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Robert D. Benford
University of Nebraska - Lincoln

Helen A. Moore
University of Nebraska - Lincoln, hmoore1@unl.edu

J. Allen Williams Jr.
University of Nebraska - Lincoln, jwilliams2@unl.edu

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*In Whose Backyard?: Concern About Siting a Nuclear Waste Facility**

Robert D. Benford, Helen A. Moore, and J. Allen Williams, Jr.,
University of Nebraska–Lincoln

Proponents of hazardous and nuclear waste depositories label opponents to local siting of such facilities "NIMBYs" (Not In My Backyard). This study assesses the extent to which the NIMBY label and the strategies of industry proponents to reduce opposition function on a reasonable set of assumptions. Using survey data and multiple regression techniques, the levels of concern of residents living in the county selected as the site of a low level radioactive waste disposal facility (imminent threat condition) are compared with a statewide sample (hypothetical threat condition). Consistent with proponents' theoretical assumptions, the levels of concern are greater for respondents under conditions of imminent threat than of hypothetical threat. However, within the host county, levels of concern are lowest, albeit most polarized, in the community closest to the proposed site. A conflict theory approach enhances an understanding of these findings by suggesting that within the most proximate community levels of concern are lowest for citizens who stand to gain the most economic benefits from the facility but highest for those citizens who are least likely to derive tangible gains.

Introduction

In recent years attempts to locate hazardous and nuclear waste facilities have typically been followed by local protest, usually vigorous and organized. In this paper we examine social and demographic characteristics of individuals and their levels of concern about living near a low-level radioactive waste facility. A statewide sample of Nebraskans is compared to persons living in Boyd County, a Nebraska county selected as a facility site. Additionally, individuals living in Butte, the town in Boyd County nearest the proposed site, are compared to those in other communities within the same county. The analysis focuses on the sociological and psychological assumptions underlying current siting policies and strategies.

History of Siting Selection

In 1980 Congress passed the Low-Level Radioactive Waste Policy Act assigning disposal responsibility to the states. States were encouraged to form

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regional compacts for this purpose and 1993 was set as the deadline for implementing the act. Nebraska joined Arkansas, Kansas, Louisiana, and Oklahoma in establishing the Central Interstate Compact in 1983 and was designated as host state for the site in 1987.

As required by Nebraska's siting legislation, the developer, US Ecology, was charged with locating three potential sites for the waste facility. Three counties were selected as possible sites in 1989, and approximately one year later US Ecology named Boyd County as its preferred location. As of March 1992 US Ecology's license application was being reviewed by the Nebraska Department of Environmental Control. If the application is approved, the scheduled date for opening the facility is January 1, 1993.

Opposition groups formed quickly in the three counties chosen as potential sites. Discord in Boyd County after its final selection for the site appears to have been especially acrimonious. Furthermore, conflict has not been confined to a dispute between the Boyd County community and those involved in placing the facility in the county (US Ecology, the Central Interstate Compact, and others), but also between residents within the county favoring and opposing the facility. Conflict has included interruptions and walkouts at meetings of the County Monitoring Committee, fights and shootings (although there have been no serious injuries to date), vandalism, arrests, law suits, an extended hunger strike by an opposition leader, and a gubernatorial race in which the incumbent was replaced by a candidate who opposed locating the facility in Nebraska.

Theoretical Considerations

Public conflict over siting noxious facilities is the rule rather than the exception (Freudenburg and Rosa 1984; Clary and Kraft 1988; Brion 1991; Goldsteen and Schorr 1991; Ladd and Laska 1991), so much so that the acronym *NIMBY* (Not in My Backyard) was coined to refer to this opposition (Amour 1984). A major strategy often recommended by developers and other industry proponents has been to compensate those who would be affected through economic benefits or incentives. Grounded in rational choice theory assumptions (Coleman 1992), the compensatory approach postulates that proponents perceive the benefits of such facilities as outweighing the probable costs while opponents view the risks as greater than the benefits (O'Hare 1977; Hadden and Hazelton 1980; Portney 1985). Opposition is expected to be stronger among persons living near a designated site since they would assume a greater risk while the benefits would be diffused throughout the wider population (Walsh 1981; Matheny and Williams 1985).

