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I am submitting herewith a thesis written by Angela R. B. Makres entitled "Recreancy and Environmental Concern: A Partial Replication of the Freudenburg Model Using Data from Oak Ridge, Tennessee." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Sociology.

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RECREANCY AND ENVIRONMENTAL CONCERN: A PARTIAL REPLICATION OF THE FREUDENBURG MODEL USING DATA FROM OAK RIDGE, TENNESSEE

A Thesis

Presented for the

Master of Arts Degree

The University of Tennessee, Knoxville

Angela R. B. Makres
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DEDICATION

This thesis is dedicated to my parents, Bill and Mary Lou Brock, whose continuous love, support, and encouragement have made this educational experience, as well as so many others, possible.

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ABSTRACT

Previous research on environmental concern has focused primarily on the sociodemographic and ideological attributes of respondents. Past research has ignored cognitive factors in predicting levels of environmental concern. This thesis partially replicates a study conducted by William R. Freudenburg, which focused on a phenomenon that he coined recreancy: "the failure of institutional actors to carry out their responsibilities with the degree of vigor necessary to merit the societal trust they enjoy."

Data for this study were collected via a random sample telephone survey of residents in an eight county area surrounding, and including, Oak Ridge, Tennessee; a designated Superfund site. The results suggest that the recreancy perspective is more important in explaining environmental concern than sociodemographic and ideological variables, so heavily studied in past research. Therefore, it is important that measures of recreancy be included in future research of environmental concern.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	Statement of the Problem	1
	Review of the Literature	5
	Sociodemographic Explanations of Environmental Concern	5
	Ideological Explanations of Environmental Concern	9
	Elaborations and Extensions	11
	Mistrust as an Explanation of Environmental Concern	13
	Analytical Framework for Study	19
II.	PROCEDURES	20
	Sample and Data	20
	Dependent Variable	20
	Independent Variables	22
III.	RESULTS	27
	Data Analysis	27
	Environmental Concern	28
	Global-Level and Community-Level Environmental Concern	28
	Environmental Concern As an Extension of Public Health	31
IV.	DISCUSSION AND CONCLUSIONS	43
	Contributions	44
	Conclusion	46
REFERENCES		47
APPENDIX		
ORHASP SURVEY INSTRUMENT		53
VITA		63

LIST OF TABLES

TABLE		PAGE
1.	Description of Variables	25
2.	Regression Analyses of Global-Level and Community-Level Environmental Concern	29
3.	Regression Analyses of the Seriousness of Health Problems	32
4.	Full Model Logistic Analysis of the Awareness of Contamination	35
5.	Full Model Logistics Analysis of the Presence of Health Problems in the Household	36
6.	Reduced Model Logistic Analysis of the Awareness of Contamination	37
7.	Probability Estimates of the Reduced Model of the Awareness of Contamination	39
8.	Reduced Model Logistic Analysis of the Presence of Health Problems in the Household	40
9.	Probability Estimates of the Reduced Model of the Presence of Health Problems in the Household	41

CHAPTER I

INTRODUCTION

Statement of the Problem

Throughout the 1960s and 1970s, protest over environmental hazards grew considerably as the levels of scientific understanding became more sophisticated. As changes in measurement technology progressed, certain environmental hazards were socially defined, or redefined. As a result, an increased awareness was created and important changes were made in the way people thought about, tolerated, and responded to risks to themselves and their communities.

In the early 1960s, Rachel Carson's analysis of poisoning by pesticides sparked environmental activism as well as strong opposition from many corporations. Her book helped to alter existing conceptions of corporate responsibility. This new awareness marked the beginning of environmental movement organizations and voluntary associations concerned with the environment, public health, consumer protection, and worker safety issues in the United States (Clarke, 1988).

Ralph Nader's Unsafe At Any Speed also contributed to changing conceptions of corporate responsibility. His book's widespread acceptance signalled the shift toward the use of the legal system to force corporations to take responsibility for the hazards they sometimes create (Clarke, 1988).

Such events revealed that corporate officials, and others

in powerful positions, were not always working in the best interests of the people they served. The result was decreased public trust in the abilities of institutional actors to meet the responsibilities required of them. These declining levels of trust soon expanded from corporations to include governmental organizations.

In the 1970s, Watergate marked the one of the biggest political scandals in U.S. history. In 1974, when President Nixon resigned, Americans discovered that he had authorized the Watergate cover-up. Previously, the President of the United States was seen by many as an infallible leader who would never participate in such a deceptive illegal scheme. For many, this event reinforced the changing conceptions and increasing distrust of corporations, industry, and government.

Before the Three Mile Island accident in March 1979, a clear majority of U.S. citizens favored nuclear power. But after the incident, public support declined considerably. The public consistently mentions plant safety and waste disposal as the main concerns about nuclear energy. Opposition to nuclear power stems not so much from the public's lack of knowledge of the technical details; it is more a concern of the accountability and credibility of the technical experts (Freudenburg and Rosa, 1984).

Public concerns with information on nuclear waste management have led to fears of deception, due largely to the methods by which this information has been transmitted. As

more and more information is revealed on the history of nuclear waste management, the incompetence and bad judgments that were masked by military and industrial secrecy become increasingly apparent. This secrecy has engendered public distrust in the officials responsible for risk management (Freudenburg and Rosa, 1984). Recent research indicates that public distrust could be an strong predictor of environmental concern (Freudenburg, 1993).

