICIPANTS

*Stakeholder	Proximity to Site	Frequency of Civic Participation	Sex	Age	Education	Occupation	Support for Residents of Circle Dr.
PC-1	1 block	Frequently	Female	62	High School	Business Owner	Yes
PC-2	1 mile	Frequently	Male	35	High School	Business Owner	Yes
PC-3	½ block	Never	Female	60	Business College	Insurance	Yes
PC-4	2 blocks	Never	Female	>60	Business College	Business Owner	Yes
PC-5	½ block	Never	Female	50	Jr. College	Business Owner	Yes
PC-6	2½ blocks	Never	Male	75	11 th grade	Civil Service	Yes
PC-7	¼ block	Seldom	Female	65	High School	Business Owner	Yes
PC-8	3 blocks	Never	Male	66	College	Business Owner	Yes
PC-9	1 block	Never	Female	35	1 sem. College	Secretary	Yes
PC-10	3 blocks	Never	Female	68	High School	Day Care Director	Yes
PC-11	½ block	Never	Male	40	High School	Carpenter	Yes
PC-12	3 blocks	Never	Female	40	8 th grade	Waitress	Yes

*Stakeholder	Proximity to Site	Frequency of Civic Participation	Sex	Age	Education	Occupation	Support for Residents of Circle Dr.
PC-13 G4	NA	Unknown	Male	>50	College	Director State Health Dept.	Neutral
PC-14 G3	NA	Unknown	Female	50	College	Hydrogeologist	Neutral
PC-15 G1	NA	Unknown	Male	>40	College	Water Resource Board	Neutral
PC-16 I1	4 miles	Frequently	Male	50	Chemist MBA	Refinery Manager	No
PC-17	3 miles	Frequently	Female	55	College	Museum Curator	Neutral
PC-18 G2	13 miles	Frequently	Male	56	College	Senator	Yes
PC-19 I2	3 miles	Frequently	Male	>40	Masters degree	Industry Enviro Rep	No
PC-20 I3	3 miles	Frequently	Female	>40	College	Industry Secretary	Neutral
PC-21	3 miles	Frequently	Male	40	Masters degree	Teacher	Yes
PC-22	4 miles	Frequently	Male	50	Law degree	Attorney	Yes

*Stakeholder identification: G = Government; I = Industry; C = Citizen

Data abstracted from the final questionnaire demonstrated that all participants in this study, except for the government participants, lived four miles or less from the refinery. Most of the Circle Drive residents lived from one-fourth block to three blocks from the refinery. Since Ponca City is a rather small town, even the industry participants, who lived farther away than the general population, only lived approximately four miles from the site of the contamination. One government official lived approximately thirteen miles; the other two lived at least one hundred miles from the refinery.

Table 2 below summarizes the data from the initial questionnaire. This questionnaire sought to identify the information sources upon which respondents relied concerning the groundwater contamination in the community of Circle Drive near the Ponca City Conoco refinery and which of these sources they most trusted and distrusted. The questionnaire also inquired about the type and extent of public participation which respondents engaged in during the contamination controversy.

TABLE 2

RELATIONSHIP AND ROLES OF PARTICIPANTS

Stake-Holder	Sources of Info. About Controversy	Most Trusted Source	Most Distrusted Source	Public Participation	Relationship to Activist Group
PC1	Enviro. Groups Friends, neighbors, Living in area	Enviro. Groups, Own research	Conoco City Govern.	Organize meetings Testified govt.. meeting Spoke at rallies Contacted govt.. Camped capitol	Member & spokes-person PCTCC
PC2	Enviro. Groups Friends, neighbors U.S. EPA U.S. Justice Depart.	Own info. Obtained From OSDH, U.S. EPA	Poncans for Progress, Conoco City govt..	Organized meetings Testified govt.. meet. Spoke at rallies, Contacted govt.. Lead tours	Member & spokes-person PCTCC
PC3	Friends/ neighbors Self/resident Out of town Media Living in area	Friends & Neighbors, Out of town media, own information	Conoco City govt.	Organized meetings Testified govt. meet. Spoke at rallies, Contacted govt.. Lead tours	Member & spokes-person PCTCC
PC4	Nat'l news media, Friends/neighbors, PCTCC, NTC Living in area	Enviro. Groups, Nat'l news Media	OSDH, City govt.. Conoco	Participated in Rallies, contacted Gov., spoke meetings, camped capitol	Member PCTCC, steering committee PCTCC
PC5	Nat'l news/TV PCTCC, NTC, Individuals in U.S. EPA	PCTCC, NTC	Conoco, U.S. EPA, OSDH, City govt..	Contacted govt.. Attended/spoke Meetings, capitol meeting	Member PCTCC, steering committee PCTCC
PC6	PCTCC, NTC	PCTCC, NTC, Friends, Neighbors	Conoco, U.S. EPA, OSDH	Contacted govt.. Attended/spoke meetings	Member & steering committee PCTCC
PC7	PCTCC, NTC Friends/neighbors Fellow workers TV	PCTCC, NTC	Conoco, U.S. EPA, OSDH	Attended PCTCC Meetings	Member PCTCC

Stake-Holder	Sources of Info. About Controversy	Most Trusted Source	Most Distrusted Source	Public Participation	Relationship to Activist Group
PC8	Nat'l News, radio, Nat'l TV, PCTCC, NTC Friends/neighbors	Nat'l TV PCTCC, NTC	Conoco, City govt., Local news Media	Contacted govt. Official, spoke/ attended meetings	Member PCTCC
PC9	News media Friends/neighbors PCTCC, U.S. EPA OK S Health Dept.	PCTCC News Friends	Conoco, U.S. EPA NTC	Signed petition Attended PCTCC meetings, helped organize meetings	Member PCTCC
PC10	Enviro. Groups Friends/neighbors	Enviro. Groups	Conoco, City govt., Local News media	Attended/spoke Meetings, Contacted govt. camped capitol	Member PCTCC
PC11	Nat'l news media, Friends/neighbors, PCTCC, NTC, U.S. EPA,	U.S. EPA, Nat'l news, Friends/ Neighbors	Conoco, Local news	Petition, attended/ spoke meetings, camped capitol	Member PCTCC
PC12	Nat'l news media, PCTCC, NTC	PCTCC, NTC	Conoco, U.S. EPA, State govt.	Attended/spoke Local/govt. meetings, camped capitol	Member PCTCC
PC13 G4	Government, Conoco	Conoco, govt.	Enviro. Groups	NA	None
PC14 G3	Government, Conoco	Conoco, Gov.	No comment	None	None
PC15 G1	Government, Conoco	Conoco, Gov.	Enviro. Groups	None	None
PC16 In 1	Conoco, Government	Conoco, State govt.	Enviro Groups	Attended State/Conoco Meetings	None
PC17	Local and Nat'l News	Local and Nat'l news	No comment	None	None
PC18 G2	Local and Nat'l News, OSDH Friends/neighbors	Local/Nat'l news, OSDH	No comment	Was not actively involved	None
PC19 In 2	Conoco	Conoco	Enviro. Groups	Was not involved	None
PC20 In 3	Conoco, media, Friends/neighbors	Conoco, Gov.	No Comment	None	None
PC 21	Friends/neighbors Own research, Enviro. Groups	PCTCC, NTC	Conoco, City govt. U.S. EPA	Organized/attended / Spoke Meetings, contacted govt.	Member PCTCC, steering committee
PC 22	Attorney	Own research	No Comment	Attorney for a small group not involved in class action suit	None

Oklahoma State University Library

Conoco

Most industry participants obtained information about the controversy from official sources: Conoco, the state and U.S. EPA; one listed friends, neighbors and news media. This can be explained by their employment-all worked for Conoco.

With respect to trust, industry participants again relied on the official sources. Most industry participants distrusted the information provided by the environmental and Circle Drive (PCTCC) activist groups because they believed it to be biased and uninformed.

The consensus opinion among industry participants was that the Circle Drive (PCTCC) activists were ignorant, or misinformed and driven by greed.

Citizens

Circle Drive activists (PCTCC) obtained information about the controversy from the news media, friends, public hearings, the state, the U.S. EPA, and environmental groups. Their most trusted information came from environmental groups, friends, and out-of-town news media. Within the local activist group (PCTCC) were individuals with advanced degrees and knowledge in the area in question. The least trusted information came from Conoco, the local news media, and local civic government. As their disillusion grew, the Circle Drive group (PCTCC) came to distrust the OSDH and the U.S. EPA also.

Government

The government officials depended heavily on the information from Conoco, the U.S. EPA and their own information. They did not trust the information from the environmental groups or the PCTCC. They considered the news media biased because the media focused on the controversy rather than the science of the project.

Government participation was limited to professional practice and public hearings.

Results of the Personal Interviews

Citizens wanted relief from the contamination in their homes and community. They were concerned with the short-and long-term health effects. Because many of the citizens had close

ties with Conoco and even more so because of E. W. Marland's parental attitude toward the citizens of the town in previous years, they expected Conoco to remedy the situation and do what they considered "right."

When Conoco refused to acknowledge that the group had a legitimate complaint, the problems grew. The citizens could not get relief from Conoco, so they turned to the state and federal government. After they received what they considered conflicting reports from various state government personnel denying there was a problem of any substance, their trust of all government agencies plummeted to a new low. They knew that much of the contamination was "old refinery products" but they also felt that since Conoco now owned the site, the company was legally responsible for the end results.

When they felt their concerns were not being met, they in turn organized into a citizens group. The citizens group (PCTCC) did not trust the company for information and felt the state was taking "Conoco's side" in the controversy. Since Ponca City is a "company town," they did not feel their state government, city government (most city council members and even the mayor had Conoco ties) or their local newspaper was free from bias. The PCTCC reached out to other grassroots activist groups for guidance and support.

There had been "Band-Aid" attempts to relieve the problem before and the end results were the same; the problem always returned.

While cleanup of the area was what the PCTCC group wanted in the beginning, their fears escalated as their research grew. They came to the conclusion that the area was no longer habitable and they wanted to be moved out of the area. They were also concerned with future use of the land and with the contaminated water removed through the groundwater lowering process. They believed the contaminated water could still pose a threat to wildlife down river if it were discharged into the Arkansas River.

Circle Drive Activists (PCTCC)

Protection of human health and welfare were the main concern of the Circle Drive activists (PCTCC).

"Our health was the number one issue, property values came next. It won't do anyone any good to have money if they are dead or have poor health."

"We were afraid the area would just be covered up, not cleaned up. Too many of the city and state officials didn't want to cross Conoco."

"We had to get the people out of there, nobody should ever live in that area again, that was one of our main goals."

"Nobody wanted to be the bad guy and cause all the negative publicity for the community. It took time away from our lives and families and caused stress. It was like the civil war, families taking different sides, not speaking to each other, it was a very stressful time for everyone, but someone had to do it."

Circle Drive activists (PCTCC) not only wanted a place at the bargaining table they wanted to be part of the decision.

"Nobody wanted the government or the attorneys involved, at first several people tried to work individually with Conoco but they either ignored them or insulted their intelligence."

"All we really wanted was Conoco to sit down and talk with us one to one, but they wouldn't do it, they never did, they had to have their lawyers."

"All the decisions were being made for us, we weren't included, it was like we didn't have good sense."

Circle Drive activists (PCTCC) wanted a sharing of information from both industry and the government.

"We couldn't get any cooperation from the company or the state or the U.S. EPA. We had to drive to Dallas and look up everything for ourselves even though Conoco and the state already had the information."

"We had open meetings, anyone could come, but we couldn't go to their meetings, we were never invited."

The Circle Drive activists' attitude toward Conoco changed as the controversy continued.

"Conoco knew there was a problem, they should have done what was right to start with."

"Conoco was in total denial in the beginning, then they stated they would lower the groundwater and we could take it or leave it. Conoco was arrogant."

"It created a lot of ill feeling toward Conoco when they had their employees take off early and pack the meeting place so we couldn't get in."

"If Conoco had put their resources into getting along and working on the problem, the results would have been better for both sides."

"Conoco said they couldn't use the contaminated water in the refinery, it wasn't cool enough, even they didn't want it back."

"If Conoco had did what was right instead of waiting until they were forced to act, mainly by the news media, they could have bought out the area a lot cheaper."

At first the Circle Drive activists (PCTCC) expected help from the government.

"Some people in the OSDH were helpful at first but they soon got the message and were called off. It's strange that one day we shouldn't eat the produce from our garden but then they had a meeting and it was OK (to eat produce from the gardens)."

"When we lodged a complaint with the state or the U.S. EPA, they always brought a person from Conoco with them when they came to see us. Why?"

As the controversy continued, the Circle Drive activists (PCTCC) group lost confidence in the government to be of help with the problem.

"The U.S. EPA should have followed through in 1986 with tests and fines and enforcement. They dropped the ball."

"OSDH had to be forced by media to do anything, city officials did only what OSDH made them do, and the U.S. EPA didn't want any participation from the public."

"Government agencies should do the testing, not the companies."

The citizens of Circle Drive (PCTCC) were stung by the lack of support from the people of Ponca City.

"Everybody says, 'Well these people bought down there, they knew Conoco was there.' But after we bought thirty years ago they put in two new smokestacks, another row of tanks and they built Carbon Black and a fertilizer plant. It's not like it used to be."

"Some of the local merchants donated to the citizens group and allowed them to put up signs at their businesses, but Conoco and the city put too much pressure on them and they had to quit."

"Poncans for Progress split the city, which they accused us of doing, but the city was not split until they formed."

"The Ponca City officials took Conoco's side, but the whole town benefited from the cleanup, not just the ones who were moved out."

In the end the Circle Drive Citizens group (PCTCC) felt the settlement was fair.

"I don't have any hard feelings toward the company, we each had a job to do."

"We tried to be fair, nobody expected to get rich, we just wanted out, for everybody."

"Conoco has put a lot of money in improvements to the area, it was the best thing that ever happened to Ponca City."

"Both the city and Conoco will eventually benefit from the clean up, but it had to be forced upon them."

"I'm concerned about what will happen after everyone moves and all the publicity dies down, Conoco will still be doing their own monitoring. It seems like the state needs to do their own testing."

Conoco

Participants representing industry had different views than the citizens concerning the controversy. Excerpted below are some of industry peoples' comments.

"We were responsible for some of the problem and we wanted to do what was right; we had a moral responsibility but we didn't deserve the negative publicity."