Public education is a second strategy, often used in conjunction with economic compensation. For example, Slovic, Fischoff, and Lichtenstein

(1981) make the theoretical assumption that the "NIMBY Syndrome" is an irrational fear stemming from a lack of information or misinformation. Matheny and Williams (1985) propose combatting opposition with comprehensive information, hence the title of their article, "Knowledge vs. NIMBY." They suggest that an educational approach "could conceivably bring the public's awareness of the issues beyond the NIMBY consciousness by engendering trust in those near the site and by mobilizing the rest of the indifferent public toward a realization of the long-term consequences of neglecting the problem" (Matheny and Williams 1985, p. 73).

Proponents point out that the strategies devised to overcome opposition to hazardous waste sites are based on genuine concerns about the potential harm that would result from failure to construct storage and/or treatment facilities. Risks and costs grow increasingly severe for all when delays in developing facilities occur. Inadequate storage and illegal disposal are additional legitimate concerns. Clearly, waste exists and something must be done with it (Carter 1987; Clary and Kraft 1988). Apparently it is for these reasons that the pejorative acronym *NIMBY* is often used to refer to siting opponents. Carter (1987), for example, refers to NIMBY as the dark side of repository siting and Portney (1985) states that NIMBY is a social malady. However, Portney (1991, p. 11) suggests reserving the NIMBY label for people who feel it is desirable to site a particular type of facility somewhere as long as it is not where they personally live.

Neither economic compensation nor public education has been especially successful in altering people's perceptions of risks associated with hazardous and nuclear waste disposal and treatment facilities (Hansen 1984; Portney 1984, 1991; Andrews and Pierson 1985; Brent 1987). This raises the question of whether these strategies are based on an accurate understanding of the reasons underlying opposition. That is, does opposition stem primarily from a refusal by persons living near a proposed site to accept the risks for the good of the larger society? If so, why is a balancing compensation uneffective? Does opposition arise because people are uninformed or misinformed and thus exaggerate the dangers? If so, why has education not changed opinions? Is it, really, as Aharoni (1981) suggests, because people desire a risk-free society?

Several social scientists operating from a conflict theory perspective point out that the mitigating strategies of proponents have often been directed toward the most vulnerable categories of people (Bullard 1983; Morrison 1986; Bright 1990; Gould 1990; Wiley 1991). Furthermore, the benefits derived from the production, storage, and treatment of waste disproportionately favor the more affluent. According to this view, the real NIMBYs are the more wealthy and powerful, because those with the fewest resources are the ones having to take the risk, while the community's elites derive the greatest

benefit. Freudenburg and Pastor (1992) suggest that using the label *NIMBY* to refer to opponents serves the function of making it easier for proponents to discount them. Given these possibilities, instead of a reaction based on selfishness or irrationality, opposition would be expected to arise from those who had the least power to prevent the site from being located in their backyard.

Not only may there be, as a conflict model suggests, differential vulnerability, costs, and benefits related to location in the stratification system (dimensions of wealth, prestige, and power), but the possibility that opposition is a rational response to a real or potential danger should not be overlooked (Mitchell 1984; Gould and Goldman 1991). To the extent that the risk is real, objective education could heighten concern rather than reduce it, and there is some evidence suggesting that opponents are as well informed about the issues as proponents (Nealy, Melber, and Rankin 1983; Clary and Kraft 1988). The possibility of informed opposition, in turn, has implications for the compensatory approach. It is possible that some opponents may know the risks and compensatory benefits associated with a given situation and find the tradeoff unacceptable (Randall 1988). Consequently, the reality of current waste problems may not necessarily convince someone that he, she, or *even someone else*, should endure the risks of being located near a hazardous waste facility. Nor will the individual be persuaded to accept financial compensation if the costs are perceived as too great, such as damaged health or potential loss of life.