Past research on environmental concern has focused mainly on the characteristics of individuals, such as sociodemographics and political ideological identification. More recent studies have shifted the focus to the identification of the cognitive attributes of a population related to environmental concern. Freudenburg (1993) sought to examine public mistrust of the institutions responsible for risk management as a determinant of environmental concern. He found the public's mistrust of regulators explained about three times the variance in levels of environmental concern as sociodemographic and ideological variables combined.

Given the lack of theoretical and empirical interest in cognitive factors that affect environmental concern, these concepts should be investigated in greater detail. Although sociodemographic and ideological variables have proven in past research to be significant predictors of environmental concern, it is evident that they explain only a relatively small percentage of the variance (Van Liere and Dunlap, 1980;

Honnold, 1981; Freudenburg, 1993; Wall, 1995). Therefore, it is crucial for researchers to identify better indicators of environmental concern. Through his research, Freudenburg has discovered one such possibility: public mistrust of regulators. However, replication of his study is required to ensure its validity.

Accordingly, this thesis examines a local community's level of environmental concern via a model including mistrust, sociodemographic, and ideological variables. The local community selected for the study is Oak Ridge, Tennessee, the town adjacent to the federal government's nuclear weapons facility. The Oak Ridge Reservation (ORR) is one of the Department of Energy's 17 sites involved in nuclear weapons production. About 680,000 people live within a 50-mile radius of the 37,000 acre site. All the streams on the reservation flow into the Clinch River, which joins the Tennessee River 23 miles downstream.

For over 50 years, by accident and intention, hazardous and radioactive materials have traveled off the ORR. Radioactive and hazardous releases to air and water have occurred since Oak Ridge operations began. In the earliest years, record-keeping was sporadic. Yet even today, uncertainty continues about the amounts of contamination being released and the potential for public exposure.

In November 1989, the ORR was placed on the Environmental Protection Agency's (EPA) National Priority List (Superfund).

The listing acknowledged serious contamination problems in Oak Ridge and set in motion a series of activities, required by the federal Superfund law, to contain and clean-up wastes and to protect public health and the environment.

Review of the Literature

Studies at the global, national, local and community levels have measured the attitudes, behaviors, knowledge, and personality traits of citizens that are most concerned with the environment. Researchers have focused their energies on determining the types of people most concerned about environmental quality. Sociodemographic and ideological variables have been the most commonly analyzed predictors of environmental concern. The literature on sociodemographic variables as indicators of environmental concern has concentrated mainly on class, education, gender, and age. The studies examining ideological variables as explanations of concern have focused primarily on liberalness, party preference, and an individual's attitudes towards regulation.

Sociodemographic Explanations of Environmental Concern

Several sociodemographic predictors of concern for the environment are generally supported by the research. One study in particular concluded that the strength and consistency of the interrelationships make sociodemographic, as well as ideological, variables good predictors of environmental

concern (Tognacci et. al., 1972).

Some studies have suggested that concern with the environment is mainly a middle class issue. In their study of a local community in Boulder, Colorado, with no present or potential environmental threats, Tognacci, Weigel, Wideen and Vernon (1972) found that individuals expressing the most concern for the environment tended to be from the middle-class. McEvoy's study (1972) revealed a similar tendency. However, Cutter (1981) found environmental concern to be a lower-class issue. In seeking to determine how community attitudes toward pollution differed among varying levels of pollution in Chicago, she found that the areas with the highest concern for pollution were the community areas with the highest mobility rates, highest densities, lowest housing values, and highest percentages of apartment dwellers.

Much of the research is consistent in finding that a high level of education is correlated with increased environmental concern (Tognacci et. al., 1972; McEvoy, 1972; Wall 1995). Buttel's (1979) state-wide study of Wisconsin residents also revealed education to be a strong predictor, but age was more strongly associated with environmental concern than education.

Many studies have found age to have a strong negative relationship with environmental concern (Tognacci et. al., 1972; McEvoy, 1972; Buttel, 1979; Hamilton, 1985). However, in Honnold's study (1981) of data from **General Social Surveys** for the years 1973-1978, she found that, although age had the

greatest direct effect on the dependent variables, the overall variance in environmental concern explained by sociodemographic variables was low. Wall concluded in her study (1995) that age has less of an impact on environmental attitudes than it did in the 1970s because awareness of environmental issues has been more dispersed throughout the population as a result of increased media exposure.

Another predictor of environmental concern that has received much attention is gender. The research suggests that females have higher levels of concern for the environment than males (Hamilton, 1985). Borden and Francis's study of personality and sex differences in environmental concern (1978) found that environmentally concerned females appeared to be more extroverted than females that were environmentally indifferent, and more than environmentally concerned males as a whole. McStay and Dunlap (1983) studied sex differences in concern for environmental quality. They found women were more environmentally concerned than men among their samples of the public and environmentalists. Females, however, were more likely to engage in personal pro-environment behaviors (cutting down on driving, saving newspapers for recycling, and avoiding environmentally damaging products), while males were more likely to engage in public pro-environment behaviors (contacting government officials, contacting a business or industry, and writing a letter to a newspaper or magazine).

Overall, prior research suggests that individuals having

the greatest concern for their environment are young adult women with children, well-educated, who are living in rural areas. Other indicators that are prevalent in the research, but less distinct as determinants, are occupation, income, race, housing, length of residence, and proximity to pollution.