"It was wrong for the radicals to camp at the capitol. Their actions alienated Conoco."

"The bad publicity might affect our ability to stay in Ponca City in the long term."

Conoco had a different opinion as to what drove the controversy.

"I think the citizens group formed because they had a groundwater problem, but I also think they were trying to profit from the issue."

"It was not really a health issue, it was more a money issue."

"The citizens group needed to work more with Conoco. Perception was reality to both sides."

"If they had just worked with us, no outside groups, no lawsuits, then we could have reached a settlement much sooner. When you get outside agitators and attorneys in the picture things get complicated."

Industry did not want the federal government involved.

"We were working with the state for a common solution; it just got more involved when the U.S. EPA got involved."

Industry considerations:

"We, and I mean most industry, does take an arrogant attitude toward citizens groups and complaints. We do the science, base our decisions on risk analysis, and believe we are right. We don't explain to the public because we don't think they will understand. The public tends to factor in emotions, and cultural norms that we don't."

"Industry can no longer have an arrogant technical scientific attitude that it is a total waste of time to try to explain to mere mortals. Our total focus was internal (shareholders), our new fourth stakeholder is the community in which we live and operate in."

"Both sides need to listen, to really hear what is being said."

"Solutions need to be based on good science and not on emotions and controversy."

Michigan State University

"Everything needs to be risk based, we need to consider the dollars involved and the risks."

Government

Comments about Conoco:

"Conoco just passed it off early on. The public outcry was what drove Conoco and the state."

"Conoco had good technical people. They had hired excellent people to work on the problem. They came in and worked fast but when the lawyers got involved it just slowed the process down."

"It wasn't a real health threat and Conoco and the state was slow to act; when Conoco finally got the technical order they did a good job."

"Conoco really went above and beyond, like horizontal wells, etc. They did innovative things, that the state wouldn't have regulations or know about."

"Conoco was slow to act but when they did they did an excellent job."

"In the end DuPont got on the ball and was the driving force behind the cleanup."

Government officials felt their role was somewhat limited because there was no immediate health threat to citizens.

"The public believes the government is biased towards companies. They don't really trust us. Of course we have to go by the laws, that's what our decision is based upon, not what someone wants necessarily."

"Information is the key to the right decision but it got so information was greeted with skepticism by the public."

"Conoco, OSDH and OWRB had a three-way meeting and gave the information to the locals who greeted the information with hysteria."

"In the future we should have meetings—invite regulators and industry consultants to advise the citizens groups. Since citizens don't trust the government."

"The citizens group didn't have anyone really sharp technically to challenge information."

Even government officials had different opinions.

"The group (PCTCC) really lost credibility with the camp-out at the capitol. That was an embarrassment to everyone and just showed how radical they were."

"The (PCTCC) camp out at the capital got media attention and things began to happen."

Government is also limited in what their actions can be.

"Our laws are sometimes economically driven, not socially driven."

"We need to be open, and share and receive information, this is critical. The agencies do have a game plan but sometimes they're not good at sharing this information."

"The problem just got too political, for everyone."

"Lawsuits cause problems but in the long run it also keeps companies on their toes."

Summary

Citizens of Ponca City had different views of the Circle Drive Controversy, mainly depending on where they lived and worked in the town.

The Circle Drive activist group (PCTCC) maintained that their concern was the long-term health effects of the pollution and their property values. They were concerned that the cleanup by Conoco would be a cover-up, and the main problem would remain and resurface again in a time of high ground water. They not only wanted the area cleaned up but also wanted assurance that the area would never be used as a residential area again. They also felt the plan to divert the contaminated groundwater to the Arkansas River might impact people or wildlife farther downstream.

A few of the residents had tried to work with Conoco on a "one-to-one basis" but got nowhere. They were disillusioned, as they had enjoyed a good working relationship with Conoco in past years. The group felt that a solution could have been reached much sooner and at less expense if Conoco had worked directly with them.

The Poncans for Progress was a citizens support group for Conoco consisting mainly of Conoco employees and city government officials. They were concerned with keeping Conoco, the largest employer, in the city.

Circle Drive residents had appealed to the state and then the federal government expecting support. When they felt they received neither, their trust in all government suffered.

Conoco did not want to take the blame for industry practices that had probably occurred many years earlier by other companies. They would be setting a legal liability precedence that could be very costly. They felt the Circle Drive group (PCTCC) was being unreasonable and should have been satisfied with lowering the groundwater in the area. They did not believe the group understood the "science" behind the suggested solution. Conoco felt money was the

driving force behind the group's complaints. Conoco thought a solution could have been reached sooner if "outside groups and attorneys" had not become involved.

State and Federal government had to go by the law, not what some citizens group wanted. They were used to working closely with industry, which caused a further decline in their relationship with the Circle Drive residents.

The personnel with the state and local government and Conoco were embarrassed by the actions of the protest group (PCTCC) when they camped at the state capitol and brought national media attention to the problem.

The Circle Drive activists (PCTCC) did not trust the company or the government to reach a fair decision on their behalf. Conoco did not trust the Circle Drive activists (PCTCC), nor did they believe the group was able to understand "science" and rationally make a decision on such matters.

All groups, industry, citizens and government, felt the main stumbling block to settlement was the retention of attorneys. Conoco had their own attorneys but was upset when the Circle Drive residents retained council.

Neither Conoco nor state or local government was interested in having members of the Circle Drive group (PCTCC) participate in decision-making meetings. They made the decisions and then considered the Circle Drive group (PCTCC) as "hysterical" when they were presented with the results and disagreed.

The result of the interviews suggests that distrust fueled the controversy and extended the time it took for a settlement to be reached. Developing trust among the parties and having citizens' input into the decision-making process would have facilitated reaching a solution to the problem much sooner.

CHAPTER VI

PREFERENCE RANKING OF DECISION CRITERIA AND PUBLIC PARTICIPATION STRATEGIES

Introduction

In chapter 5, results of the open-ended and quasi-structured personal interviews were presented. In chapter 6, as part of this effort to better understand contamination controversies, it was important to determine what, if any, differences exist among stakeholders' preferences concerning the criteria that should be used in making environmental decisions and the means by which the public should participate in making these decisions. Preferences were elicited by a technique known as card ranking.

Card Ranking Technique and Analysis

Procedure

The stakeholder participants in this study were given a card-ranking exercise immediately following the Q sorting exercise discussed in Chapter 7. The card ranking exercise consisted of two parts: decision criteria and public participation strategies.

In the first part of the card ranking exercise, stakeholders were first asked to rank thirteen cards, each containing criterion, with a brief description, which could be used in making siting/environmental decisions (see Appendix C). Participants were instructed to read through all 13 cards and then linearly arrange them from least preferred (rank order = 13) to most preferred (rank order = 1).

In the second part of the card ranking exercise, the stakeholders were asked to repeat this process – this time with nine cards (see Appendix D) on each of which was described, a public participation strategy that could be used in making siting/environmental decisions. In both

sorting exercises, after arranging the cards in linear fashion, the stakeholders were asked to divide the cards into three groups – those that they judged as having high importance, those having moderate importance, and those having low or no importance. The raw decision criteria and raw participation strategy card ranking data are included in Appendix F.

Results of the rank order exercises were combined across all stakeholders and by stakeholder demographic type (government/industry and citizen). In both cases, the results were analyzed using five analytical methods, which are discussed, in the next section. The fifth method, a composite of the results of the first four, was used in interpreting the card ranking results. This analysis is followed by a discussion of the public participation strategy ranking results. Finally, the relationship between these rank order results is explored.

Card Rank Analytic Methods

Five card-ranking analyses were used to deduce a composite rank order of decision criteria and public participation strategies across stakeholders and stakeholder types. Each of the first four methods has its strengths and weaknesses; for this reason therefore, the rank order used in the interpretation of card ranking data was computed using a fifth method that combines the results of the first four.

Analytic Method #1: Median Rank Order

The median rank order method was selected because of its suitability in finding a measure of central tendency in ordinal data. The individual rank order scores of each decision criterion and each public participation strategy were arranged in ascending order and the middle (median) rank order score was determined. The median, as the measure of central tendency for ordinal data, has an advantage over other descriptive statistics because it excludes outlying (extremely high or low) ranks. Unfortunately, it suffers from a loss of data richness by the loss of outlier rank scores. It also suffers from failure to consider the relative importance that stakeholders attached to each criterion of strategy.

The composite median rank order was determined by arranging the criterion-specific and strategy-specific median scores from high (low preference) to low (high preference).

Analytic Method #2: Individual Rank Order

The individual rank order method maximizes the resolution of the combined rank order by preserving the full richness of the data in the composite results. In this method, the individual rank order scores were summed for each criterion and strategy. The composite rank order was computed by arranging the sums in a manner identical to that used for median scores. Though this method is richer than the median method, it still fails to take into account the subjective importance that each criterion and strategy has to the stakeholder, and it is sensitive to extreme values.

Analytic Method #3: Group Rank Order

The group ranking method is useful because it distinguishes the relative importance that each criterion and strategy has to the stakeholder. To compute a composite rank order score using this method, each individual's criterion and strategy importance rating (high = 1, moderate = 2, low = 3) was summed with those of other stakeholders. The sums were arranged as above to deduce the composite rank order. Though this method captures relative importance, it suffers from a lack of resolution (scores vary from 1-3, rather than from 1-13 or 1-9 for decision criteria and public participation strategies, respectively).

Analytic Method #4: Weighted Individual Rank Order

In an attempt to combine the advantages of the individual and group rank order methods, these methods were combined. The individual rank order scores were first multiplied by an assigned value as follows: high importance = 1, moderate importance = 2, and low importance = 3. These products were then summed by criterion or strategy to compute a composite score for that criterion or strategy. The final rank order was computed by arranging the summed products in ascending order as described above. Though this method combines the advantages of the individual and group ranking methods, it still suffers from the bias produced by extreme values.

Analytic Method #5: Overall Rank Order

The overall rank order, calculated from the four rank orders described above, represents the composite rank order of criteria and strategies. The overall rank order score was computed

as the sum of the median, individual, group and weighted individual rank orders. The composite overall rank order was determined using the same ascending array of rank order scores as was used in the four previous methods.

In the discussion of card sort results, a criterion is referred to as method-independent when the rank order for that criterion is constant across each ranking method. Method independence was common among those criteria and strategies that were ranked near the preferred or least preferred; minor mixing of rank orders was found for those criteria and strategies ranked in the middle.

Decision Criteria Preference Ranking Results

Decision Criteria Considered

As mentioned in the chapter introduction, 13 decision criteria were considered by the stakeholders in their ranking exercises. A brief description of each is presented below. The specific definitions of each criterion are included in Appendix C.

Environmental Criteria

Six of the 13 criteria can be included in this criterion grouping. Four of the six are primarily technical criteria: Scientific risk estimates, technical/legal education, access to information, and use of alternative technologies. The fifth and sixth are non-technical but are included here because they also relate to environmental concerns: personal view toward technology and personal risk perception/judgment. It is expected that the ranking of these criteria will tend to be clustered.

Economic Criteria

Three criteria concern economic impacts: economic impact on the company, economic impact on the community, and fairness and justice. While the first two deal with allocational impacts, the third concerns the equity of the distribution of risks, costs, and benefits among stakeholders. As in the case of technical and environmental criteria, it is expected that these three criteria will tend to be clustered.

Community-Based Criteria

Two of the criteria involve community-based concerns. Community disruption and understanding local culture are directly tied to community-level impacts. Again, it is expected that these two criteria will be clustered in the ranking results.

Institutional Trust Criteria

Trust in government and industry was the eighth criterion presented to stakeholders for their consideration in judging the relative importance that the criteria should play in siting decisions. No particular relationship between trust and any other criterion is expected, though it is certainly reasonable to expect that the importance of trust may vary directly with the importance of citizen involvement and non-technical criteria and indirectly with technical environmental criteria. The relationship between trust, technical criteria, and citizen involvement is proposed because those stakeholders who believe that trust is not important can be expected to believe that citizens should defer to institutional expertise and discretion; thus technical criteria would dominate and citizen involvement would subordinate. On the other hand, those who believe that institutional trust is highly important to siting decisions may be inclined to insist on increased citizen involvement and the inclusion of non-technical environmental and community-based criteria in decision making.

Citizen Involvement Criteria

The relative importance of citizen involvement in siting decision-making is tested with this criterion. As mentioned in the trust criterion paragraph, though no particular clustering of this criterion with any other is explicitly anticipated, it is reasonable to suppose that those who judge this criterion as important may be less inclined to judge technical criteria as important and more inclined to believe that institutional trust is important.

Industry and Government Preferences

Table 3 presents the distribution of decision criterion card rankings among industry and government stakeholders who supported Conoco's proposal to lower the ground-water contamination in order to clean up of the Circle Drive area. The criterion that those in this group

most preferred (order-independent rank of 1) is scientific risk estimates. All of the industry and government ranked it number one. They are comfortable with scientific risk estimates and put their faith in the results. This result is evidence to the claim that this group prefers objective, scientific arguments in making environmental decisions.

The second most-preferred (also order-independent) decision making criterion is access to information. This preference indicated that it is important to this group to have all the information before a decision can be made.

The third most-preferred (also order-independent) decision criterion among industry and government stakeholder is citizen involvement. They believe citizens should be involved in some steps of decision making. They believe if the citizens were more educated and understood technical and legal information, they would be more inclined to see the industry/government perspective.

The fourth most preferred decision criterion among government and industry stakeholders is alternative technologies. Both individual order ranking and group order ranking also put this criterion in fourth place. Industry and government favor the use of alternative technologies but want all industries to have the same requirements.

The fifth most preferred decision criteria among government and industry is personal judgment of risks. This criterion is also ranked number five by both individual and group rank order. The respondents explanation demonstrates that they were referring to their own judgment and other similarly trained professionals not non-technical trained persons.

Technical and legal education was ranked number six. Industry and government respondents are pro-education, especially for the non-technically-trained public. They believe if the general public were better educated on technical issues it would not oppose decisions made by technical criteria.

Ranking numbers seven and eight, fairness, an economic concern, and institutional trust are areas where industry and government feel satisfied and are therefore are of little concern. Community disruption, personal views toward technology, and understanding local culture ranked

9th through 11th respectively. Two of these criteria are community based and directly tied to community-level impacts and the other is an environmental criterion.