Results of Previous Research

Correlates of environmental concern tend to be issue-specific (Buttel and Flinn 1974; Van Liere and Dunlap 1980; Mazur 1981). Consequently, we focus on the few studies that appear to be the most relevant; studies that deal with attitudes and/or behavior with respect to nuclear or hazardous waste issues. While support and opposition to the use of nuclear energy and the disposal of nuclear waste are found across all demographic and social categories, some factors appear to increase the likelihood that individuals will take a particular stance. Variables that have been examined and found to have some bearing on the question include education, age, sex, marital status, presence of children in the household, and occupation.

Whereas the large majority of general studies have found a positive association between education and environmental concern, studies related to nuclear and hazardous waste issues have tended to find the reverse. Less well-educated people tend to be more opposed to using nuclear energy (Melber, Nealey, Hammersla, and Rankin 1977; Mazur 1981), are more concerned about radioactive contamination of soil and water (Kohut and Shriver 1989),

and were more likely to leave the Three Mile Island vicinity at the time of the nuclear accident (Dohrenwend, Dohrenwend, Warheit, Bartlett, Goldsteen, Goldsteen, and Martin 1981). While lower levels of formal education do not necessarily reflect less knowledge about nuclear issues, the negative association between education and concern could support either the proposition of the opponent as uninformed or the conflict hypothesis of the opponent as more vulnerable.

Some studies have reported a negative relationship between age and concern about nuclear technology (Dohrenwend et al. 1981; Mazur 1981). Nealey et al. (1983), on the other hand, report that opposition to nuclear power plant construction was higher among the youngest and oldest age categories, and Kohut and Shriver (1989) show a similar pattern for a national sample with respect to concern about contamination of soil and water from nuclear facilities. These studies provide possible support for the conflict model's notion of vulnerability in that there is evidence that among adults, the youngest, especially those less than the age of 25, and oldest, those over 65, tend to have the least resources and hence the least power (Atchley 1985).

Surveys conducted in recent years have rather consistently found women to be more concerned than men regarding nuclear and hazardous waste issues (Dohrenwend et al. 1981; Levine 1982; McStay and Dunlap 1983; Brody 1984; Hamilton 1985; Kohut and Shriver 1989; Portney 1991). The observed sex difference may help support the "vulnerability" hypothesis in that women, on the average, have fewer resources than men. On the other hand, if men have greater knowledge about nuclear technology and have reached the conclusion that it is safe, then the NIMBY hypothesis remains a possible explanation (Arcury, Scollay, and Johnson 1987).

Several studies have found married persons and parents among the most concerned about nuclear and hazardous waste issues (Dohrenwend et al. 1981; Levine 1982; Hamilton 1985). In fact, the category of persons by far the most likely to have left the vicinity of Three Mile Island after the nuclear accident was that of families with a preschool child (Dohrenwend et al. 1981). Parents would not be expected to have less knowledge than others but, with the possible exception of the elderly widowed, they could be considered more vulnerable to siting by virtue of having concerns about their children and possibly greater costs associated with geographic mobility (Blocker and Eckberg 1989). Portney (1991), on the other hand, finds no significant difference between women with and without children and opposition to siting a hazardous waste treatment facility.

National data from a 1979 Gallup survey show persons in professional and business occupations and those in clerical and sales are more likely than manual workers and those in the "nonlabor force" to favor using nuclear power

to meet future energy needs (Nealey et al. 1983). The latter categories may have the fewest resources, but they also may have less knowledge. The present study introduces farming as an occupational variable, given its potential significance related to locating the nuclear waste facility in a rural county where farming is a major industry.

Method

Samples

A statewide survey of 1,869 adults (age 18 and above) was conducted in October 1989 by the Bureau of Sociological Research (BOSR) of the University of Nebraska-Lincoln. In June 1990 BOSR surveyed 347 Boyd County households on behalf of the Boyd County Monitoring Committee. Respondents for both samples were selected through random digit dialing and interviewed by telephone. The refusal rate for those contacted in the state sample was 11.5 percent and the refusal rate for Boyd County was 4.3 percent. Appropriate weights were assigned to items to assure that sample characteristics were representative of the state and county populations. Thus, after deleting respondents from the three counties in the state sample that were potential sites, the first sample includes respondents who knew a low-level radioactive waste disposal facility would not be located in their immediate vicinity, but nonetheless were asked to imagine that it was going to be located in their county (hypothetical threat condition), while the second sample included individuals who knew their county, or "backyard," had been selected (imminent threat condition).