Although previous research has increased our understanding of environmental concern, it has emphasized sociodemographic variables as the sole indicators, and it has neglected cognitive processes. While many researchers agree that sociodemographic variables are good determinants of environmental concern, some of the specific findings contradict conclusions from other studies. For example, some studies found that environmental issues were dominantly a middle-class concern (Tognacci et. al., 1972), and yet others found environmental concern to be strongly prevalent among citizens living in low income areas (Cutter, 1981). Although sociodemographic predictors are important in this type of research, it would appear that other factors are viable as well. Cognitive determinants, such as attitudinal variables and underlying belief structures, are missing from much of the prior research on environmental concern. It is important that these indicators be studied in conjunction with sociodemographic predictors (Kowalewski and Porter, 1993; Samdahl and Robertson, 1989).

Van Liere and Dunlap (1980) found that only 10 to 15

percent of the variance in environmental concern could be explained by sociodemographic variables. They suggested that researchers pay as much attention to the cognitive determinants of support for environmental protection, as they do the demographic determinants.

> . . . to achieve a better understanding of the social bases of environmental concern researchers should conceptualize such concern more precisely than has generally been done in the past, and also pay at least as much attention to the cognitive as to the demographic determinants . . . (P.194)

Ideological Explanations of Environmental Concern

Past literature suggests that politically liberal citizens tend to be more concerned with environmental issues than their conservative counterparts (Tognacci et. al, 1972; Dunlap, 1975; Samdahl and Robertson, 1989). Identification with the Democratic party has also been found to be an indicator of a more serious attitude toward environmental problems, as opposed to Republican, or more conservative groups (Wall, 1995).

Most studies which focus on political ideology and environmental concern have uncovered similar findings. Individuals with a liberal ideology tend to perceive environmental problems as more serious and threatening than those holding a more conservative view (Tognacci et. al., 1972; Dunlap, 1975). Samdahl and Robertson (1989) found a pro-regulatory, liberal ideology to be a strong predictor of support for environmental issues.

The research also suggests that affiliation with the Democratic party is an important determinant of environmental concern (Wall, 1995). Respondents that identified themselves with the Democratic party tended to exhibit a greater concern for environmental issues (Dunlap, 1975).

Buttel and Johnson (1977) conducted personal interviews with 231 community elites in 32 small and medium-sized communities in Wisconsin to investigate the multi-dimensionality of environmental beliefs and environmental reform. Two distinct types of reform were studied: amelioration, or improvement of the existing political-economic institutions, and massive societal redirection, where ecological effects are considered to be central. They found that although the redirective mode of environmental concern did not have a clear political association, the ameliorative method of environmental concern did have a statistically significant relationship to Democratic Party preference.

Although it is important to consider demographics - such as ideology, political party affiliation, and stance on regulation - in studying predictors of environmental concern, it is equally important not to limit research to these types of variables alone. Researchers are merely tapping the surface of attitudes and belief structures when ideological variables are the focus of studies. It is vital that researchers consider ideological variables along with sociodemographic variables in combination with other cognitive determinants,

such as trust in authorities. Researchers can thus gain a better understanding of the variance in environmental concern that is explained by each group of variables.

Elaborations and Extensions

Cutter (1981) sought to determine how community attitudes toward pollution varied among different social groups and with different levels of pollution in Chicago. Although she found that the areas with the highest concern for pollution were the community areas with the highest mobility rates, highest densities, lowest housing values and highest percentages of apartment dwellers, she also found that high pollution levels were indicative of high concern. She concluded that social and environmental indicators were equally important in the prediction of community concern.

Kowalewski and Porter (1993) proposed that postindustrialism has a society-wide, rather than a class-specific, impact. Therefore, environmentally minded citizens could be distinguishable from others by their orientations toward specific and concrete issues. They suggested that attitudinal variables on concrete issues, namely political alienation and risk perceptions, may be found to be more important predictors of environmentalism than sociodemographic variables. The two perspectives were incorporated into a single design that examined the positions of citizens on a proposed nuclear waste facility in a western New York

community. They found attitudinal variables to be better predictors of environmental concern than sociodemographic variables.

Gooch (1995) found that the bases of environmental concern vary across countries. His study on environmental attitudes in Sweden and the Baltic states yielded some interesting findings. He conducted interviews in urban Estonia, Latvia, and Sweden, using four different scales to measure environmental beliefs and attitudes. One scale included in the study measured concern for environmental conditions. The results of the study showed that the expected correlations between the four scales were only partially supported by the Swedish interview data, and not at all by the data collected in Estonia and Latvia. Gooch attributes the discrepancies to different foundations of environmental concern. He explains that concern for the environment may be based either on direct personal experience or on general depictions of global problems.

Although these studies have added to our understanding of environmental concern, they do not include cognitive variables as possible determinants of environmental concern. Cognitive determinants should be paid as much attention as demographic indicators (Van Liere and Dunlap, 1980). Also, each study only focuses on one level of environmental concern; the community/local level, or the global level. The inclusion of both of these levels in a single study would be an important

extension of past research.

Mistrust as an Explanation of Environmental Concern

Durkheim's societal division of labor allows for increased specialization of tasks, which in turn yields increased efficiency and productivity (Jary & Jary, 1991). In regard to what Durkheim coined "organic solidarity," different people come to need and rely on each other to fulfill different functions within the collectivity. The implications can be problematic, however, when some specialized interests are detected that differ from the interests of the collectivity. "The very interdependencies of increasingly complex social systems may increase the probability that some key portions of the system . . . cannot be safely counted on" (Freudenburg 1993, p.914).