Community and company economic interest ranked last. This rank suggests that industry and government might not put as much importance on economics of the company and community as the citizens believe.

Citizen Activists Preferences

Table 4 presents the results of citizens' decision criteria card ranking. The most preferred criterion is access to information, followed by citizen involvement and fairness. Citizens believe it is very important that they have access to obtain relevant information in a timely manner and in easily understandable form and that they be involved in environmental decisions that may affect their community. The third, fairness, concerns the equality of the distribution of risks, costs, and benefits among stakeholders.

Institutional trust and technical/legal education is the fourth criterion for the citizens. Those who are not technically educated need some level of trust in the institutions (government and industry) that are to make these decisions. Without this trust citizens feel they must be involved in many of the steps of decision-making. One citizen stated that trust should be the number one criterion but was doubtful that industry or government could ever earn trust. To better understand the technical issues, citizens feel they need more technical and legal education.

The sixth criteria are personal view of technology and community disruption. Personal view of technology is an environmental concern. Community disruption is a concern about the whole impact on a community, from infrastructure and jobs to number eight, understanding local culture. These are non-technical issues that are not usually considered important by technically trained professionals.

Alternative technologies, number eight, is an environmental criterion that citizens believe could greatly reduce the need for waste sites across the country. This criterion also ranked number eight in the median rank score.

Scientific risk estimates ranked number ten in the overall rank, but was ranked in the preferred category by 2 of the citizen respondents; the majority ranked it low preference. This is almost opposite (see comparison of Stakeholders Decision Criterion Chart 7) to the ranking of the technically trained professionals all of who ranked it number 1.

Economic impacts on the community ranked number eleven in the overall rank order, individual rank order, and the weighted rank order scores. Citizens with environmental concerns, although concerned with the economic impact on a community, believe that the environmental welfare of a community is more important.

Personal judgment of risks is an environmental concern that is an individual measurement of how much risk an individual is comfortable with. This level will vary with the situation such as seen or unseen, and familiar or unfamiliar risks.

Economic impact on the company ranked last in the individual rank, group rank, weighted individual rank and overall rank order scores. Environmentally sensitive citizens do not feel the economic welfare of a company should be a major factor in environmental decisions.

Comparison of Decision Criteria Preferences

Tables 6 and 7 present an overall rank-order comparison of decision-criteria preference rankings by each stakeholder group. This section identifies the important similarities and differences among the stakeholder groups.

Citizen-Government/Industry

Both citizens and government/industry agree that access to information and technical and legal education are very important criteria for slightly different reasons. Government/Industry would like for the citizens to be educated so they might understand the many technical and legal issues involved in siting and contamination decisions. Citizens' distrust of government/industry motivates them to demand that information be provided so that the community can independently judge the propriety of a siting/contamination decision.

Citizens and industry/government both rank citizen involvement very high, but with a different idea of what the involvement should be. Citizens want to be a part of the decision

making process and have input into the decisions made while government/industry believe citizens have adequate input into the process now and until they are better educated on technical issues, have very little to offer to the process.

While the citizens ranked fairness, institutional trust, personal view of technology, and community disruption much higher than did government/industry, both ranked economics of community low and economics of the company last.

Government/industry ranked scientific risk assessment high while the citizens ranked it low, again demonstrating the difference between technically and non-technically educated people. The Government/industry group is much more confident in using a risk-based decision-making process.

While local culture did not rank high with the citizens, it ranked even lower with the government/industry respondents.

Public Participation Strategy Preference Ranking Results

Public Participation Strategies Considered

The nine participation strategies the stakeholders considered can be arranged along a gradient from no citizen power (preemption) to maximum citizen power (citizen control). Low power strategies do not provide any meaningful opportunity for influencing a decision and include public hearing and comment (one way communication) and consultation (two-way communication). Moderate power strategies offer a greater chance for citizen influence on the outcome and include non-binding agreement (face-to-face discussions), mediation (third party facilitation), and binding arbitration (third party decision). High power strategies offer substantial influence opportunities and include oversight board (shared power), referendum (community approval or veto of entire package), and of course, citizen control. It can be expected that citizen activists may prefer high power strategies while government/industry may prefer low power strategies for the citizens.

Specific definitions of each of these strategies are included in Appendix F.

Industry/Government Participation Strategies

Table 6 presents the results of the government/industry stakeholders' preference rankings of public participation strategies. The most preferred strategies for government/industry was public hearing/comment (one way communication) and consultation (two-way communication); both are a low citizen power strategies. Low power strategies, while providing some citizen input, do not provide any meaningful opportunity for influencing a decision.

Non-binding agreement (face-to-face discussions), a moderate power strategy, and oversight board (shared power) were ranked third and fourth respectively. Mediation (third party facilitation) a moderate power strategy, and pre-emption (no citizen control) were the fifth and sixth strategies chosen. Binding arbitration (third party decision), a moderate power strategy, and referendum (community approval or veto of entire package), a high power strategy tied for seventh place.

The high power strategy for citizens came in, as can be expected, last in the ranking sorts for government/industry. These results imply that government/industry stakeholders are not willing to give up power in the siting/contamination decision process. While they may believe they have to have some citizen input, they would like to keep it to a minimum.

Citizen Participation Strategies

Table 7 presents the results of citizens' public participation strategy preferences. Their most preferred participation strategies are oversight board (shared power) and referendum (community approval or veto of entire package), both high power strategies, with a rank order of 1. Public hearing/comment (one way communication), low power strategy, and non-binding agreement (face-to-face discussions) a moderate power strategy, were tied for rank order number 3. Citizen control (high power) and mediation (third party facilitation), moderate power strategies came in fourth and sixth respectively. Consultation (two-way communication) a low power strategy, and binding arbitration (third party decision), a moderate power strategy came in seventh and eighth respectively. Pre-emption (no citizen control) came last in rank order. Citizens are willing to share power but they want a meaningful participation in decision making. They are not really interested in having full citizen control.

Comparison of Public Participation Strategy Preferences

Table 8 presents an overall rank order comparison of participation strategy preferences by each stakeholder group.

Citizen-Government/Industry

The citizens prefer the oversight board, with a rank order of 1 (high power) while government/industry gave this criterion a rank order of four. Referendum (high power) also tied for a rank order of first by the citizens and a rank order of seven by the government/industry respondents. This is not surprising since government/industry would prefer that citizens have a low power option.

While government/industry chose public hearing/consultation (low power) for their first choice, citizens gave it a rank order of three. This is the participation strategy that was being used in the Circle Drive Conoco controversy and it left the citizens very frustrated, feeling that they did not have any real input into the process. Government/industry did not see any need to change the process, believing it gave the citizens adequate participation. Consultation (low power), chosen second by government/industry, was ranked number seven by the citizens. Citizens felt they would still be at a disadvantage with this process. Both citizens and government/industry chose non-binding agreement (moderate power) as their third rank order.

Pre-emption (no citizen power) was ranked nine by the citizens and sixth by government/industry. Industry chose citizen control as its last choice while citizens ranked it fourth. Neither of these participation strategies was very popular with either group.

Relationship Between Decision Criteria and Public Participation Strategies

As discussed earlier in this chapter, the decision criteria and participation strategies are directly and indirectly related and will tend to be grouped together according to their relationship. This section will identify and discuss the clustering of decision criteria and participation strategies as indicated by their overall rank order.

Relationship Among Industry's Preferences

Decision Criteria

The most important decision criteria for government/industry are 5 of the 6 environmental criteria. This group is tightly clustered, particularly the technical criteria; scientific risk estimates, access to information, alternative technologies, personal judgment of risks, and technical/legal information. It was expected that these criteria would be clustered.

The next favored criteria among government/industry is fairness, an economic criteria concerning the equitable distribution of risks, costs, and benefits among stakeholders. This criterion is not clustered at this level.

The next cluster contains the criterion institutional trust, community disruption, personal views of technology and understanding local culture. This cluster of criteria is expected.

The last cluster (2 of a possible 3) is economic impact on the community and on the company, which is tied for the lowest rank order for government/industry. This cluster suggests that government/industry is not willing to take chances with the environment even for the benefit of community and company economics.

Participation Strategies

Government/industry's low preference for citizen involvement in decision-making criteria is shown by their number 1 ranking for public hearing/comment, a low power strategy that provides little citizen input into the final decision. Consultation their second choice, is also a low power strategy, and their third choice, non-binding agreement, offers only moderate power but does at least offer two-way communication,

Interestingly, an oversight board is government/industry's fourth preference and the citizens' first choice. An oversight board would allow substantial influence with all parties. This results suggests that government/industry is willing to share power if necessary. Though they would prefer the status quo, public hearing, which from their perspective is working by providing public participation with very limited citizen input into the decisions.

Relationship Among Citizens' Preferences Summary

Decision Criteria

Citizens differ from government/industry in their decision criteria and participation strategy preferences, especially with respect to technical/environmental criteria and the extent to which citizens should be involved in the decision-making process.

The citizens loosely clustered the environmental criteria with access to information, fairness, technical/legal information, and personal views on technology being in the preferred category. While these were environmental issues, only two would be considered technical: number one, preferred access to information, and number four, technical/legal education.

In the moderate rank, community criteria was clustered with community disruption and understanding local culture. Citizens seem to be saying that while these are important, other issues are more important.

Clustered in the low end are two technical issues, alternative technologies and scientific risk estimates. Like industry, the citizens clustered economic impact on community and industry on the lowest or least preferred ranking. Neither citizens nor government/industry seem to be willing to take chances with the environment for economic gain.

Participation Strategies

Citizens' preferences among participation strategies tend to further support their demand for citizens' involvement in decision making. For example, citizens' preference for public participation includes high and moderate power strategies. However they recognize they are not competent alone to make siting/contamination decisions (they rank citizen control fourth) nor do they want to be excluded from the siting/contamination process (preemption is ranked ninth). Oversight board (shared power) and referendum (community approval or veto of entire package) tied for first preference in the citizens group. Citizens are willing to share power and control but do not want to be excluded. Public hearing/comment is a criterion that citizens are familiar with but which they have had little success in influencing decisions in the Ponca City controversy.

Summary

How stakeholders ranked decision criteria and participation strategies sheds light on why the Circle Drive/Ponca City controversy developed and continued. Citizens felt they were denied access to information that was available from both Conoco and the state government. As a result, citizens were motivated to organize and participate to ensure that independent access to information was available for making personal judgments about the controversy. Citizens were unwilling to be excluded from the decision-making process. They were unwilling to defer to government expertise and as the controversy continued, their trust in all government--city, state and federal--deteriorated.

Citizens see participation demands as a trust issue, specifically, trust in government as regulators of the industry they work closely with, and trust in industry which stand to bear the financial costs of any clean-up operations. They distrust the technical information given to them by both government and industry. They see close political ties between government and industry and do not believe government can be impartial in its decisions. With their first choice of participation strategies, oversight board and referendum, they believe they would have some control over the process and outcome. It is reasonable to believe that citizens' trust depends upon government and industry's willingness to involve them in the decision making process and provide them with relevant information necessary for an informed opinion.

Government/industry stakeholders, on the other hand, believe technical arguments for the solution of the ground water controversy should dominate the decision. Their confidence in scientific risk assessment can be explained by their familiarity with technical analysis, which they believe proves that public health and the environment are adequately protected. Government and industry do not believe that citizens should have much of a role in the decision making process until they become better informed on relevant technical and legal issues.

When decisions are made with technical and legal expertise, neither government nor industry understands why citizens object, even though they have had no part in the solution. Until government and industry realize the importance of non-technical issues in the overall decision process, conflict with the public will continue.

TABLE 3

**DECISION CRITERIA PREFERENCES
(Government/Industry)**

Criterion	Median Rank		Individual Rank		Group Rank					Weighted Individual Rank		Overall Rank	
	Score	Order	Score	Order	Hi	Mod	Low	Score	Order	Score	Order	Score	Order
Economics Community	0	8	31	1	0	2	1	7	10	5	9	38	13
Economics Company	0	8	33	15	0	2	1	7	10	5	7	38	13
Scientific Risk Estimates	3	7	5	2	3	0	0	3	1	9	1	17	1
Personal Risk Judgment	1	1	18	5	1	2	0	5	4	17	5	24	5
Access to Information	2	5	4	1	2	1	0	4	2	3	3	18	2
Personal View Technology	1	1	27	9	1	1	1	6	7	21	6	33	10
Fairness	0	8	25	8	0	3	0	6	7	6	6	29	7
Institutional Trusts	0	8	29	10	0	3	0	6	7	6	6	31	8
Local culture	0	8	31	11	0	2	1	7	10	25	7	36	11
Community Disruption	0	8	23	7	0	2	1	7	10	25	7	32	9
Citizen Involvement	2	5	11	3	2	1	0	4	2	12	4	21	3
Technical/ Legal Education	1	1	19	6	1	2	0	5	4	5	5	25	6
Alternative Technologies	1	1	17	4	1	2	0	5	4	5	5	23	4

TABLE 4
DECISION CRITERIA PREFERENCES
(Citizens)

Criterion	Median Rank		Individual Rank		Group Rank					Weighted Individual Rank		Overall Rank	
	Score	Order	Score	Order	Hi	Mod	Low	Score	Order	Score	Order	Score	Order
Economics Community	2	5	82	11	2	2	5	21	10	110	11	37	11
Economics Company	1	1	97	13	1	3	6	25	13	169	13	40	13
Scientific Risk Estimates	2	5	79	10	2	3	4	20	7	70	9	31	10
Personal Risk Judgment	3	7	62	7	3	2	4	21	10	70	9	28	12
Access to Information	7	13	28	1	7	3	0	13	2	1	1	17	1
Personal View Technology	1	1	75	8	1	5	3	20	7	56	7	23	6
Fairness	6	11	42	3	6	2	1	13	2	6	3	19	3
Institutional Trusts	5	9	48	4	5	2	2	15	5	20	4	22	4
Local Culture	1	1	83	12	1	4	4	21	10	120	12	35	8
Community Disruption	1	1	75	8	1	5	3	20	7	56	7	23	6
Citizen Involvement	7	13	38	2	7	2	0	11	1	2	2	18	2
Technical/Legal Education	5	9	53	5	5	3	1	14	4	20	4	22	4
Alternative Technologies	4	8	57	6	4	4	1	15	5	30	6	25	8