In addition to the surveys, we conducted in-depth interviews of 17 people involved in the Boyd County waste disposal siting controversy during June 1991. The interviews included people who identified themselves as opponents, proponents, or neutral regarding the waste facility issue. Although the results of this ongoing qualitative study are not reported here, those data are used as a reliability check on the survey data and as a means of assisting in the interpretation of the findings reported below.

Dependent Variable

To measure the overall level of concern about locating a nuclear waste facility in one's county, the following statement was read to respondents.

> Nebraska has been selected as a location for a regional site of a low-level radioactive waste disposal facility. There is a good deal of discussion about its location. Government and industry say that property located near low-level waste facilities are safe; on the other hand, environmentalists and others believe they are not safe. If a low level radioactive waste disposal facility were located in your county, how concerned would you be?

Respondents in Boyd County were given the following stem statement: "You may have heard that there are plans to locate a low-level radioactive waste

facility in Boyd County in Nebraska." Responses for both samples were coded as: (1) not too concerned; (2) somewhat concerned; (3) very concerned; and (4) extremely concerned.

Independent Variables

Residence is categorized as: (1) rural farm; (2) rural non-farm; (3) small town or city; and (4) metropolitan area. Education is measured by number of years of school completed. Marital status is dichotomized between those currently married and all others. The presence of children refers to households in which any children under the age of 18 are living. Additionally, the following occupational categories were included in the analysis: professional, managerial, sales/clerical, crafts, labor, farmer, and houseworker. Retirement status is dichotomized between those currently retired and all others, including houseworkers. The category of business owners refers to those who indicated they owned a business other than a farm.

In the following analysis we compare the responses of those in a hypothetical threat condition (state sample) with those in an imminent threat condition (Boyd County sample) to examine whether these threats under the two conditions tend to support proponent assumptions or an alternate set of assumptions.

Findings

A majority of respondents in both the samples indicated a high level of concern with siting a nuclear waste facility in their county. Under conditions of imminent threat, Boyd County residents voiced only a slightly higher level of overall concern, with 71 percent indicating "very concerned" or "extremely concerned," as compared to 65 percent for those in the state or hypothetical threat condition. However, there is a much larger difference at the most heightened level of concern with 50 percent of those in Boyd County saying they are extremely concerned compared to only 36 percent of those in the state sample. The samples are significantly different in concern ($X^2 = 25.04$, $P < .001$).

Multiple regression analyses were used to examine the relationship between each of the independent variables and the level of concern about locating a nuclear waste facility. Separate equations were run for the hypothetical threat (state) and imminent threat (Boyd County) conditions. As shown in Table 1, six variables are significantly associated with the level of concern for the hypothetical threat condition. Consistent with the most previous research, the data show that women, persons with less education, and younger people are significantly more likely to say they would be concerned about locating a nuclear waste disposal facility in their county. Married persons are also more likely than those not presently married to express concern. However, contrary to expectations, the presence of children under

Table 1

Regression Analysis of Attitudes Toward Siting a Nuclear Waste Facility, Comparing State and Boyd County Level of Concern with Proximity of Facility