In siting a facility identified as "hazardous," government essentially chooses certain residents as the victims of any adverse impacts from an operational accident. Even when a facility is privately managed, the government is still responsible for issuing permits. When the health and safety of nearby residents are not protected, the credibility of federal regulators and technical experts is called into question. As a result, distrust of government often develops (Edelstein, 1988). Citizens wonder if authorities are really capable of, and interested in, protecting the environment, and they wonder if regulators are being open and honest with the

affected community. The naive sense of trust that is generally granted to others is reduced or disappears altogether. Specifically, the idea that the government works to protect citizens in danger is rejected.

Opponents of nuclear power claim that federal regulators are reluctant to impose costs on private industry, and unwilling to vigorously protect public health and safety. Therefore, a lack of trust results because government is perceived as not wanting to hinder industry's ability to grow by imposing regulations (Freudenburg and Baxter, 1985).

> The resulting risk dynamic is likely to lead to a perceived mutual loss of trustfulness on the part of both regulators and citizens. The citizen is viewed as a 'screamer' by the regulator for reacting to risk that is not scientifically established; the regulator is seen as 'corrupt or incompetent' by the citizen for denying the potential for risk. In a sense, the citizen views the chemical as guilty until proven innocent, while the official sees the chemical as innocent until proven guilty. (Edelstein 1988, p.132)

In his article, "Risk and Recreancy" (1993), Freudenburg argues that most analyses of risk perceptions in the past have been primarily concerned with the characteristics of the individual perceivers. But since the industrial revolution, numerous technological changes have yielded many societal changes. One such change is the dramatic growth in societal interdependence. Humans have a specialized interest that differs from the needs or interests of the collectivity as a whole, and the expectation is that each person performs a necessary function and will do her job so that others can

count on her. Although this increase in societal interdependence facilitates many of the achievements of advanced industrial societies, it simultaneously increases the potential for risk and vulnerability of the collectivity; thus increasing the likelihood of recreancy. Freudenburg defines recreancy as "the failure of institutional actors to carry out their responsibilities with the degree of vigor necessary to merit the societal trust they enjoy" (1993, p.909). Consequently, it is important to focus on the actual institutions responsible for risk management, rather than on the characteristics of the individual perceivers.

To test this hypothesis, he draws data from three separate sources. The first is survey data from a midwestern state identified as a potential site for a low-level nuclear waste facility. The second source is survey data from a western state identified as a proposed site for a high-level nuclear waste facility. The third data source is a set of 25 existing case studies focusing on the victims of toxic waste exposure incidents. With each data source, Freudenburg's research model poses environmental concern as the dependent variable with sociodemographic, ideological, and recreancy indicators as independent variables.

In the first study, survey data were utilized from three counties in Nebraska, that were being considered as potential sites for a nuclear waste facility. Level of environmental concern was determined by asking the question, "If a low-level

radioactive waste facility were located in your county, how concerned would you be?" (extremely, very, somewhat, or not too concerned). Of the 1,889 respondents, 753 answered "extremely" or "very" concerned and constitute the focus of this first study. The customary sociodemographic variables considered included education level, income, sex, age, marital status, the presence of children, rural/urban residence, and the respondent's employment and home ownership status. The ideological variables were political party affiliation and self-identified liberalism-conservatism.

Three items measuring levels of trust were used as indicators of recreancy: 1) trust in "current scientific and technical ability to build safe, efficient nuclear waste disposal sites." 2) "trust in the ability of private enterprise to develop cost-effective, safe disposal sites in the U.S." 3) and trust in "national government agencies to safely administer a system of nuclear waste sites."

Among those respondents who answered "extremely" or "very" concerned, the sociodemographic variables having the strongest statistical significance were sex and the presence of children (females with children present in the home). But the sociodemographic and ideological variables combined only accounted for 6.6% of the variance in environmental concern, while the three recreancy variables explained over 24% of the variance.

The second study employed data from a Nevada survey.

Nevada contained the only site being considered for a high-level nuclear waste repository. First, the sample was dichotomized in terms of the dependent variable, support for the proposed facility. Of 996 respondents 24% indicated they would vote for the in-state site. Supporters and opponents were asked about a series of management options. Most of the options involved the economic tradeoffs, such as jobs, tax rebates, protection of property values, and favorable community facilities advocated by policy makers as likely to improve public acceptability of the facilities. The survey also included one option that reflected the recreancy perspective: "A local committee would have the power to shut down the repository if they decided it was unsafe."

The findings of this study also supported the recreancy perspective. The only option that differentiated supporters and opponents was the recreancy option. Opponents were more likely than supporters to describe the recreancy option as "very important" (79.7% vs. 41.2%). This was the second most important option among opponents. The most important option among opponents of the site involved the federal government setting strict safety standards and having an inspector at the repository at all times.

The final study involved 25 case studies of community exposures to toxic wastes summarized by Finsterbusch (1988,1989), who identified and organized the case study findings. His analysis suggests clear indications of recreancy

problems. Five phases of the "common pattern" he found were: 1) the "predisposal stage," 2) the "disposal stage," 3) the "discovery stage," 4) the "reaction phase," and finally, 5) "resolution." In 16 of the 25 cases, Finsterbusch discovered that the contamination problems were first discovered by citizens, rather than by the authorities. The most common pattern began with the victims experiencing a problem, bringing it to the attention of government officials, and fully expecting them to investigate and solve the problem. The victims entrusted the government to quickly act and remediate contamination in their community. As government officials failed to respond, the victims would pressure for increased government action. Lack of government action dually caused victims to question and lose trust in the government in protecting the health and safety of citizens. A major finding of this study was that citizen activism was generally a response to government inaction.