TABLE 5
COMPARISON OF STAKEHOLDERS' DECISION CRITERIA PREFERENCES

CRITERION	Citizen Overall Rank Order	Government/Industry Overall Rank Order
Economic Impact Community	11	13
Economic Impact Company	13	13
Scientific Risk Estimates	10	1
Personal Judgment of Risks	12	5
Access to Information	1	2
Personal View Technology	6	10
Fairness	3	7
Institutional Trust	4	8
Local Culture	8	11
Community Disruption	6	9
Citizen Involvement	2	3
Technical/Legal Education	4	6
Alternative Technologies	8	4

TABLE 6

**PUBLIC PARTICIPATION STRATEGY PREFERENCES
(Government/Industry)**

Strategy	Median Rank		Individual Rank		Group Rank					Weighted Individual Rank		Overall Rank	
	Score	Order	Score	Order	Hi	Mod	Low	Score	Order	Score	Order	Score	Order
Pre-emption	3	2	11	2	1	0	2	7	8	7	8	20	6
Public Comment	3	2	9	1	2	1	0	4	1	4	2	6	1
Consultation	2	1	11	2	2	0	1	5	3	5	5	11	2
Non-Binding Agreement	4	5	13	5	2	1	0	4	1	3	1	12	3
Mediation	5	6	13	5	1	2	0	5	3	5	5	19	5
Binding Arbitration	6	7	17	7	1	1	1	6	6	6	7	27	7
Oversight Board	3	2	12	4	2	4	1	5	3	5	5	14	4
Referendum	6	7	17	7	1	1	1	6	6	6	7	27	7
Citizen Control	9	9	19	9	0	0	3	9	9	9	9	36	9

TABLE 7

**PUBLIC PARTICIPATION STRATEGY PREFERENCES
(Citizens)**

Strategy	Median Rank		Individual Rank		Group Rank					Weighted Individual Rank		Overall Rank	
	Score	Order	Score	Order	Hi	Mod	Low	Score	Order	Score	Order	Score	Order
Pre-emption	1	1	60	9	1	3	5	22	9	81	9	37	9
Public Comment	6	6	35	2	6	3	0	12	2	4	2	14	3
Consultation	2	2	58	7	2	3	4	20	8	56	8	25	7
Non-Binding Agreement	3	3	41	3	3	5	1	16	4	12	4	14	3
Mediation	1	1	55	8	1	6	2	20	6	48	7	22	6
Binding Arbitration	4	6	43	4	4	4	1	15	13	12	3	28	8
Oversight Board	8	9	21	1	1	0	22	1	22	22	1	12	1
Referendum	3	3	48	5	2	3	17	4	20	20	4	12	1
Citizen Control	4	6	48	5	4	2	3	16	6	30	6	22	4

Table 8

COMPARISON OF STAKEHOLDERS' PUBLIC PARTICIPATION STRATEGY PREFERENCES

Participation Strategies	Citizens	Government/Industry
Pre-emption	9	6
Public Hearing/Comment	3	1
Consultation	7	2
Non-Binding Agreement	3	3
Mediation	6	5
Binding Arbitration	8	7
Oversight Board	1	4
Referendum	1	7
Citizen Control	4	9

CHAPTER VII

Q FACTOR RESULTS

Two Factor Q Analysis

The 47-item Q sort data was entered into a software program known as PC QUANAL (van Tubergen 1975). Two, three, four and five factor extraction's were accomplished using the principal components method. These factors were rotated to simple structure by varimax rotation, which minimizes unexplained variance.

Only the two-factor solution was retained for analysis. Reasons for keeping the two-factor solution are that (1) each retained factor explained at least 15% of the total variance; (2) each factor produced high and pure factor loadings; (3) the total explained variance increased only 4% with the third factor (The third factor has theoretical or field interest but cannot be defended statistically); (4) additional factors produced higher commonalties and lower purities, indicating that two factors best represented unique stakeholder perspectives; and (5) the factors are of theoretical importance. Each common factor score array was interpreted by the author and validated by telephone confirmation with the stakeholder whose perspective best correlated with the perspective manifest by the common factor. The two factors collectively explained 50% of the total variance.

Table 9 contains the re-ordered factor score matrix for the two-factor solution after varimax rotation. The critical value for a significant factor loading is 0.451 (using a confidence level of 99.9%). This value is calculated as the two-tailed z score corresponding to a specific level of significance (in this case, $\alpha=0.001$) multiplied by the standard error of the loading estimate, where SE, equals $1/\sqrt{N}$ and N = number of Q items. Bold factor loadings in Table 9 are those that are statistically significant. Nineteen participant's loadings proved significant, 1 loading

was confounded, (PSC 3 loaded on factors 1 and 2). PLC 9, PSC 2, PSG2, and PLC5 were not significantly loaded on any of the factors.

TABLE 9
RE-ORDERED FACTOR MATRIX

PARTICIPANTS	FACTOR A LOADING	FACTOR B LOADING	COMMONALITY
FACTOR A			
PLC 10 Waitress	.815	.109	.966
PLC 6 Business owner	.695	.080	.949
PLC 2 Self employed (media)	.713	-.205	.923
PSC 1 Ret. Business owner	.728	.134	.912
PLC 1 Self employed	.769	.249	.887
PLC 3 Rt. Business owner	.673	.239	.868
PLC 4 Business owner	.699	.306	.834
PLC 8 Day care operator	.759	-.178	.830
PLC 11 Attorney	.509	.360	.647
PLC 7 Secretary	.454	.046	.567
FACTOR B			
PS I1 Refinery manager	-.074	.495	.955
PS G1 OWRB	-.077	.880	.893
PL G3 Hydrologist	.165	.806	.876
PS G3 Government regulator	.272	.757	.874
PL I3 Secretary	.310	.793	.863
PL G4 OSDH	.166	.737	.834
PSW Curator Museum	.302	.680	.814
PS I2 Environmental Director	-.293	.512	.752
PS C3 Teacher, Business owner	.513	.590	.537
NOT LOADED ON ANY FACTOR			
PLC 5 Business owner	.092	.326	.634
PSG 2 Senator	.405	.393	.353
PSC 2 Business own	.348	.341	.422
PLC 9 Self employed	.346	.432	.381

Table 10 presents the z-scores for each of the statements comprising each of the factors. The z-scores are used to represent the structure of a common factor by identifying each statement's relative importance. These scores are used in interpreting the perspectives held by those participants who significantly load on the factor. Those statements which score nearer to ± 1.00 are particularly useful because these statements are those which elicited strong reactions (indicating higher quantal of importance) by the participants. Differences between item scores

across factors, especially for those z-score items varying by more than 1.0 (distinguishing items), and those less than 1.0 (consensus items), also aid factor interpretation.

TABLE 10
TYPAL ARRAY Z-SCORES

Q ITEM	FACTOR	
	A	B
1. Waste facility means economic growth and prosperity for the community.	-1.3	-.7
2. Offering cash payments to a community is the same as a bribe.	.2	-.4
3. When jobs are scarce, an increase in employment is good even if there is resulting pollution.	-1.4	1.6
4. If environmental restrictions limit the ability of a company to make a profit, the restrictions should be lifted.	-1.8	1.5
5. Industry works with communities to maintain a good public image.	-.2	.4
6. Scientific risk assessment should be the major consideration in siting decisions.	-.7	1.3
7. Citizens need to control which risks they have to put up with.	.2	.8
8. We should not take any chances with the environment.	1.2	.0
9. I tolerate risk as a fact of life, but I don't like it.	.0	.8
10. It doesn't matter how much we pollute today because tomorrow's technology will solve the problem.	-1.9	2.1
11. The world would be a better place to live if we could go back to the good old days.	-.6	1.2
12. It is better to put facilities in communities with high unemployment; the people there need the jobs.	-.8	-.9
13. The People who benefit the most from a waste facility are not the ones who bear the risk.	.9	.3
14. Government and industry know what they are doing; they are the experts.	-1.8	-.4
15. Cost effectiveness is more important to industry and government than environmental issues.	.9	-.8
16. The government adequately enforces environmental laws even when it costs them money.	-2.0	.6
17. Industry usually complies with environmental laws even when it costs them money.	-1.8	.1
18. Environmental laws are full of loopholes for industry's advantage.	1.7	-1.4
19. The character of a community changes after a waste facility is located there.	-.1	-.4
20. Allowing a waste facility to locate in a community divides a community.	.3	.0
21. Waste facilities give a community a bad reputation.	-.7	-.6
22. Citizens should be involved in every step of a siting decision.	.7	1.3
23. Citizens have ample opportunity to be involved in siting decisions in their community.	-1.0	-.0
24. Industry, government and the public should decide together what level of pollution should be allowed.	.5	2.0
25. All information should be shared in easily understood language as soon as it is available.	.6	1.5
26. Who provides the information makes a difference to me; the person must be honest.	1.2	1.1

Q ITEM	FACTOR	
	A	B
27. It is really hard to know if decision makers have the same values as I do.	.8	.5
28. It is impossible to know whether or not a process is really safe without adequate technical education.	.2	.7
29. If the public were more familiar with the operation of a waste facility, they would be more willing to consider it.	-0.9	.7
30. Citizens should have their own experts.	-.3	.9
31. We would all be better off if the legal procedures were easier to follow.	.4	1.6
32. Government shouldn't be trusted in making siting decisions.	.8	-.9
33. Government uses citizen opinion against citizens.	-.2	-1.0
34. Economic special interests have too much influence in siting decisions.	1.0	-.2
35. The people living in a community know what is best for them.	.6	.4
36. Citizens should initially oppose all proposals for siting by industry.	-0.4	-1.0
37. It is better to be active today than to be radioactive tomorrow.	1.4	.8
38. If you have enough money, you can get away with polluting.	.8	-1.4
39. Conflict in decision making is necessary and healthy.	-.3	.6
40. Consensus is impossible when activists become involved in environmental decisions.	-1.1	-.6
41. The chief function of government is to support the economy.	-0.3	-1.5
42. Just being physically present in situations where environmental decisions are made is not enough.	.2	.8
43. The siting process is unfair because results provide greater risks to the people who are ethnically different or poor.	.8	-.1
44. Environmental radicals are necessary to bring balance to the issues.	.0	.6
45. There are clean technologies available that must be used now to reduce pollution.	1.6	1.1
46. Government and industry skew their risk estimates to suit their own purposes.	.9	-1.4
47. Industry must be required to recycle, reduce waste, and use safer techniques and raw materials.	1.7	1.4

Q Factor Interpretation

Q factor interpretation is accomplished by analyzing scores across factors, incorporating information obtained from other techniques used in this research and theoretical insights from other relevant studies. All factor interpretations are given short descriptive titles that best characterize the perspective revealed by the factor scores. Bold z-scores represent the factor that is the subject of the immediate discussion. Each of the Two-factor interpretations is explained and defended below.

Factor A: Guardians (GS)

This factor accounts for 35% of the total explained variance and is the dominant factor among the two factors found in the study. The Guardians (GS) factor represents the perspective shared by nine of the Ponca City Circle Drive (PCTCC) citizen activists, and a local attorney,

Q ITEM	GS	TE
18. Environmental laws are full of loopholes for industry advantage.	1.7	-1.4
47. Industry must be required to recycle, reduce wastes. And use safe techniques and raw material.	1.7	1.4
45. There are clean technologies available that must be used now to reduce pollution.	1.6	1.1

While the Guardians (GS) do not believe environmental laws adequately protect them, industry believes the laws are adequate. The Technical Experts (TE) also believe industry should be required to reduce waste, recycle and use safer technologies. This is a stewardship issue for both factors and a trust issue for the guardians.

37. It is better to be active today than to be radioactive tomorrow.	1.4	.8
8. We should not take any chances with the environment.	1.2	.0

The Guardians (GS) are risk averse and are not willing to take chances especially with the environment. They are willing to be active if necessary.

26. Who provides the information makes a difference to me; the person must be honest.	1.2	1.1
14. Government and industry know what they are doing; they are the experts.	-1.8	-.4

The Guardians (GS) are not sure that the government is knowledgeable, believing that much of the government's information comes from the industries they are supposed to regulate. Even if government or industry has the knowledge the Guardians (GS) are not sure they can be trusted.

4. If environmental restrictions limit the ability of a company to make a profit, the restrictions should be relaxed.	-1.8	-1.5
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Neither the Guardians (GS) nor the Technical Experts (TE) believe the restrictions should be lowered for economic gain.

17. Industry usually complies with environmental laws even when it costs the company money.	-1.8	.1
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Guardians (GS) do not trust industry when the bottom line is affected.

10. It doesn't matter how much we pollute today because tomorrow's technology will solve the problem.	-1.9	-2.1
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Neither the Guardians (GS) nor the Technical Experts (TE) believe technology can solve all the problems concerning pollution.

16. The government adequately enforces environmental laws to protect human health and safety.	-2.0	.6
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Statement number 16. "The government adequately enforces environmental laws to protect human health and safety" and Number 17. "Industry usually complies with environmental laws even when it costs them money," are the two statements that rank farthest apart. This indicates a lack of trust with both the government and industry.

Factor B: The Technical Experts (TE)

This factor accounts for 15% of the total variance and describes the perspective of 1 citizen activist (who is confounded on factors 1 and 2), 1 neutral citizen, 3 industry and 4 government personnel.

Q SORT	GS	TE
24. Industry, government and the public should decide together what level of pollution should be allowed.	.5	2.0
31. We would all be better off if the legal procedure were easier to follow.	.4	1.6
25. All information should be shared in easily understood language as soon as it is available.	.6	1.5

The Technical Experts (TE) wish legal procedures were easier to follow too. They are willing to allow limited citizen participation but believe they have the technical information to make informed decisions. They are willing to share technical information so the citizens might be better educated.

47. Industry must be required to recycle, reduce wastes, and use safer techniques and raw materials.	1.7	1.4
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This is a stewardship issue that both Guardians (GS) and Technical Experts (TE) agree on. The Technical Experts (TE) would like for all industry to have the same requirements in order to make a level playing field.

22. Citizens should be involved in every step of a siting decision.	.7	1.3
6. Scientific risk assessment should be the major consideration in siting decisions.	-.7	1.3

Technical Experts (TE) are willing to let citizens in on the siting decisions but scientific risk assessment should be the major deciding factor.

11. The world would be a better place to live if we could go back to the good old days.	-.6	-1.2
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Neither the Technical Experts (TE) nor the Guardians (GS) show much enthusiasm for going backwards with technology.