	Nebraska (N = 1802)			Boyd County (N = 325)		
INDEPENDENT VARIABLES	b	Standard Error	Beta	b	Standard Error	Beta
Female	.414	.057***	.194	.547	.160***	.250
Married	.145	.055**	.067	-.298	.140*	-.135
Age	-.006	.002**	-.097	-.000	.005	-.007
Education	-.069	.025**	-.073	-.009	.061	-.009
Residence	.012	.029	.010	.014	.076	.012
Children present	.102	.060	.047	.229	.168	.097
Business owner	-.130	.101	-.033	-.072	.222	-.023
Farmer	.312	.125**	.070	.533	.317	.188
Houseworker	.031	.100	.010	.250	.296	.090
Managerial	.065	.107	.018	.354	.355	.093
Sales/clerical	.144	.089	.051	-.160	.337	-.038
Crafts	.262	.120*	.061	-.141	.420	-.024
Labor	.084	.089	.031	.353	.301	.105
Retire	.077	.110	.027	.115	.314	.049
Constant	2.813	.178		2.666	.468	
	R^2 = .058	F = 7.85***		R^2 = .089	F = 2.17**	

* = $p \leq .05$ ** = $p \leq .01$ *** = $p \leq .001$ all 2-tailed tests

eighteen in the household is not associated with the levels of concern. Regarding occupations, farmers and crafts persons are more likely than those in other occupations to express concern. A multivariate analysis confirmed that the levels of concern in Boyd County are significantly higher than in the state (beta = .240, $p < .001$).

The findings for Boyd County, on the other hand, produce quite different results. In Boyd County, with the higher level of concern under this condition of imminent threat, the effects of education, age, and occupation are no longer evident. The greatest levels of concern in this county are voiced by women.

One anomalous finding concerns marital status. As in the state findings, marital status is significant, but in Boyd County single people (which includes never married, divorced, and widowed) are more likely to express concern. Cross-tabular comparisons of the two samples indicate that the change is a consequence of singles becoming more concerned under conditions of imminent threat rather than married persons becoming less concerned. Specifically, whereas married persons are equally concerned in the state and Boyd County samples (67 percent very or extremely concerned in both samples), single people in Boyd are significantly more concerned than singles in the state (76.6 percent compared to 60.8 percent; $X^2 = 11.364$, $P < .001$). However, checks for interaction effects failed to reveal the factors associated with this difference. Instead, a consistent and stable relationship exists between marital status and concern levels in Boyd County.

The data show that a significantly higher percentage of persons in Boyd County than in the state as a whole would be extremely concerned if a low-level radioactive waste facility were to be located in their county. This finding suggests that persons faced with an imminent threat are more likely to be concerned than those who only consider a hypothetical possibility. If this is true, then it would follow that the persons in Boyd County who can expect to be living nearest to the facility would be the most concerned. The designated site is 2.5 miles west of the village of Butte. The distances from the site for other communities in Boyd County are Naper, 10.5 miles west, Spencer, 11.5 miles east, Bristow, 18.5 miles east, and Lynch, 24.5 east.

Using telephone prefixes as approximate residential locations in and surrounding the five towns mentioned above, allowed us to compute community-specific levels of concern. The findings are presented in Table 2. Whereas Butte residents should be the most concerned, according to the idea that proximity to a site increases the perceived risks, calculations of mean scores indicate the least concern in Butte ($X^2 = 59.595$, $P < .001$). Moreover, when residence is included as a variable in a multiple regression analysis controlling for the other independent variables previously discussed (Table 3), Butte is not only significantly different from the other communities, it ranks

Table 2
Concern for Siting a Nuclear Waste Facility in Boyd County by Community

CONCERN*	Naper $N = 57$		Bristow $N = 28$		Lynch $N = 47$		Spencer $N = 112$		Butte $N = 83$	
	N	%	N	%	N	%	N	%	N	%
Extremely concerned	31	(54.4)	15	(53.6)	16	(34.0)	71	(63.4)	32	(38.6)
Very concerned	15	(26.3)	7	(25.0)	12	(25.5)	27	(24.1)	7	(8.4)
Somewhat concerned	9	(15.8)	6	(21.4)	13	(27.7)	5	(4.5)	21	(25.3)
Not very concerned	2	(3.5)	0	(0)	6	(12.8)	9	(8.0)	23	(27.7)

*Chi Square = 59.595 $p < .001$

Table 3
Regression Analysis of Attitudes Toward Siting a Nuclear Waste Facility
Boyd Sample Controlling for Butte Residence