Freudenburg finds in all three data sets that the recreancy variables are the best predictors of environmental concern, accounting for roughly three times the variance of the sociodemographic and ideological variables combined. Therefore, the recreancy perspective may be significantly applicable in other cases involving potential performance problems by bureaucratic agents.

Freudenburg (1993) examined two sets of survey data from areas being considered as potential sites for nuclear waste

facilities, as well as 25 case studies of community exposures to toxic wastes. Although his findings showed significantly that recreancy was a determinant of environmental concern, his measures of both variables were limited. Also, his research did not include an area with an ongoing nuclear facility; only communities which were potential sites for nuclear waste facilities.

Analytical Framework for Study

This thesis partially replicates Freudenburg's study using survey data that encompasses the attitudes, beliefs, and perceptions of people living in an eight-county area surrounding and including Oak Ridge, Tennessee. Although much of the prior research focuses on sample areas where proposed sites for nuclear facilities are located, the ORR in Oak Ridge, Tennessee has been in operation for over 50 years, and is a known Superfund site.

In light of the significant influence cognitive factors could have on environmental concern, and the absence of research on the mistrust of government influencing the level of concern for the environment, the following question will be investigated: Does recreancy have a stronger effect on environmental concern than sociodemographic and ideological variables?

CHAPTER II

PROCEDURES

Sample and Data

From October 25th through November 24, 1993, the Social Science Research Institute (SSRI) at the University of Tennessee, Knoxville conducted a survey of adults living in an eight-county area surrounding Oak Ridge, Tennessee. The survey area includes Anderson, Campbell, Claiborne, Meigs, Morgan, Rhea, Roane and Union Counties. These counties were selected because of their proximity to the Oak Ridge area both downwind and downstream. With the use of random-digit dialing, households were randomly selected at large from this eight-county area. The screening process allowed for only one member per household, age 18 or older, to participate in the survey. Of the 7,045 households contacted, 3,283 individuals consented to be interviewed, for a response rate of 47%. The respondents were asked a series of questions and their responses were recorded directly into the computer, using the Computer Assisted Telephone Interviewing (CATI) program.

Dependent Variable

The dependent variable for this study is environmental concern. It was operationalized at three levels: global, community, and public health. Environmental concern was operationalized on a global-level by asking respondents what

they thought about the quality of the natural environment in the United States. Responses were categorized as: (1) excellent, (2) good, (3) fair, or (4) poor. The lowest level of quality, "poor," was coded as the highest rating since a low-level of perceived environmental quality is expected to reflect a high-level of environmental concern. Since Oak Ridge, Tennessee is a known Superfund site, environmental concern was also operationalized at the community-level.

Respondents were asked what they thought about the quality of the environment in their community, with the responses and the rationale the same as in the previous question.

Environmental concern was also operationalized as an extension of public health by asking questions related to perceptions of environmental contamination and the occurrence of illness. Several aspects were measured. First, respondents were asked whether they thought the activities at the ORR had created any health problems for people living in the nearby communities. Those respondents answering yes were asked their opinions on how serious the problems had been. Responses were categorized as: (1) not serious, (2) somewhat serious, or (3) very serious. Second, a similar question was asked in regard to health problems for workers at the plants on the Reservation, with the same response categories as the previous question. Third, environmental concern was also operationalized by asking whether the respondent was aware of

any environmental contamination in their county that they believed to be a threat to public health. The responses for this question were categorized as: (1) yes, or (2) no. Finally, respondents were asked if they, or any member of their household, had experienced any health problems that they attributed to environmental contamination coming from the ORR. The responses for this question were categorized as: (1) yes, or (2) no.

Independent Variables

The most important independent variables for this study are the dimensions of recreancy. Recall that recreancy refers to the failure of institutional authority figures to carry out their respective responsibilities in such a capable manner that they receive societal trust. First, recreancy was operationalized in a general way by asking respondents about their overall level of trust in the scientific and technological enterprise. Responses were categorized as: (1) high level of trust, 2) some, or (3) none. The last choice was coded as the highest score since "none" reflects the highest level of distrust.

Recreancy was also operationalized in more specific terms by asking respondents a battery of questions on their level of trust in various governmental organizations. The first of these six questions asked how much trust the respondent has in what the U.S. Department of Energy (DOE) says about the

effects of the ORR on the surrounding environment. Responses were categorized as: (1) very trustworthy, (2) somewhat trustworthy, or (3) not at all trustworthy. Similar questions, with the same response format, were asked in regard to the respondent's level of trust in the U.S. Environmental Protection Agency (EPA), the Tennessee Department of Environment and Conservation (TDEC), the Tennessee Department of Health (TDH), Martin Marietta Energy Systems (MMES), and local government officials.

A reliability analysis of the six measures yields strong evidence that the indicators covary well. Cronbach's alpha for the six measures is .84. Consequently, the variables were combined into a recreancy scale: the ordinal responses for the six trust questions were summed for each respondent to form a recreancy scale. The scale serves as a single variable, instead of six individual recreancy variables.

In addition to the measures of recreancy, respondents were asked if they, or any member of the household, had ever worked at any of the facilities at the ORR. Respondents were also asked if they had any children under 18 currently residing in their home. Other variables included ideological and basic sociodemographic variables. Ideology was measured by asking respondents their views on political matters. Responses were categorized as: (1) very conservative, (2), conservative, (3) moderate, (4) liberal, or (5) very liberal. In addition, some basic sociodemographic questions were included. The

respondent's age, gender, level of education, and income level were recorded. Table 1 summarizes the variables.