18. Environmental laws are full of loopholes for industry advantage.	1.7	-1.4
38. If you have enough money, you can get away with polluting.	.8	-1.4
46. Government and industry skew their risk estimates to suit their own purpose.	.9	-1.4

Technical Experts (TE) believe the laws are being followed and money is not the deciding factor in their operations or decisions.

4. If environmental restrictions limit the ability of a company to make money, they should be relaxed.	-1.8	-1.5
41. The chief function of the government is to support the economy.	-.3	-1.5
3 When jobs are scarce, an increase in employment is good even if there is resulting pollution.	-1.4	-1.6

Technical Experts (TE) agree pollution should not be allowed to make more jobs.

10. It doesn't matter how much we pollute today because tomorrow's technology will take care of the problem.	-1.9	-2.1
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Technical Experts (TE) realize not all pollution problems can be solved by technology.

Similarities Among Perspectives

Table 10A: Similarities Among Perspectives

There are 7 consensus statements (Table 10A) among the factors which are particularly salient (z score near or greater than 1.0)

TABLE 10A
CONSENSUS STATEMENTS

Q ITEM	GS	TE
47. Industry must be required to recycle, reduce waste, and use safer techniques and raw materials.	1.7	1.4
26. Who provides the information makes a difference to me; the person must be honest.	1.2	1.1
25. All information must be shared in easily understood language as soon as it is available.	.6	1.5
37. It is better to be active today than to be radioactive tomorrow.	1.4	.8
45. There are clean technologies available that must be used now to reduce pollution.	1.6	1.1
3. When jobs are scarce, an increase in employment is good even if there is an increase in pollution.	-1.4	-1.6
4. If environmental restrictions limit the ability of a company to make a profit, the restrictions should be relaxed.	-1.8	-1.5
10. It doesn't matter how much we pollute today because tomorrow's technology will solve the problem.	-1.9	-2.1

Both perspectives agree that environmental regulation and the use of clean technologies are necessary and that environmental-economic tradeoffs are inappropriate. Each factor also acknowledges the importance of sharing information involved as soon as possible. Since the Guardians (GS) do not trust government or industry to protect their communities they want independent access to information, whereas the Technical Experts (TE) want to share information so they can educate the citizens on technical issues. Both agree that technology may not be able to solve all environmental contamination problems and that preventive measures must be used. The Technical Experts (TE) agree with the Guardians (GS) that action may be needed to protect the environment.

Differences Among Perspectives

Statements that score more than one standard deviation apart across factors are particularly helpful in explaining the differences in perspectives. Only items that differ by 1.5

standard deviations or more will be discussed (see Appendix H for a complete list of item scores greater than 1 standard deviation apart).

The strongest point of disagreement between the Guardians (GS) and the Technical Experts (TE) is # 18. "Environmental laws are full of loopholes for industry advantage." This statement shows distrust of both the government and industry by the Guardians (GS). The Technical Experts (TE) believe industry and government are enforcing environmental laws fairly.

Q ITEM	PS	TE	Diff.
18. Environmental laws are full of loopholes for industry advantage.	1.7	-1.4	3.07
16. The government adequately enforces environmental laws to protect human health and safety.	-1.9	.56	-2.52

The widest margin between the factors concerns trust in government; Guardians (GS) show their lack of trust in the government to regulate industry, but the Technical Experts (TE) believe government does an adequate job.

46 Government and industry skew their risk estimates to suit their own purpose.	.95	-1.4	2.35
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Guardians (GS) show they do not trust risk assessments or industry to protect their welfare, while the Technical Experts (TE) believe industry is honest and does a good job.

15. Cost effectiveness is more important to industry and government than environmental issues.	.86	-.85	1.70
38. If you have enough money, you can get away with polluting.	.76	-1.4	2.16
17. Industry usually complies with environmental laws even if it costs them money.	-1.8	.08	-1.90

The Guardians (GS) believe money will allow one to pollute no matter what the laws are, but the Technical Experts (TE) disagree with them. The Technical Experts (TE) do not believe economics interfere with their environmental decisions.

24. Industry, government and the public should decide together what level of pollution should be allowed.	-.46	1.97	-1.51
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The Guardians (GS) do not trust industry or government to make siting decisions or to make the judgment as to how much pollution should be allowed. The Technical Experts (TE) believe risk assessments can be used to make rational decisions on siting and pollution and do not care whether the public is included in the process.

Q Factor Validation

After initial interpretation of each factor, those participants with the highest loading of the two factors were contacted by telephone to confirm the author's interpretations. Because statements in the Q sort can have different meanings to different readers, confirmation of the author's interpretation is important to validity. All participants verified the author's interpretation in telephone conversations.

Summary

Both groups agree that environmental regulation and the use of clean technologies are necessary and that environmental tradeoffs are inappropriate. Each factor group also acknowledges the importance of sharing all information involved as soon as possible. Since the Guardians (GS) do not trust government or industry, they want independent access to information, whereas the Technical Experts (TE) want to share the information so they can educate the public on technical issues. Both agree that action may be necessary for protection of the environment.

Technical Experts (TE) believe that government and industry are the experts and are acting responsibly and should be trusted to make informed decisions and that opposition is acting irrationally or out of ignorance. They strongly believe that technical education is essential to understanding and solving the contamination problem. They believe the current decision-making process is fair and offers citizens ample opportunities to participate in the process. If citizens were better educated in technical matters they would accept risk assessment as an important part of their decision making process.

The distinguishing feature of the Guardians (GS) is their pervasive distrust of government and industry. This distrust is based, at least in part, on the belief that economic and political

influence rather than environmental concerns drive the decisions made by both parties. Distrust is also driven by the often-contradictory information given to them by the government and industry. This distrust motivates the Guardians (GS) to insist on aggressive citizen oversight to ensure that the environmental quality concerns of the community are protected. They are concerned with lack of opportunity to affect siting/contamination decisions. They feel they are included, as a token, only after the decisions have already been made. They are interested not only in a place at the (bargaining) table but in having input into the decisions.

CHAPTER VIII

INTEGRATION OF FINDINGS AND CONCLUSIONS

Introduction

The Circle Drive/Conoco controversy grew from problems that had arisen from the early oil refinery days. The Marland/Conoco Oil Company had always taken care of the needs of the town; it was a company town in every respect. When the contaminated groundwater began to seep into their homes, the Circle Drive citizens expected Conoco to start remediation of the problem immediately. When Conoco refused to claim ownership of the contamination, the Circle Drive citizens lost trust in the Company and were further humiliated when many of their Ponca City neighbors supported Conoco. The Circle Drive citizens then took their complaint to the city, state, and federal governments; again they felt rebuked in their efforts. They now felt they were fighting for their health and financial future against their neighbors, Conoco, and the very state and federal government that was supposed to protect them. As one citizen activist stated in the personal interview, "All we had to lose now was our health and our home, why wouldn't we fight?"

It is clear from the data obtained through both R and Q methodology that institutional distrust and a "crises of legitimacy" existed at the time of the controversy in Ponca City. The results of this research indicate that differences between Circle Drive citizens', Conoco's and government views relating to sense of control, perception of risks, judgment of fairness, technical familiarity, scientific certainty, and most importantly, institutional distrust were the dominate factors behind the controversy. These findings support and build upon studies such as those by Armour (1991) and Duerg, Frankel, and Niemeczewski (1980) that have shown that community resistance to siting proposals is linked to four important concerns: inequities in the distribution of costs and benefits, perceived risks, feeling of loss of control over forces affecting the quality of one's life and community, and lack of trust in proponents and regulators. These findings also

support Portney's (1991) risk perception conversion theory, which states that qualitative attributes of risk objects such as familiarity, scientific uncertainty, equality in distribution of risks and benefits, and institutional trust affect the perceived level of risk.

The four research instruments used in this study consistently produced evidence that distrust – citizen distrust of industry and government and industry's distrust of citizens – is one important, if not the most important, basis of this contamination controversy.

The structured questionnaire and open-ended personal interviews of stakeholders revealed a clear lack of trust related to missing information, lack of forthrightness, and economic agendas. A perception by industry and government that the citizens and environmental groups and media were uneducated only added to the distrust.

Q methodology confirmed the results of the interviews and questionnaires, which identified two perspectives among stakeholders in the Ponca City controversy. Guardians (GS) believed the contamination in their homes was both a health and financial threat. The often-contradictory reports from government sources and Conoco denying a health threat fueled their distrust of both government and industry. With statement #18 (Environmental laws are full of loopholes for industry advantage), the citizens let it be known that they did not believe industry was being regulated correctly or that government could be trusted. Statement #46 (Government and industry skew their risk estimates to suit their own purposes) clearly illustrates that citizens lack institutional trust. The Guardians (GS) viewed the reports as having both economic and political overtones because of the close working relationship between Conoco and the government. The Technical Experts (TE), on the other hand, did not believe there was an immediate threat to the citizens' health. They disagree with statement #18. They believe environmental laws are fair and agree with #46. They do not believe industry and government skew their risk estimates to their own advantage. The Technical Experts (TE) believed statement #6, that scientific risk assessment should be the major consideration in siting solutions. Their offer to lower the groundwater in the area was a scientific technically correct solution. When the Guardians (GS) refused the offer (to lower the groundwater) they were considered uneducated, irrational, and "hysterical." This behavior added to the distrust of citizens' and environmental

groups by the Technical Experts (TE), who felt (statement #30) that citizens' should have their own experts and technical and legal education.

The card ranking results further support the Q methodology results in identifying the preferred decision criteria and participatory process. Citizens distrust technical arguments and are frustrated by their inability to influence the decision-making process. Public hearing/comment meetings are a low power, one-way-participation process that traditionally has been used by government. Citizens feel they have not been able to influence siting or contamination issues through this procedure. Industry is confident in the technical criteria that citizens distrust, and believes that citizens should have a limited role in the decision-making process, at least until they become more technically informed. State Officials are more prepared to legitimize citizens' distrust and to encourage citizen involvement if non-adversarial participatory arrangements are implemented. One government official who did not load on either factor has a unique point of view in that he shares elements of both the Guardians' (GS) and the Technical Experts' (TE) perspectives.

The following sections review the differences between the Guardians (GS) and the Technical Experts (TE) that produced gridlock in the contamination controversy.

Lack of Citizens' Sense of Control Produced Gridlock

Citizens were not willing to accept the decisions of the government or of Conoco regarding the contamination in their homes and neighborhood. The citizens wanted to be involved in the decision-making process. The decisions would affect both their health and their financial well being and they were not willing to let those decisions be made by either industry or the government without their input. Frustrations over a lack of control was apparent in the interviews, as illustrated by the following quotes:

"All the decisions were being made for us; we weren't included; it was like we didn't have good sense."

"Nobody wanted the government or the attorneys involved; at first several people tried to work individually with Conoco, but they either ignored them or insulted their intelligence."

"All we really wanted was Conoco to sit down and talk with us one to one, but they wouldn't do it; they never did; they had to have their lawyers."

This frustration led citizens to believe there were hidden agendas, risks, and injustices in the decision-making process, and that industry or the government could not be trusted to protect their community. For these reasons the citizens took matters into their own hands; unable to obtain accurate and up to date information locally, they researched information on the state level and even traveled out of state for information they felt might shed light on the problem.

"We couldn't get any cooperation from the company or the state or the U.S. EPA. We had to drive to Dallas and look up everything for ourselves even though Conoco and the state already had the information."

"We had open meetings anyone could come, but we couldn't go to their meetings; we were never invited."

Industry had a different idea as to what drove the controversy.

"It was not really a health issue; it was more a money issue."

"I think the citizens group formed because they had a groundwater problem, but I also think they were trying to profit from the issue."

Differences in Risk Perception Produced Gridlock

There is strong evidence from the open-ended interviews, Q sorts, and decision criteria to support the claim that differences in risk perception produced gridlock. Citizens' perception of risks was a significant factor motivating opposition and encouraging activism as indicated in the open-ended interviews:

"Our health was the number one issue, property values came next. It won't do anyone any good to have money if they are dead or have poor health."

"We were afraid the area would just be covered up, not cleaned up. Too many of the city and state officials didn't want to cross Conoco."

"We had to get the people out of there; nobody should ever live in that area again; that was one of our main goals."

As the citizens' researched the problem, their fears began to grow, but industry had a different opinion concerning the risks involved:

"Everything needs to be risk based; we need to consider the dollars involved and the risks."

"Solutions need to be based on good science and not on emotions and controversy."

Lack of Fairness in the Distribution of Costs and Benefits Produced Gridlock

Q sort results indicate that both sides disagreed on the fairness and distribution of costs of the controversy. Technical Experts (TE) did not feel they should take the technical and legal liability for industry practices that had gone on years before.

"We were responsible for some of the problem and we wanted to do what was right; we had a moral responsibility but we didn't deserve the negative publicity."

"It was wrong for the radicals to camp at the capitol. Their actions alienated Conoco."

"The bad publicity might affect our ability to stay in Ponca City in the long term."

The citizens of Circle Drive (PCTCC) were stung by the lack of support from the people of Ponca City.

"Everybody says, 'Well these people bought down there, they knew Conoco was there.'

But after we bought thirty years ago they put in two new smokestacks, another row of tanks, and they built Carbon Black and a fertilizer plant. It's not like it used to be."

"Poncans for Progress split the city, which they accused us of doing, but the city was not split until they formed."

"The Ponca City officials took Conoco's side, but the whole town benefited from the clean up, not just the ones who were moved out."

Difference in Technical Familiarity Produced Gridlock

There is strong evidence to support a difference in technical familiarity produced gridlock. Industry and government officials routinely work with technical issues and are familiar with technical analysis. According to their decision criteria preferences, technical familiarity leads

them to subjectively judge the risks as lower and increases their confidence that risks can be controlled through technology.

Technical Experts (TE) admit they may have to change their attitude towards citizen groups.

We, and I mean most industry, does take an arrogant attitude toward citizens groups and complaints. We do the science, base our decisions on risk analysis, and believe we are right. We don't explain to the public because we don't think they will understand. The public tends to factor in emotions and cultural norms that we don't.

Technical and legal education rated high with all sides in the Ponca City controversy. The Guardians (GS) also rated access to information as one of the highest requirements on the decision card sorts.