Level of Concern with Proximity of Facility (N = 325)

INDEPENDENT VARIABLES	b	Standard Error	Beta
Butte resident	-.676	.131***	-.275
Female	.533	.154***	.244
Married	-.246	.135	-.112
Age	.000	.005	.008
Education	-.006	.059	-.006
Residence	.031	.073	.028
Children present	.275	.161	.117
Business owner	-.053	.213	-.017
Farmer	.468	.305	.165
Houseworker	.086	.286	.031
Managerial	.193	.343	.051
Sales/clerical	-.365	.327	-.085
Crafts	-.369	.406	-.062
Labor	.256	.290	.076
Retired	-.032	.304	-.013
Constant	2.843	.451	
R^2 = .161	F = 3.97***		

* = $p \leq .05$ ** = $p \leq .01$ *** = $p \leq .001$ all 2-tailed tests

as the best predictor of concern (beta = $-.676$, $P < .001$). Lynch, on the other hand, is furthest from the site and has the second lowest level of concern. However, the percentage distributions of concern in these two communities shows a relatively even distribution in Lynch, but with more in the extremely-concerned than in the not-very-concerned category. Butte, on the other hand, is clearly polarized. The communities of Naper, Bristow, and Spencer have higher, and approximately the same, levels of concern and the distributional patterns are quite similar also.

Backyards and Vested Interests

Additional analyses were undertaken in order to explain the unexpected finding of lower levels of concern in and around Butte, the area closest to the proposed nuclear waste disposal site. Statistical analyses indicate that the Butte area is not socially and demographically different from other areas in the county and that the factors differentiating opponents from proponents in Butte function in the same manner as in the larger statewide and countywide samples. Of course, we can be less confident about the findings from the Butte area data since the sample consists of only 89 respondents.

Interviews with proponents and opponents in Boyd County confirm that the level of concern regarding the proposed waste facility is high throughout the county but relatively lower in Butte. Several people suggested that long-standing intercommunity rivalries, especially between Spencer and Butte regarding a high school consolidation controversy, were partly responsible for differences in the levels of concern across the communities. However, it seems unlikely that the particular factors mentioned could account for the distribution of concern across all of the Boyd County communities, nor could it account for the degree to which Butte has become polarized over the waste facility issue.

The survey data could be interpreted as consistent with either the NIMBY or vulnerability hypothesis. One possibility is that the twin-pronged educational and compensatory strategies have shifted the benefit-cost balance assessment. From this perspective, rather than calling into question proponent assumptions, the lower levels of concern and polarization in the community nearest the proposed site could be interpreted as indicative of the efficacy of industry efforts to overcome the NIMBY syndrome.

The developer contracted a public relations firm to allay citizens' fears regarding the safety of the facility and to publicize the economic benefits Boyd County would enjoy from the proposed development. The public relations firm, in turn, established a pro-facility community group, "People for Progress in Boyd County." Facility proponents conducted bus tours to nearby nuclear power plants and produced and distributed glossy literature promoting the

facility's safety and economic benefits. Citizens were informed, for example, that Boyd County would receive $300,000 a year until the facility is operational and would then receive $2 million a year for thirty years (Lincoln Star 1991, pp. 1, 8). Community leaders in Butte expect to receive a large portion of these funds. Additionally, the developer (US Ecology n.d.) has provided a pamphlet indicating that the selected community can expect to receive "corporate participation in local community programs" (Chambers of Commerce, United Way), direct employment of 20 site operators, indirect employment, local acquisition of goods and services, scholarships to students from high schools located near existing sites, and direct compensation for "community service improvements to adequately service the site." The developer (US Ecology n.d.) concludes that "Conservatively, a regional low-level radioactive waste facility can stimulate local economies by as much as $3-6 million annually."

These data cannot identify change over time, but they do suggest that Butte residents respond differently to the imminent threat condition than do residents of their neighboring communities. Some of the differences may be explained by these deliberate inducements. Reductions in the proportion of opponents could be interpreted as consistent with proponent assumptions, but these reduced concern levels and polarization could also be consistent with the vulnerability hypothesis.