Table 1. Description of Variables

Variables	Measurement
Independent Variables	
Recreancy:	
1 Level of Trust In DOE, EPA Martin Marietta, TN Dept. of Health, TN Dept. of Environment and Conservation, and Local Government Officials (Questions Were Combined into a Scale)	Original 3-Category Ordinal Scale (1) "Very Trustworthy" (2) "Somewhat Trustworthy" (3) "Not At All Trustworthy" Scale Range = "6-18"
2 Level of Trust In Science and Technology	3-Category Ordinal Scale: (1) "High Level of Trust" (2) "Some" (3) "None"
Ideological Variable:	
3 Political Orientation	5-Category Ordinal Scale: (1) "Very Conservative" (2) "Conservative" (3) "Moderate" (4) "Liberal" (5) "Very Liberal"
Demographic Variables:	
4 Age	Continuous: Range = "18-99"
5 Gender	Dichotomous: (0) "Male" (1) "Female"
6 Education	5-Category Ordinal Scale: (1) "Not High School Graduate" (2) "High School Graduate" (3) "Some College" (4) "College Graduate" (5) "Grad./Professional Degree
7 Children 18 or Younger Living in Household	Dichotomous: (0) "No" (1) "Yes"
8 Income	5-category Ordinal Scale: (1) "Less Than $12,500" (2) "$12,501-$25,000" (3) "$25,001-$35,000" (4) "$35,001-$50,000" (5) "50,000 +"

Table 1. (cont.)

Variables	Measurement
9 Respondent or Member of Household Ever Employed At the ORR	Dichotomous: (0) "No" (1) "Yes"
Dependent Variables - Environmental Concern	
Global-Level	
10 Quality of Environment In the United States	4-Category Ordinal Scale: (1) "Excellent" (2) "Good" (3) "Fair" (4) "Poor"
Community-Level	
11 Quality of Environment In the Community	4-Category Ordinal Scale: (1) "Excellent" (2) "Good" (3) "Fair" (4) "Poor"
As an Extension of Public Health	
12 Contamination: Aware of Any Contamination In Your County That You Believe To Be A Threat To Public Health	Dichotomous: (0) "No" (1) "Yes"
13 Illness: Respondents Answering These First Two Questions (a and b) Have Already Answered "Yes" They Believe Activities At the ORR Have Created Health Problems.	
a Health Problems for People Living In the Nearby Communities: How Serious Have Problems Been	3-Category Ordinal Scale: (1) "Not Serious" (2) "Somewhat Serious" (3) "Very Serious"
b Health Problems for Workers at the ORR: How Serious Have Problems Been	3-Category Ordinal Scale: (1) "Not Serious" (2) "Somewhat Serious" (3) "Very Serious"
c Have You or Member of Household Experienced Any Health Problems You Believe To Be Caused By Contamination Coming From the ORR	Dichotomous: (0) "No" (1) "Yes"

CHAPTER III

RESULTS

Data Analysis

To examine the effects of the various indicators on the different levels of environmental concern, ordinary least squares regression and logistic regression were used. Multiple regression analyses were performed on the models of environmental concern that have multiple, ordinal, response categories. These models include the global-level measure and the community-level measure of environmental concern. In my examination of environmental concern as an extension of public health, the severity of health problems for people in the community, and the severity of health problems for workers at the plants were also used as dependent variables in multiple regression models. The multiple regression analyses used the following model to predict the mean level of environmental concern for single cases:

$$Y = B_0 + B_1X_1 + B_2X_2 + \ldots + B_NX_N$$

where Y is the change in level of environmental concern; and B_0 is the constant.

The last two models of environmental concern were analyzed using logistic regression. When the dependent variable is dichotomous, logistic regression is a more appropriate technique than ordinary least squares regression (Knoke and Bohrnstedt, 1994). Interpreting logistic regression

coefficients is somewhat different from interpreting estimates from ordinary least squares regression. For the purposes of this study, the coefficients, termed logits, are predictors that indicate an increase or decrease in the log odds of the prevalence of environmental concern (Knoke and Bohrnstedt, 1994). These logits can be used to compute the probability of environmental concern. The logistic regression analyses used the following model to estimate the probability of environmental concern:

$$\text{Prob(environmental concern)} = \frac{1}{(1 + e^{-z})}$$

where Z is the linear combination:

$$Z = B_0 + B_1X_1 + B_2X_2 + \ldots B_NX_N .$$

Environmental Concern

As previously stated, four models of environmental concern were included in the multiple regression analyses, and two were examined using logistic regression.

Global-Level and Community-Level Environmental Concern

The first multiple regression analyses investigates the effects of multiple indicators on global-level and community-level environmental concern. Table 2 presents the regression analyses for both models. The results show that each model explains about 11 percent of the variance in environmental concern, respectively.

In the global-level concern model, the recreancy scale,

Table 2. Regression Analyses of Global-Level and Community-Level Environmental Concern

	Dependent Variables			
	Global-Level Concern		Community-Level Concern	
	b	Beta	b	Beta
Independent Variables				
Trust In Various Government Organizations (Recreancy Scale)	.04	.15***	.06	.20***
Trust In Science and Technology	.18	.13***	.14	.09***
Political Ideology	.03	.05*	.07	.10***
Age	-.002	-.04	-.004	-.09**
Gender	.19	.13***	.15	.09***
Education	-.04	-.07*	-.04	.06*
Children	-.06	-.04	-.08	-.05
Income	-.05	-.09**	-.06	-.09**
Ever Employed At the ORR	-.06	-.04	-.004	-.002
Constant	2.22	--	1.70	--
	F=20.14***		F=21.25***	
	R^2=.11		R^2=.11	

* p < .05
** p < .01
*** p < .001

the general trust question, and gender are all significant at the .001 level. These findings indicate that females are more concerned about the environment on a global-level. As mistrust of science and technology increases, global-level environmental concern increases as well. The same results are found to be true for the recreancy scale, which reflects trust in various governmental organizations. Other significantly indicative variables are income at the .01 significance level, and political ideology and education at the .05 significance level. This significance illustrates that as income level increases, concern for the environment, on a global scale, decreases. Similar results are found for level of education. Respondents who hold more liberal political views are generally more concerned about global-level environmental issues. The recreancy scale has the largest standardized coefficient, with general trust and gender having the next largest.