Differences in Belief in Scientific Certainty Produced Gridlock

Decision criteria preferences and Q sort results demonstrate the difference in Stakeholders' views of scientific and technical criteria. Technical Experts (TE) are confident in their views that scientific risk estimates are sufficient bases for decision making and ensure adequate protection of public health and the environment. Their familiarity is further supported in the Q sort results in that they believe risk analysis should be the deciding factor on siting/contamination issues (statement #6. Scientific risk assessment should be the major consideration in siting decisions). Guardians (GS) on the other hand did not put much trust in scientific risk assessment, as they rated it very low in the decision-criteria card sort.

In support of technical education, one citizen activist who had a technical education and occupation ranked risk analysis high in his Q sort, leading one to believe that technical education and familiarity, as Technical Experts (TE) suggested, may affect the decisions about technical analysis.

Differences in Social Trust of Institutions Produced Gridlock

Lack of institutional trust probably played the major role in the contamination controversy in Ponca City. The situation was unique in that Conoco had the citizens' trust and confidence in

the beginning. When the company refused to take ownership of the problem, the government gave conflicting health reports, and the local citizens turned against the Circle Drive residents, they lost all trust in the very institutions and people that they felt should have protected their interest. They felt isolated and feared for their health and welfare grew. Their attitude towards Conoco changed:

"Conoco knew there was a problem; they should have done what was right to start with."

"Conoco was in total denial in the beginning; than they stated they would lower the ground water and we could take it or leave it. Conoco was arrogant."

"It created a lot of ill feeling toward Conoco when they had their employees take off early and pack the meeting place so we couldn't get in."

Open-ended interviews and Q sort results indicated that both industry and government were distrusted (statement #14. Government and industry know what they are doing; they are the experts, statement #17. Industry complies with environmental laws even when it costs them money, and statement #18. Environmental laws are full of loopholes for industry advantage.), in part because of the close working relationship of Conoco with the same government agencies that are supposed to regulate the company. Distrust, as Hadden (1991) claims, motivates citizens to seek to assert more control over the decision-making process (e.g., preferences for oversight board, and increased citizen participation as indicated in their decision-criteria and participation-strategy card sorts).

"If Conoco had put their resources into getting along and working on the problem, the results would have been better for both sides."

"If Conoco had did what was right instead of waiting until they were forced to act, mainly by the news media, they could have bought out the area a lot cheaper."

The government officials felt their role was limited because there was no immediate health threat to the citizens.

"Our laws are sometimes economically driven, not socially driven."

"We need to be open, and share and receive information; this is critical. The agencies do have a game plan but sometimes they're not good at sharing this information."

"The problem just got too political, for everyone."

Conclusion

Lack of trust (especially of government) may be on the increase because of the distance (in miles and in actions) between the citizens and their elected officials. As the Watergate break-in, China spying episode, presidential affairs and general decline of morals with many of our elected officials make the daily news, the trust in government declines. Many have so lost faith with the government that they do not vote or take any responsibility for what happens in "Washington." As one industry participant so elegantly put it:

If you go back to the first form of democratic government and the issues around your city or village, it was ultimate democracy because if you decided, where are we going to put the building with the moon on it and where we going to dump the garbage, you just called all the villagers together and talked about it. And there is the ultimate citizen involvement and the ultimate in elected government official because somebody is going to be the mayor and the mayor is going to be accountable for making the decision. There could be ten different places people want to put the outhouse. You can establish trust because you can see them and you can see the decisions he or she makes, and you might even have someone in the village who has some technical knowledge of how to run an outhouse and you could listen to them. The problem is; as we get bigger and more complex, we get more distant from our elected officials.

As was pointed out by the industry respondent, building trust isn't easy. Trust is very fragile and even harder to replace once it has been lost.

The research hypothesis states that if in fact NIMBY organizations are a result of institutional distrust and the associated "crises of legitimacy," than consideration of additional decision criteria and the use of alternate public participation strategies incorporating these criteria will build a foundation for consensus (Focht 1995). Legitimacy and trust are regained and NIMBY actions avoided, not by further rationalization of the process, but through openness, communication, and empowerment (Edelstein 1988). These are some of the elements that were

missing in the controversy at Ponca City, which divided the citizens and resulted in turmoil and negative publicity for the town.

In the end Ponca City gained: Conoco bought out the Circle Drive area and helped financially to relocate the displaced citizens. A green belt has been planted between the refinery and the residential area and the water recovery project continues to lower the ground water in the area. While many of the Circle Drive residents were unhappy at leaving their homes and the area, they are consoled that no one will ever live in the immediate area again.

CHAPTER IX

Recommendations

Several recommendations for further research could come out of findings of this case study. Different levels of contamination may elicit different responses from the public. The Circle Drive residents had a threat that could be seen and felt (contaminated ground water seeping into their homes and neighborhood) that caused immediate fears, and as their research grew, their fears escalated. Unseen risks such as radiation from a proposed nuclear disposal site may also cause unrelenting opposition by the public, concerned with both their health and economic welfare. The results may also be different for familiar events (tornadoes) vs. the unfamiliar (earthquakes).

The culture of the community affected is often overlooked and can have a very important influence on the outcome of controversy/siting attempts. The culture of the Circle Drive area was mixed: by race, age of residents, level of education, and economic level. These variations all need to be considered. The citizens activist group (PCTCC) that was formed as a result of the controversy was a traditional grassroots group (ethnically mixed, female leadership) that is far different in make-up and responses from the traditional national environmental groups (traditionally well financed and male). The findings of this study suggest many fertile areas of research for further study in the area of TIMBY/NIMBY problems.

Recommendations for Avoiding Controversy

Q methodology has shown that the contamination problem in Ponca City was not a true conflict. Both parties wanted the same thing, remediation of the contamination. Nobody was disagreeing on the problem but they were talking around each other, not communicating. As the conflict continued, both sides attributed ideas and thoughts to the other side that were probably

not true. Conoco was not a cold, heartless corporation that did not care about the citizens. The citizen activist group was not a greedy group of rabble-rousers who wanted to take Conoco for everything they could. There were shades of gray on both sides of the issue.

Q methodology has shown that the two factors, the Guardians (GS) and the Technical Experts (TE), were not really far apart. The solutions to the problems that seemed so overwhelming can be broken down into manageable parts.

Determine What Citizens Wanted

The citizens of the Circle Drive area wanted:

1. Acknowledgment they had a legitimate concern
2. Relief from the contamination

Edelstein (1988) states the inability of a community to stop a threat affects people's sense of well being. Threatening events can shatter people's basic assumptions about the world, giving way to new perspectives marked by threat, danger, insecurity, and self-questioning. Edelstein (1988:181) adds that people may experience "feelings of depression and a sense of being helpless and disabled." When Conoco refused to legitimize the contamination concern, the citizens were denied acknowledgment that they had a problem. The Circle Drive residents were not asking for "mansions on the hill;" they simply wanted out of the contaminated area.

Determine What Conoco Wanted

1. To be a good corporate citizen
2. Remediation of the contamination at least cost to company
3. To avoid liability for past refinery practices

As one Circle Drive resident commented, Conoco was afraid to acknowledge the problem for fear of being held liable for past oil refinery practices. The negative publicity for the city and the company would affect both the city and the company. It might even affect the ability of the company to operate in the future. Everyone was talking but no one was listening.

What Q Methodology Could Have Accomplished

The conflict in Ponca City was about what each side thought the other side wanted. Those involved had no way of reaching down deep inside and finding the true conflict. The Circle Drive activists did not say in so many words that they wanted recognition for their problem. Conoco did not say it would like to clean up the contamination but did not want the liability of previous oil refinery practices. These are the unspoken but very important part of the equation that must be considered along with technical risk management in decisions concerning environmental problems.

Had the government or industry used Q methodology to measure the unseen and revealed the subjectivity involved in the conflict it would have defined what the problem really was, what the participants really wanted, and how best to reach that solution for all sides of the controversy. With Q methodology, the types of public participation and the salient criteria would have been made clear. Armed with Q data at the start of the controversy, people would have been communicating, not just talking, and Ponca City could have been the model for the nation in solving disputes.

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APPENDIXES

STRUCTURED QUESTIONNAIRE

Structured Questionnaire for the Site Custodians

under the following heading:
Structured Questionnaire

No. 105

105
105
105
105
105

APPENDIX A

STRUCTURED QUESTIONNAIRES

INITIAL QUESTIONNAIRE

Relationships and Roles in the Ponca City Controversy

The following 11 questions concern the situation that existed in south Ponca City from late 1986 until late 1990 regarding the contamination of the Circle Drive area alleged to have been caused by the Conoco refinery.

1. What relationship did you have with the Circle Drive area at the time of the situation?

- I lived in the Circle Drive neighborhood
- A member of my family lived in the Circle Drivehood
- I own property in the Circle Drive neighborhood but did not live there
- My children went to school in the Circle Drive neighborhood
- I visited a park in the Circle Drive neighborhood
- Other (specify) _____

2. From what sources did you get information about the situation? CHECK ALL THAT APPLY

- News media
- Friends and neighbors
- Conoco
- Environmental groups such as the National Toxics Campaign
- Fellow workers at my place of employment
- The Ponca City Toxic Concerned Citizens
- The Poncans For Progress
- US EPA
- Oklahoma State Department of Health
- Local government
- Other (specify) _____

3. Which of the sources listed in Question #2 did you most rely on and trust? LIST TOP 3 IN ORDER.

Most Important: _____

Second Most Important: _____

Third Most Important: _____

Why? (Explain these choices)

4. Which of the sources listed in Question #2 did you least rely on and trust? LIST BOTTOM 3 IN ORDER.

Least Important: _____

Next to Least Important: _____

Third Least Important: _____

Why? (Explain these choices)

5. **At the time of the situation**, did you believe that a clean-up of the Circle Drive neighborhood was necessary? CHECK ONLY ONE ANSWER

- No
 Yes
 I was unsure whether a clean-up was necessary
 I had no opinion one way or the other
 I don't remember what my belief was then

6. How would you describe your participation in the situation at that time? CHECK ALL THAT APPLY

- I did not participate
 I signed a petition
 I contacted a government official
 I attended a meeting of concerned citizens
 I spoke at a meeting of concerned citizens
 I helped organize a meeting of concerned citizens
 I attended a government meeting or public hearing
 I testified at a government meeting or public hearing
 I participated in a rally or demonstration
 I helped organize a rally or demonstration
 Other (specify) _____

7. How often did you participate?

- Never Seldom Occasionally Frequently Continuously

8. **At the time of the situation**, what relationship, if any, did you have with the group known as the Ponca City Toxic Concerned Citizens (PCTCC)?

- I didn't know anything about PCTCC and had no dealings with them
 I knew about PCTCC but I had no dealings with them
 I attended at least one PCTCC meeting or other function sponsored by them but I never became an active supporter or member
 I was an active supporter or member of PCTCC
 Other (specify) _____

9. **At the time of the situation, what relationship, if any, did you have with the group known as the Poncans for Progress (PFP)?**

- I didn't know anything about PFP
- I knew about PFP but I had no dealings with them
- I attended at least one PFP meeting or other function sponsored by them but I never became an active supporter or member
- I was an active supporter or member of PFP
- Other (specify) _____

10. **What relationship did you have with Conoco before or during that period of time?**

- I had no employee or business relationship with Conoco before or during the period of the situation
- I was a Conoco employee during at least some of the period of the situation
- I was a Conoco employee before the situation began but not during it
- I had a non-employee business relationship with Conoco during at least some of the period of the situation
- I had a non-employee business relationship with Conoco before the situation began but not during it
- Other (specify) _____

11. **What relationship did any family member of your household (other than you) have with Conoco before or during that period? CHECK ALL THAT APPLY**

- No household family member had an employee or business relationship with Conoco before or during the period of the situation
- At least one household family member was a Conoco employee during at least some of the period of the situation
- At least one household family member was a Conoco employee before the situation began, but no member was a Conoco employee during it
- At least one household family member had a non-employee business relationship with Conoco during at least some of the period of the situation
- At least one household family member had a non-employee business relationship with Conoco before the situation began, but no member had a business relationship with them during it
- Other (specify) _____

FINAL QUESTIONNAIRE

Demographic Characteristics

1. How close did you live to the Conoco refinery during the time of the dispute?
2. Are you now an active member of any citizens' group or service organization (other than the PCTCC or PFP)?
 No Yes
3. How often do you participate in these organizations' activities?
 Never Seldom Occasionally Frequently Continuously
4. How old are you? _____
5. Gender
 Female Male
6. What is the highest level of formal education you have attained? _____
7. What was your major subject of study in school? _____
8. What is (or was, if retired) your primary occupation? _____

APPENDIX B
OPEN-ENDED INTERVIEW SCRIPT

OPEN-ENDED INTERVIEW SCRIPT

1. How long have you lived in the Ponca City area? _____
2. Let's talk about the Circle Drive cleanup situation. I am interested in your opinions and recollections of events that occurred then. I understand that you played an active role in the events that occurred then.

Is that correct? _____ In what way, can you give me examples?
3. About when did you get involved? (ask for a date)
4. Why did you decide to get involved? (If several reasons are given, after they list them, ask which are most important)
 - a. Concerns and motives?
 - b. What do you think would have happened if you had not got involved?
5. Did anyone influence your involvement? (if yes, ascertain the relationship of the person to the respondent; e.g., family relative, friend, neighbor, fellow worker, stranger, organization, etc.)
(If no, probe-newspaper article, TV, etc.)
6. What were your concerns about the cleanup of the Circle Drive area?
(Any concerns, not necessarily environmental)
[Add important concerns to the card deck used in the ranking and sorting task, if they are not already represented there. Star items that need to be added to deck]
7. Which of these concerns were most important to you?
8. Apparently, there were some people who agreed with the cleanup proposals and some who disagreed. What things about the cleanup do you think most people agreed on?
9. Is there anything that could have been done to bring most people in agreement about the cleanup? [Why or why not?]
10. I want to ask you now about how things have changed in the community since the time you were active in the situation. How would you say things have changed in Ponca City *economically* since that time? [gotten better, worse, less jobs, etc.]

11. How have things changed insofar as your *sense of community*, in other words, how you view Ponca City as a place to live and what Ponca City means to you? [people not as friendly as before, community has become stigmatized, neighborhood disruption, traditions abandoned or changed, etc.]

12. Does the Conoco refinery seem to be as much of a health or environmental threat to you now as it had then? Why?

Now, I want to ask you whether or not the cleanup situation could have been handled differently. I am interested in your views of what things could have been done in dealing with the cleanup to better serve all members of your community.