A demographic profile of Butte respondents revealed that those who said they were extremely concerned (N = 32) tended to be females, single, elderly (age 70 to 96), rural dwellers, and houseworkers or retirees. By comparison, those responding as the least concerned (N = 23) were more likely to be males, married, middle-aged (age 40 to 69) and either business owners, managers, sales persons, or crafts persons. Women were twice as likely as men to say they were extremely concerned (46.9 percent compared to 22.5 percent) and half as likely as men to say they were not too concerned (16.3 percent compared to 37.5 percent). Single persons were more likely than married to respond as extremely concerned (51.8 percent compared to 29.0 percent) and less likely than their married counterparts to respond not too concerned (14.8 percent compared to 30.6 percent). Nearly all single persons who responded as extremely concerned were retirees or single mothers with children present in the household.

Butte residents who responded as extremely concerned were compared to their demographic counterparts in the other Boyd County communities. Among those living in or near Butte, men, married people, the middle-aged, urban dwellers, and business owners were significantly less likely than their counterparts living in the other communities to respond as extremely concerned. These analyses also revealed that among women, single persons,

the elderly, houseworkers, and retirees, the levels of concern are consistently high regardless of the Boyd County community in which they reside.

Males, middle-aged persons, business owners, and persons in occupations such as management, sales, and crafts are more likely than other Butte citizens to say they are not very concerned about any potential danger from the radioactive waste. This would seem to be consistent with the idea that these persons would most likely benefit from the economic compensation. Considering that their counterparts in the other Boyd communities tend to be significantly more concerned about the proposed facility, it seems reasonable to suggest that the developer's compensatory strategy has been effective in reducing the levels of concern among those Butte residents who have vested interests in the development. Conversely, that women, the elderly, retirees, and those residing on farms near Butte respond as extremely concerned is consistent with conflict theory's notion of vulnerability. These are the persons who are the least likely to benefit from such a development as well as being the least likely to be able to defend or insulate themselves against deleterious effects.

Conclusion

The results of this study strongly suggest that the predictors of opposition to locating a nuclear waste disposal facility in one's backyard are multiple, complex, and contextually situated. Different people may be concerned about the threat for different reasons and may change their views when the threat becomes more imminent. The findings also reveal the limitations of proponents' theoretical assumptions regarding the reasons for opposing a noxious facility. A conflict model, which takes social stratification and the differential distribution of power and subsequent rewards into account, seems better suited to the task of explaining differential support across demographic categories for such a facility.

Under the hypothetical threat condition, our findings are consistent with those reported by other researchers; that is, the less educated, younger respondents, married people, and women tend to express the highest levels of concern regarding nuclear waste disposal sites. When comparing the statewide data with Boyd County, hypothetical versus more imminent threat, the significant predictors change dramatically. Age and education are not significant under the imminent threat condition and the marriage variable reverses its direction. These findings seem to indicate that most everyone becomes more concerned under these conditions. Even so, women continue to display higher levels of concern than men when the analysis shifts from the hypothetical to the imminent threat condition.

Moving from the imminent threat area to a more specific proximity to the

waste facility, the closest community, while polarized, has a considerably higher proportion of persons who indicate they are not too concerned. Although the number of Butte respondents is too small to conduct multivariate analyses, certain patterns are discernable. Respondents who are the least concerned tend to be persons who stand to gain the most from the development of the facility, while those who are the most concerned are the least likely to derive any personal benefits. Just as some opponents may in fact be perceived as having selfish motives for opposing a nuclear waste disposal site, some proponents may have vested interests in supporting the construction of such a facility in their backyard. Our analysis suggests that a major weakness of the proponent explanation is that it fails to specify who will be the NIMBYs and the conditions under which they are likely to be so.