The community-level concern model yields similar findings. The recreancy scale, general trust, political ideology, and gender are all significant at the .001 level. Other variables displaying significant coefficients are age and income at the .01 significance level, and education at the .05 significance level. An increase in the respondent's age causes a decrease in community-level environmental concern. The effects of the other significant variables are much the same as in the previous model. Once again, the standardized

coefficients show the recreancy scale has the largest effect, with political ideology having the next largest coefficient. It should also be noted the other recreancy variable, general trust, follows closely behind the ideological variable.

Environmental Concern
As an Extension of Public Health

Multiple regression was used to examine the effects of the same indicator variables, used in the previous models, on environmental concern as an extension of public health. Respondents were first asked whether or not they thought the activities at the ORR have created any health problems for people living in the nearby communities. If the respondent answered "yes" to this question, he or she was asked how serious the problems have been. The same format was used to ask about health problems for workers. These two questions, concerning the severity of health problems, comprise the models for the next multiple regression analyses. The results presented in Table 3 show that each model explains about 8 percent of the variance in environmental concern.

In the environmental concern model pertaining to the severity of health problems for people in the nearby communities, the recreancy scale, and the general trust variable both show the most significance at the .001 level. Another less significant variable is gender, which is significant at the .05 level. The gender variable causes an increase in the belief that health problems for workers have

Table 3. Regression Analyses of the Seriousness of Health Problems

	Dependent Variables			
	Seriousness of Health Problems for People In Nearby Communities		Seriousness of Health Problems for Workers	
	b	Beta	b	Beta
Independent Variables				
Trust In Various Government Organizations (Recreancy Scale)	.05	.21***	.05	.19***
Trust In Science and Technology	.13	.12***	.14	.13***
Political Ideology	-.01	-.02	.01	.01
Age	-7.32	-.02	-.001	-.03
Gender	.07	.06*	.03	.03
Education	-.01	-.01	.002	.004
Children	-.01	-.01	-.01	-.01
Income	-.01	-.03	-.03	-.08*
Ever Employed At the ORR	.03	.03	.08	.07*
Constant	1.50	--	1.62	--
	$F=8.69^{***}$ $R^2=.08$		$F=9.56^{***}$ $R^2=.08$	

* $p < .05$
** $p < .01$
*** $p < .001$

been serious if the respondent is female. The effects of the other significant variables are much the same as those shown in previous models. As in the two previous models, the Beta coefficients show the recreancy scale has the largest slope with general trust having the next largest coefficient.

The environmental concern model involving the severity of health problems for workers shows that, once again, the recreancy scale, and general trust are the most significant indicators at the .001 level. Other significant predictors include income, and employment at the ORR, which are significant at only the .05 level. The employment variable causes an increase in the belief that health problems for workers have been serious if the respondent, or a member of his or her household, has ever been employed at the ORR. The effects of the other significant variables are much the same as those shown in previous models. Once again, the Beta coefficients clearly show the recreancy scale, and general trust, respectively, to have the largest slopes of all the independent variables.

Lastly, environmental concern is modeled after two dichotomous measures. The first is the presence of environmental contamination in the community believed to be a threat to public health, and the second is the presence of health problems in the household believed to be attributed to the ORR.

Logistic regression was performed for both dichotomous

environmental concern variables: (1) awareness of environmental contamination in the respondent's county believed to be a threat to public health; and (2) respondent, or member of household, experienced any health problems believed to be attributable to environmental contamination coming from the ORR. Both models include the same independent variables used in the previous analyses. Table 4 presents the results of the logistic regression analysis of the probability of the first full model of environmental concern (awareness of environmental contamination).

The second full model logistic regression of environmental concern analyzes the probability of the presence of health problems, by the respondent or another member of the household, believed to exist due to contamination coming from the ORR. Table 5 presents the logit coefficients for this model. The results show the recreancy scale, gender, and employment at the ORR significantly contribute to the probability of environmental concern. The general trust variable, that was found to be significant in the multiple regression analyses, does not contribute significantly to the model.