13. Let's first talk about government's dealings with the cleanup.

What things did EPA, OSDH, and local government officials do right in presenting the proposal to the community?

14. What did EPA, OSDH, and local government officials do wrong?

15. What should EPA, OSDH, and local government officials have done in handling this issue that would have best served all members of the community?

16. Now, let's talk about industry.

What things did Conoco or DuPont officials do right in presenting the proposal to the community?

17. What did Conoco and DuPont officials do wrong?

18. What should Conoco and DuPont have done in handling this issue that would have best served all members of the community?

19. Finally, let's talk about the citizens of your community.

What things did citizens do right in dealing with the cleanup proposal?

20. What did citizens do wrong?

21. What should citizens have done in handling this issue that would have best served all members of the community?

22. Is there anything else that you would like to tell me about your feelings, concerns or suggestions about the Circle Drive cleanup situation or about hazardous waste cleanups in general that we haven't covered so far?

OPEN-ENDED INTERVIEW

QUESTIONS FOR STATE GOVERNMENT EMPLOYEE

I have been interviewing citizens involved in the south-side contamination problem (1986 to 1990) in Ponca City, and I would like your opinion, from the state's point of view, of the activities that took place.

What was your role with the state in the south-side problem?
Did you visit the area in Ponca City at any time during the controversy?

AT THE TIME OF THE CONTROVERSY:

How did the state feel about the situation, how did you see things happening at the time?

What did you believe was the main concern of the citizens group at the time?

Has your opinion changed today?

After the state assured people there wasn't any health threat and they continued to protest, what was the state's feeling towards the citizens?

What was the state's feeling toward Conoco at the time?

How do you think Conoco felt about the situation at the time?

What do you believe was Conoco's main concern about the controversy?

What was Conoco's attitude toward the citizens group?

Did you feel Conoco felt any responsibility for the contamination?

How do you think the citizens felt towards the state at the time?

What was the citizens attitude towards Conoco at the start of the situation?

Do you believe the citizens attitude towards Conoco changed as the controversy went on?

IN THE FUTURE:

From a state agency's point of view, what would be the best way for a citizens group to go about getting information and help with a problem like this?

How could the south-side problem have been handled that would have been better for everyone involved?

What did Conoco do right? Wrong?

What should Conoco do different?

What did the citizens do right? Wrong?

What should the citizens group do different?

Do you believe camping on the capital lawn helped or hindered their case?

What did the state do right? Wrong?

What should the state do different?

In making environmental cleanup and siting decisions in the future, how can *we avoid gridlock and get to negotiation instead of litigation?*

OPEN-ENDED INTERVIEW

QUESTIONS FOR CONOCO

I have been interviewing citizens involved in the south-side contamination problem (1986 to 1990) in Ponca City and I would like your observation and opinions from both Conoco and your own personal point of view, of the activities that took place.

What was your position with Conoco at the time of the south-side problem?
Did you live in the Ponca City area at the time of the controversy?

AT THE TIME OF THE CONTROVERSY?

How did you perceive Conoco felt about the situation at the time?
What was Conoco's main concern about the controversy?
What responsibility did Conoco feel for the contamination?

Concerning relations with the state, what we Conoco's feeling toward the OSDH?
What the state easy to work with? If not, why?
Did the OSDH appear to be taking the PCTCC complaints seriously?
From your point of view, what was the state's attitude towards Conoco at the time?
Did this attitude change as the controversy went on? Or afterwards?
How has the controversy affected your working relationship with the state, has there been any change?

CONCERNING THE PCTCC GROUP:

Why do you think the PCTCC formed in the first place, what were their motives?
What did you believe was the main concern of the citizens group at the time?
Has your opinion changed today?
What was Conoco's attitude toward the PCTCC group? Your personal attitude?
Was the PCTCC group easy to work with? Why?
What was the PCTCC attitude towards Conoco at the start of the situation?
Do you believe their attitude towards Conoco changed as the controversy went on?
If so, how?

IN THE FUTURE:

How could the south-side problem have been handled that would have been better for everyone involved?
What did Conoco do right? Wrong?
What should Conoco do different?
What did the state do right? Wrong?
What should the state do different?
What did the PCTCC group do right? Wrong?
What should a citizens group do different?

In making environmental cleanup and siting decisions in the future, how can *we avoid gridlock and get to negotiation instead of litigation?*

APPENDIX C
DECISION CRITERIA CARDS

CARD DECK #1

CRITERIA IMPORTANT TO COMMUNITY ENVIRONMENTAL DECISION MAKING

CARD #1: Economic Impact on the Community

Community environmental cleanup decisions can affect the economic health of the community. Economic benefits could include creation of jobs; increase in tax revenue; compensation in the form of cash payments; and improvements to parks, libraries, schools, or hospitals. Economic costs could include loss of tourism, change in land use, traffic disruption, and increases in demand for community services.

I believe that economic impact on the community should be important in making community environmental cleanup decisions.

CARD #2: Economic Impact on the Company

Private companies want to make a profit to stay in business. Ability to make a profit can be affected by various costs, including costs of environmental remediation, compliance with regulations, construction and operation, legal liability, compensation payments to the community, and limits on how the company may operate.

I believe that a company's ability to make a profit should be important in making community environmental cleanup decisions.

CARD #3: Scientific Risk Estimates

Scientific experts in government and industry claim that they can scientifically measure risk to human health and the environment. To estimate the risk that may result from a harmful event, they multiply the seriousness of the potential harm by how likely it is that the harm may happen.

I believe that scientific risk assessments should be important in making community environmental cleanup decisions.

CARD #4: Personal Judgments of Risk

People often make judgments about whether to accept or avoid risks. Factors that may be important in judging environmental risk include personal familiarity and understanding of the risk involved, whether the risks are voluntary and controllable, whether experts agree on the amount of risk, whether children or future generations are affected, and whether the risks are reversible or have delayed effects.

I believe that citizens' judgments of risk should be important in making community environmental cleanup decisions.

CARD #5: Access to Information

The ability to easily obtain relevant information in a timely manner and in an understandable way can help people make informed decisions. This is especially true if the decision involves complex issues where it is important to consider all of the facts.

I believe that assurance of citizens' timely access to relevant information should be important in making community environmental cleanup decisions.

CARD #6: Personal Views Toward Technology

Some people claim that continuing advances in technology are important to improving quality of life. Others question whether reliance on technology is always a good thing. For example, some people believe that some technologies create more harm than good and should not be used.

I believe that citizen's views toward a technology should be important in making community environmental cleanup decisions.

CARD #7: Fairness

Even though a decision may produce a community benefit when all costs and benefits are added up, some citizens or neighborhoods may experience more harm than good and other citizens or neighborhoods may experience more good than harm. Some people may consider that an unequal distribution of costs, benefits, and risks in a community is unfair.

I believe that the fairness of the distribution of benefits, costs, and risks should be important in making community environmental cleanup decisions.

CARD #8: Trust in Government and Industry

Trust has different meanings. For example, acting in the community's best interests (being a good neighbor), credibility (truthfulness, believability), and openness (accessibility, forthrightness), may each be important to judgments about whether a person or organization is trustworthy.

I believe that citizens' level of trust in government and industry should be important in making community environmental cleanup decisions.

CARD #9: Understanding Local Culture

Communities vary in their traditions, customs, values, attitudes and identities. Decisions that can affect a community may require that decision makers be knowledgeable about the local culture. Since different communities and regions of the nation have different cultures, it is not always easy to know what local values may be.

I believe that an adequate consideration of the local community's culture and values should be important in making community environmental cleanup decisions.

CARD #10: *Community Disruption*

Environmental cleanup activities may disrupt the normal flow of a community. For example, rerouting of traffic, separation of one neighborhood from another, and loss of reputation may cause a decline in a sense of community and an interruption of long-held traditions.

I believe that consideration of the potential for community disruption should be important in making community environmental cleanup decisions.

CARD #11: *Citizen Involvement*

Some citizens choose to become actively involved in decisions that affect their community or them personally. The amount of involvement not only depends on their willingness and ability to participate, but also on the opportunities that the decision process offers for participation.

I believe that the provision of adequate opportunities for citizen involvement should be important in making community environmental cleanup decisions.

CARD #12: *Technical and Legal Education*

Decisions about the cleanup of community environmental contamination involve various technical and legal issues. Technical issues may include the proper measurement of long term health risks, whether a technology will operate as it was designed, and what the odds are of a plant upset or spill that would result in a major environmental threat to the community. Legal issues may include how to understand complicated laws and regulations and what procedures apply in the decision making process. Many of these issues are difficult to understand without technical and legal training.

I believe that assurances of adequate training in relevant technical and legal areas should be important in making community environmental cleanup decisions.

CARD #13: *Alternative Technologies*

It used to be commonplace for waste to be disposed of by dumping it into landfills and open pits. Recently, there have been efforts to find alternatives to land disposal. One approach is to develop new manufacturing and processing techniques that do not generate toxic waste, for example, by recycling wastes back into the process or by the use of less dangerous raw materials. For those toxic wastes that cannot be eliminated, new and innovative waste treatment methods are being developed that can convert them into non-toxic forms without creating emissions or discharges to the environment.

I believe that preference for alternative technologies such as recycling and non-emitting waste treatment should be important in making community environmental cleanup decisions.

16

17
18

APPENDIX D
PARTICIPATION STRATEGY CARDS

19

CARD DECK #2: CITIZEN PARTICIPATION STRATEGIES

CARD #1: *Preemption*

The expertise of government officials is relied on to make cleanup decisions. The public is effectively excluded from participating directly in the decision making process.

I believe that community environmental cleanup decisions should be made by experts in government and industry.

CARD #2: *Public Comment and Hearing*

The government makes a tentative cleanup decision, announces it to the public, considers comments received from the public, and then makes a final decision.

I believe that community environmental cleanup decisions should be made by the government, but only after the public has had a chance to comment on the proposals.

CARD #3: *Consultation*

Government conducts public meetings, distributes information, conducts surveys, and asks for comments throughout the entire cleanup decision process. Government considers all public comments before making cleanup decisions.

I believe that community environmental cleanup decisions should be made by the government, but the public should be allowed to voice its concerns throughout the entire decision making process.

CARD #4: *Non-Binding Negotiation*

Company officials are required to enter into preliminary negotiations with citizen representatives of the community. Any agreement that may be reached will be delivered to government decision makers for their consideration. However, the final cleanup decision will be made by the government. Its decision may or may not include any or all of the agreement.

I believe that the citizens of a community and the company should be allowed to try to reach an agreement before the government makes community environmental cleanup decisions.

CARD #5: *Third Party Mediation*

A neutral third party attends all meetings between citizen representatives of the community and the company concerning the environmental cleanup of the community. The mediator attempts to help the parties to reach an agreement. This agreement is then forwarded to the government for their consideration; however, the government is free to include none, part, or all of the agreement in its decisions.

I believe that a mediated agreement between the community and the company should be reached before the government makes community environmental cleanup

decisions; however, the government may pick and choose which, if any, parts of the agreement to include in its decisions.

CARD #6: *Binding Arbitration*

A fixed period of time (e.g., one year) is provided to allow community and industry representatives to try to reach a voluntary agreement on how environmental cleanup of a community would be accomplished. If no agreement is reached during this time, an experienced arbitrator will consider the positions of both parties and develop a document that binds both parties. Industry is required to pay for, but the citizens select, the arbitrator. Subject to verification of legality, the government is required to attach the agreement to its permit and enforce it as part of its oversight duties.

I believe that an independent arbitrator should be brought in to resolve any disputes between citizens and industry concerning community environmental cleanups and that the government should be required to enforce the arbitrator's decisions.

CARD #7: *Oversight Board*

An oversight board composed of an equal number of citizens (selected by a consensus of public interest groups in the community), industry representatives, and government representatives provides continuous control of the entire decision making process. All parties agree to abide by the oversight board's decisions.

I believe that an oversight board, composed of equal numbers of representatives from government, industry, and self-selected citizens, should be used to oversee the entire decision making process concerning community environmental cleanups.

CARD #8: *Referendum*

Any community environmental cleanup proposal must be approved by a vote of the majority of the community before it can take effect.

I believe that community environmental cleanup proposals should be approved by a majority vote of the citizens of a community before they can take effect.

CARD #9: *Citizen Control*

The community itself controls the community environmental cleanup decision process. A citizens' committee, whose representatives are chosen by members of various environmental, community action, neighborhood development, and other citizens' groups, make all decisions. The government and industry are bound by the decisions of the committee and must provide whatever funds are necessary to comply with the decisions of the committee.

I believe that community environmental cleanup decisions should be made solely by the citizens of a community and that industry and government should be bound by those decisions.

Q. QUESTIONS FROM TEXT

1.

2.

3.

4.