To the extent that the NIMBY label is used pejoratively, the implication is that those who oppose the location of hazardous waste sites in their backyards are selfish people who are unwilling to accept some risk for the common good. This fails to examine the structural situations of NIMBYs. Some respondents are more able than others to appear unselfish. They are the well-educated, economically secure, upwardly and hence often geographically mobile who, due to their advantaged position, have a number of options other than being saddled with the label NIMBY or having to live near a noxious facility. First, they may welcome a hazardous waste facility to their community (to their poorer neighbor's backyard), cloaked in the mantle of good citizenship, while using their status to ensure that they accrue a disproportionate share of the facility's benefits. Second they may avoid having the hazardous wastes in their backyard by using their resources or power to affect decisions. If those strategies fail, they can move elsewhere. For the poor, elderly, uneducated, and relatively powerless, such options are less available. They are, in short, more vulnerable. The question thus becomes in whose backyard? Once it is in our backyard, such demographic differences may shift or disappear. This appears to be the case for most social and demographic categories studied.

Our initial analyses tend to support the proponent assumption that the NIMBY syndrome can be mitigated by education. The higher the education, the less a respondent was likely to be concerned. Yet, this effect disappears in Boyd County. These changes may be explained by a heightened level of concern across social and demographic categories once the threat becomes imminent. Although data are unavailable to explain why, it seems reasonable to assume that this amplified concern is partly attributable to the citizens of Boyd County becoming more informed on the issue of nuclear waste disposal once their county was designated as the site. If this assumption is valid, it raises the question of what being informed means. A high level of education,

per se, does not ensure that a person stays current on all issues. Nor does it say much about which issues will be the most salient. And when an issue is sufficiently salient for a person to become informed, researchers and analysts may lack the specifics on the content of the information to which the individual has been exposed. The actual content of that information is especially problematic given the diverse scientific and political interpretations regarding the hazardous waste disposal issue.

In addition to facilitating an understanding of the validity and dynamics of sociological and psychological assumptions underlying current siting policies and strategies, a serendipitous finding consistent with conflict theory emerged from the present study. The compensatory strategy, ironically, appears to cultivate conflict as it promotes support within the community nearest the facility. The data suggest that citizens in a community located near a proposed nuclear waste disposal facility perceive that the purported economic benefits of such a depository will not accrue equally across social and demographic categories. The concern levels of those citizens most likely to derive immediate, tangible rewards from the facility are significantly low in comparison to their counterparts living in other nearby communities. In contrast, those least likely to benefit directly from the facility development and the associated financial compensation tend to remain just as concerned as their counterparts in other communities. Hence, the community becomes polarized. Moreover, because the community's elites tend to support the facility and because developers tend to enlist local spokespersons for their educational campaigns, reports emanating from the proximate town tend only to extol the development's benefits and to minimize the associated risks. This may serve to amplify intercommunity conflict. Citizens from the nearby communities perceive the host community as comprised primarily of greedy people willing to put their neighbors at risk for a fast buck while the proponents accuse facility opponents of being NIMBYs.

Apart from the foregoing findings which bear directly on the research objectives, two additional implications of the research deserve mention. First, although this paper does not explore how socio-demographic factors affect siting decisions, we suggest they are taken into consideration by developers and other industry proponents. It is noteworthy that Boyd County has a higher proportion of older, retired residents as compared to the rest of the state. These are the people who tend to be least able to resist the siting of such a facility or to derive economic benefits from it. Moreover, like many rural counties, Boyd suffers from economic and population declines. According to facility opponents interviewed, the selection of Boyd County as the disposal site was based primarily on the county's demographic, economic, and political vulnerability rather than upon geological and hydrological desirability. Taken

together, these observations seem to support Morrison's (1986, pp. 204–205) contention that hazardous wastes, by conventional social practice, will end up in the ghetto—often the "rural ghetto."

Finally, this study bolsters recent calls for methodological precision in operationalizing environmental concern variables (Van Liere and Dunlap 1981; Freudenburg 1991). In particular, researchers should take care in clarifying the extent to which an environmental threat is represented as hypothetical or as imminent. The two are not synonymous. Indeed, the present study suggests that the dynamics of siting noxious facilities can dramatically affect the relative salience of such an issue for various populations and hence affect the correlates of concern.

ENDNOTE

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