APPENDIX E

Q QUESTIONS AND FORM BOARD

QUESTIONS FOR Q SORT

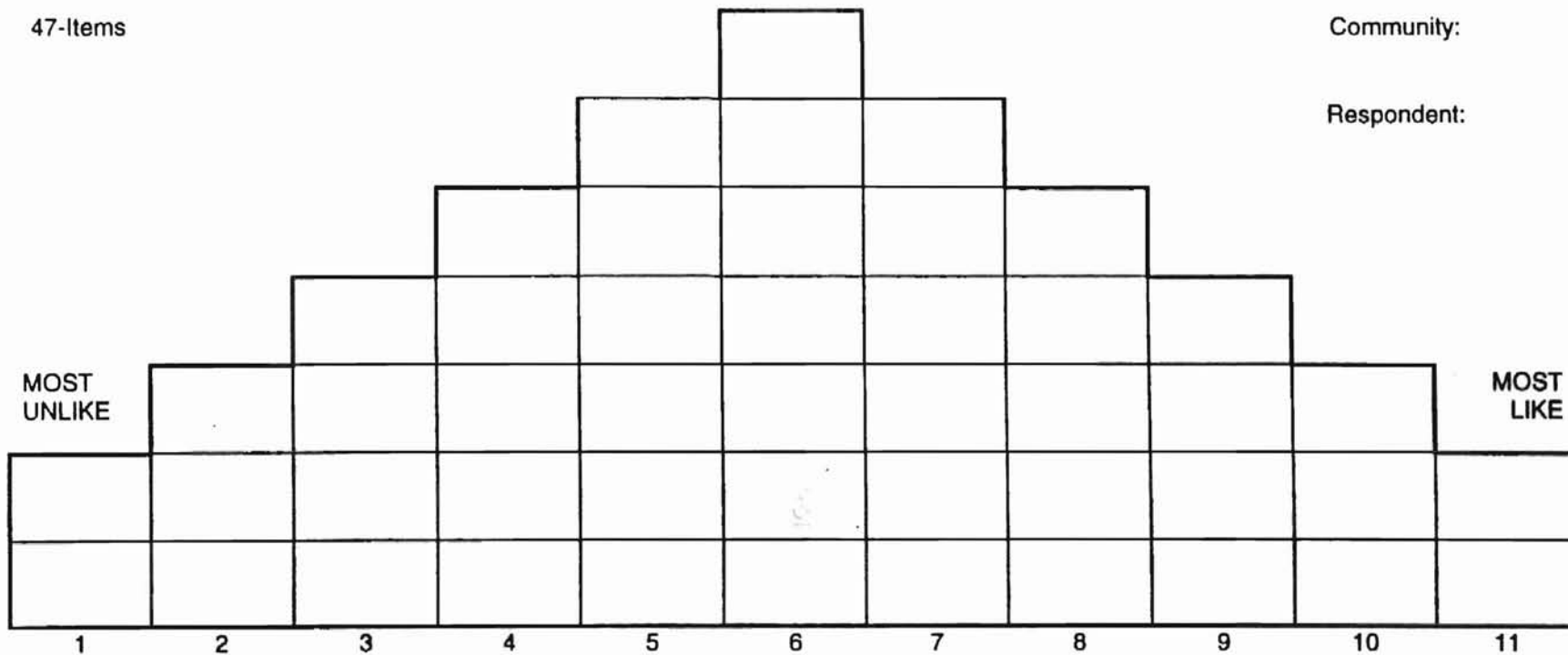
1. Waste facility siting means economic growth and prosperity for the community.
2. Offering cash payments to a community is the same as a bribe
3. When jobs are scarce, an increase in employment is good even if there is resulting pollution.
4. If environmental restrictions limit the ability of a company to make a profit, the restrictions should be relaxed.
5. Industry works with communities to maintain a good public image.
6. Scientific risk assessment should be the major consideration in siting decisions.
7. Citizens need to control which risks they have to put up with.
8. We should not take any chances with the environment.
9. I tolerate risk as a fact of life, but I don't like it.
10. It doesn't matter how much we pollute today because tomorrow's technology will solve the problem.
11. The world would be a better place to live if we could go back to the 'good old days'.
12. It is better to put facilities in communities with high unemployment; the people there need the jobs.
13. The people who benefit the most from a waste facility are not the ones who bear the risks.
14. Government and industry know what they are doing; they are the experts.
15. Cost effectiveness is more important to industry and government than environmental issues.
16. The government adequately enforces environmental laws to protect human health and safety.
17. Industry usually complies with environmental laws even when it costs them money.
18. Environmental laws are full of loop holes for industry advantage.
19. The character of a community changes after a waste facility is located there.
20. Allowing a waste facility to locate in a community divides the community.
21. Waste facilities give a community a bad reputation.
22. Citizens should be involved in every step of a siting decision.
23. Citizens have amole opportunity to be involved in siting decisions in their communities.
24. Industry, government and the public should **decide together** what level of pollution should be allowed.

25. All information should be shared in easily understood language as soon as it is available.
26. Who provides the information makes a difference to me; the person must be honest.
27. It's really hard to know if the decisions makers have the same values as I do.
28. It is impossible to know whether or not a process is really safe without adequate technical education.
29. If the public were more familiar with the operation of a waste facility, they would be more willing to consider it.
30. Citizens should have their own experts.
31. We would all be better off if the legal procedures were easier to follow.
32. Government shouldn't be trusted in making siting decisions.
33. Government uses citizen opinions against them.
34. Economic special interests have too much influence in siting decisions.
35. The people living in the community know best what is good for them.
36. Citizens should initially oppose all proposals for siting by industry.
37. It is better to be active today than to be radioactive tomorrow.
38. If you have enough money, you can get away with polluting.
39. Conflict in decision making is necessary and healthy.
40. Consensus is impossible when activists become involved in environmental decisions.
41. The chief function of the government is to support the economy.
42. Just being physically present in situations where environmental decisions are made is not enough.
43. The siting process is unfair because the results provide greater risks to people who are ethnically different or poor.
44. Environmental radicals are necessary to bring balance to the issues.
45. There are clean technologies available that must be used now to reduce pollution.
46. Government and industry skew their risk estimates to suit their own purposes.
47. Industry must be required to recycle, reduce waste and use safer techniques and raw materials.

47-Items

Community:

Respondent:



MOST UNLIKE

MOST LIKE

125

FIGURE A.1. Q SORT FORM BOARD (47 ITEM)

APPENDIX F
CARD SORT RANKING

TABLE A-1

DECISION CRITERIA CARD SORT RESULTS

DECISION CRITERIA CARDS	C1	C2	C3	C5	C6	C8	C9	C10	C11	G13	G14	I20
Economic Impact Community	11	12	<i>11</i>	12	4*	5*	<i>11</i>	11	5	12	<i>11</i>	8
Economic Impact Company	12	8	10	13	13	13	13	6	9	13	<i>10</i>	<i>10</i>
Scientific Risk Estimates	10	13	7	1*	12	8*	8	8	12	1*	2*	2*
Personal Judgment Risks	9	4*	12	6	5*	3*	6	10	7	9	5	4*
Access to Information	3*	6	2*	5	6	2*	1*	1*	2*	2*	1*	1*
Personal Views Technology	13	3*	9	7	7	<i>11</i>	<i>10</i>	9	6	8	13	6*
Fairness	2*	9	3*	9	2*	<i>10</i>	2*	4*	1*	5	9	11
Institutional Trust	8	<i>11</i>	1*	4	1*	4*	3*	3*	13	<i>10</i>	<i>12</i>	7
Understanding Local Culture	6	5	5*	10	<i>11</i>	12	12	12	10	11	8	12
Community Disruption	7	<i>10</i>	<i>13</i>	11	8	9	7	7	3*	4*	6*	<i>13</i>
Citizen Involvement	5	7	4*	8	3*	1*	4*	2*	4*	3*	3*	5*
Technical/legal Education	1*	2*	6	2*	9	7*	5*	13	8	6	4*	9
Alternative Technologies	4*	1*	8	3*	<i>10</i>	6*	9	5	11	7	7	3*
Factor	GS	GS	GS	GS	GS	GS	GS	GS	GS	TE	TE	TE

***Bolded** numbers represent most preferred,
italicized numbers represent somewhat preferred
 numbers in normal font represent not preferred.

Factor –

GS = Guardians, TE = Technical Experts

TABLE A-2

**FREQUENCY DISTRIBUTION OF DECISION CRITERIA CARD RANKINGS
GUARDIANS (GS)**

Criterion	Frequency Distribution (Important)		
	Highly	Somewhat	Not
Community Economic Impact	2	2	5
Company Economic Impact	0	3	6
Scientific Risk Estimates	2	3	4
Personal Judgment of Risk	3	2	4
Access to Information	6	3	0
Personal Views Toward Technology	1	5	3
Fairness	6	2	1
Trust in Government/Industry	5	2	2
Understanding Local Culture	1	3	5
Community Disruption	1	5	3
Citizen Involvement	6	2	1
Technical and Legal Education	5	3	1
Alternative Technologies	4	4	1

TABLE A-3

**FREQUENCY DISTRIBUTION OF DECISION CRITERIA CARD RANKINGS
TECHNICAL EXPERTS (TE)**

Criterion	Frequency Distribution (Important)		
	Highly	Somewhat	Not
Community Economic Impact	0	1	1
Company Economic Impact	1	5	1
Scientific Risk Estimates	3	0	0
Personal Judgment of Risk	1	2	0
Access to Information	2	1	0
Personal Views Toward Technology	1	2	0
Fairness	0	3	0
Trust in Government/Industry	0	3	0
Understanding Local Culture	0	2	1
Community Disruption	0	2	1
Citizen Involvement	2	1	0
Technical and Legal Education	1	2	0
Alternative Technologies	1	2	0

APPENDIX G
FREQUENCY DISTRIBUTION OF PARTICIPATION STRATEGY CARD RANKINGS

TABLE A-4

PARTICIPATION CRITERIA CARD SORT RESULTS

PARTICIPATION STRATEGIES	C1	C2	C3	C5	C6	C8	C9	C10	C11	G13	G14	I20
Pre-emption	6	9	9	6	8	9	8	1*	4	7	8	3*
Public Hearing/Comment	2*	6	2*	3*	6*	6	2*	7	1*	2*	3*	4
Consultation	5	7	8	5	9	7	1*	8	2*	1*	2*	8
Non-Binding Agreement	4	3*	4	2*	2*	5	7	9	5	4*	7	1*
Mediation	7	8	5	8	3*	8	6	3*	7	3*	5	5
Binding Arbitration	8	4	6	1*	7*	2*	3*	6	6	5*	6	6
Oversight Board	1*	1*	1*	4*	4*	1*	4*	4*	3*	3*	1*	2*
Referendum	3*	2*	7	9	5*	4*	5	5	8	6	4*	7
Citizen Control	9	5	3*	7	1*	3*	9	2*	9	9	9	9
Factor	GS	GS	GS	GS	GS	GS	GS	GS	GS	TE	TE	TE

***Bolded** numbers represent most preferred, *italicized* numbers represent somewhat preferred numbers in normal font represent not preferred.

Factor –
GS = Guardians, TE= Technical Experts

TABLE A-5**FREQUENCY DISTRIBUTION OF PARTICIPATION STRATEGY CARD RANKINGS
GUARDIANS (GS)**

Criterion	Frequency Distribution (Important)		
	Highly	Somewhat	Not
Pre-emption	1	4	4
Public Hearing/Comment	6	3	0
Consultation	2	4	3
Non-binding Agreement	3	6	0
Mediation	1	6	2
Binding Arbitration	4	4	1
Oversight Board	8	1	0
Referendum	4	2	3
Citizen Control	4	2	3

TABLE A-6**FREQUENCY DISTRIBUTION OF PARTICIPATION STRATEGY CARD RANKINGS
TECHNICAL EXPERTS (TE)**

Criterion	Frequency Distribution (Important)		
	Highly	Somewhat	Not
Pre-emption	1	2	0
Public Hearing/Comment	2	1	0
Consultation	2	0	1
Non-binding Agreement	2	1	0
Mediation	1	2	0
Binding Arbitration	1	1	1
Oversight Board	2	0	1
Referendum	1	1	1
Citizen Control	0	0	3

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APPENDIX H
DESCENDING ARRAY OF DIFFERENCES BETWEEN FACTORS A AND FACTORS B
(DIFFERENCES GREATER THAN ONE)

TABLE A-7

**DESCENDING ARRAY OF DIFFERENCES BETWEEN FACTORS A AND B
(DIFFERENCE GREATER THAN ONE)**

	Factor A	Factor B	Diff.
18. Environmental laws are full of loopholes for industry advantage.	1.7	-1.4	3.1
46. Government and industry skew their risk estimates to suit their own.	.9	-1.4	2.4
38. If you have enough money, you can get away with polluting.	.76	-1.4	2.4
15. Cost effectiveness if more important industry and government than environmental issues.	.86	-.85	1.7
32. Government shouldn't be trusted in making siting decisions.	.82	-.87	1.7
8. We should not take any chances with the environment.	1.2	.02	1.2
41. The chief function of the government is to support the economy.	-.34	-1.5	1.2
34. Economic special interest have too much influence in siting decisions.	.95	-.17	1.1
31. We would all be better off if the legal procedures were easier to understand.	.42	1.6	-1.1
30. Citizens should have their own experts.	-.30	.93	-1.2
14. and industry know what they are doing; they are the experts.	-1.8	-.45	-1.3
29. If the public were more familiar with the operations of a waste facility, they would be more willing to accept it.	-.85	.66	-1.5
24. Industry, government and the public should decide together what level of pollution should be allowed.	-.46	2.0	-1.5
17. Industry usually complies with environmental laws even when it costs them money.	-1.8	.08	-1.9
6. Scientific risk assessment should be the major considerations in siting decisions.	-.70	1.3	-2.0
16. The government adequately enforces environmental laws to protect human health and welfare.	-2.0	.56	-2.5

APPENDIX I
RESEARCH APPROVAL

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH

Date: 04-12-93

IRB#: AS-93-064

Proposal Title: PRAGMATIC APPROACHES TO RESOLVING GRIDLOCK IN
THE SITING AND REMEDIATION OF HAZARDOUS AND RADIOACTIVE
WASTE FACILITIES

Principal Investigator(s): Mike Hirlinger, Keith Willet, Jim
Lawler

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW
BOARD AT NEXT MEETING.

APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A
CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR
BOARD APPROVAL. ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO
BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for
Deferral or Disapproval are as follows:

Signature:

Maria L. Tilley
Chair of Institutional Review Board

Date: April 23, 1993

VITA

Orva Sue Garrett Rothgeb
Candidate for the Degree of
Master of Science

Thesis: TIMBY CONFLICT: Q METHODOLOGICAL STUDY OF THE CIRCLE DRIVE/CONOCO
CONTROVERSY

Major Field: Environmental Science

Biographical:

Personal Data: Born in Ponca City, Oklahoma, to Orval and Grace Garrett.

Education: Graduated from Ponca City High School, Ponca City, Oklahoma in 1954;
Associate in Science, Nursing, from Northern Oklahoma College, Tonkawa,
Oklahoma, 1973; Bachelor of Science from St. Mary of Plains, Dodge City,
Kansas, 1988. Completed requirements for Master of Science degree with a
major in Environmental Science at Oklahoma State University, December, 1999.

Experience: Environmental Activist, Partner in Rothgeb Inc., Agriculture Enterprise, 1957
to present, Tonkawa, Oklahoma; Hospital Supervisor, Emergency Department
RN, Medical/Surgery RN, Patient Educator and Program Coordinator, for St.
Joseph Regional Medical Center, Ponca City, Oklahoma, 1973 to present,
Southwestern Bell, Ponca City, Oklahoma; Bookkeeper, Security Bank and Trust,
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Professional Memberships: Sigma Theta Tau International Nursing Honor Society,
National League of Nursing, St. Mary of Plains College Nursing Honor Society,
Order of Campanile Summa cum laude.