To further investigate the influence of the recreancy scale on the probability of extensions of environmental concern, a reduced model was constructed by including the significant variables from the full model of awareness of contamination. Table 6 presents the logit coefficients for

Table 4. Full Model Logistic Analysis of the Awareness of Contamination

	Logit Coefficients
Independent Variables	
Trust In Various Government Organizations (Recreancy Scale)	.148***
Trust In Science and Technology	.200
Political Ideology	.102*
Age	.003
Gender	-.034
Education	.281***
Children	.090
Income	-.017
Ever Employed At the ORR	.366**

Constant = -4.2518
Model Chi-Square = 91.548
Significance = p < .0001
Degrees of Freedom = 9
* p < .05
** p < .01
*** p < .001

Table 5. Full Model Logistic Analysis of the Presence of Health Problems In the Household

	Logit Coefficients
Independent Variables	
Trust In Various Government Organizations (Recreancy Scale)	.226***
Trust In Science and Technology	.114
Political Ideology	.085
Age	-.001
Gender	.524**
Education	-.063
Children	-.018
Income	-.084
Ever Employed At the ORR	1.164***

Constant = -6.0198
Model Chi-Square = 82.867
Significance = p < .0001
Degrees of Freedom = 9
* p < .05
** p < .01
*** p < .001

Table 6. Reduced Model Logistic Analysis of the Awareness of Contamination

	Logit Coefficients
Independent Variables	
Trust in Various Government Organizations (Recreancy Scale)	.1538***
Political Ideology	.0720
Education	.2534***
Ever Employed At the ORR	.3445**

Constant = -3.6968
Model Chi-Square = 90.843
Significance = p < .0001
Degrees of Freedom = 4
* p < .05
** p < .01
*** p < .001

the reduced model. Probability estimates were computed using these coefficients, and they are presented in Table 7.

As shown by the estimates, the probability of awareness of environmental contamination is significantly influenced by feelings of distrust, education level, and previous employment at the ORR. As initially predicted, the degree of recreancy greatly influences the likelihood of environmental concern. Being distrustful of governmental organizations yields a 15 percent increased likelihood of the awareness of contamination at the lowest level of recreancy, and a 52 percent likelihood at the highest level. As the level of education increases, so does the likelihood of environmental concern. A graduate or professional degree increases the probability of contamination awareness to 44 percent. Finally, the likelihood of the awareness of contamination increases moderately with employment at the ORR.

To further examine the effect of the recreancy scale on the presence of health problems in the household, once again a reduced model was constructed using only the significant variables from the full model. These coefficients are presented in Table 8. Once again, probability estimates were derived from the coefficients. These results are presented in Table 9.

The reduced model shows that the probability of health problems in the household is significantly influenced by feelings of distrust in governmental organizations, gender,

Table 7. Probability Estimates of the Reduced Model of the Awareness of Contamination*

	Probability Estimates** (in percent)
Recreancy Scale: (Range = 6 - 18)	
6	15
7	17
8	19
9	21
10	24
11	27
12	30
13	33
14	37
15	40
16	44
17	48
18	52
Education:	
Not High School Graduate	22
High School Graduate	27
Some College	32
College Graduate	37
Graduate/Professional Degree	44
Ever Employed At the ORR:	
No	27
Yes	35

* Political Ideology was excluded from probability estimation due to lack of significance in the reduced model.

** Estimated likelihood of the awareness of contamination, in the respondent's county believed to be a threat to public health, when scores of all other variables are held at their mean.

Table 8. Reduced Model Logistic Analysis of the Presence of Health Problems in the Household

	Logit Coefficients
Independent Variables	
Trust in Various Government Organizations (Recreancy Scale)	.2306***
Gender	.4484*
Ever Employed At the ORR	1.0658***

Constant = -5.9816
Model Chi-Square = 85.168
Significance = p < .0001
Degrees of Freedom = 3

Table 9. Probability Estimates of the Reduced Model of the Presence of Health Problems in the Household

	Probability Estimates* (in percent)
Recreancy Scale: (Range = 6 - 18)	
6	2
7	2
8	3
9	4
10	5
11	6
12	7
13	9
14	11
15	13
16	16
17	20
18	23
Gender:	
Male	6
Female	9
Ever Employed At the ORR:	
No	5
Yes	13

* Estimated likelihood of health problems, in the household believed to be attributable to environmental contamination coming from the ORR, when scores of all other variables are held at their mean.

and employment at the ORR. As in the previous model, the degree of recreancy does influence the likelihood of environmental concern. However, in this model, the recreancy scale yields significantly lower probabilities of environmental concern. Being distrustful of governmental organizations yields a 2 percent increased likelihood of health problems in the household at the lowest level of recreancy, and a 23 percent likelihood at the highest level. The respondent being female slightly increases the probability of health problems in the household. Lastly, this same likelihood increases moderately with employment at the ORR.

CHAPTER IV

DISCUSSION AND CONCLUSIONS

Increasing evidence indicates that cognitive processes are more important in determining environmental concern than researchers have previously thought. Research on environmental concern has focused primarily on sociodemographic and ideological variables, ignoring an investigation of cognitive factors such as attitudes and behaviors, which may affect the variation in levels of concern for the environment. This study has ventured beyond previous research to investigate the influence of recreancy on levels of environmental concern.

The analyses indicate that recreancy is a stronger predictor of environmental concern than sociodemographic and ideological variables. In each and every model, the recreancy scale proved to be the strongest predictor of environmental concern. Although some demographic and ideological variables were found to be significant in some of the models analyzed, they were not as consistent as the recreancy scale. Contrary to prior research, the presence of children in the household failed to show any significance as a predictor of environmental concern in any of the models analyzed. In the least squared regression models, general trust did indeed significantly affect the variance. However, general trust failed to show any significance in any of the logistic regression models. Nevertheless, the sociodemographic and

ideological variables were sporadic in affecting the probability of environmental concern, while the recreancy scale was very consistent in largely affecting environmental concern. The results do indeed help to support the research that recreancy is a stronger predictor in the study of environmental concern.

One shortcoming of this study is the absence of a question in the survey which asks the respondent about her concern for the environment. Environmental concern was operationalized from questions relating to quality, the severity of health problems, the awareness of contamination, and the presence of health problems in the household. Although these questions can be indirectly related to environmental concern, the presence of a question that directly asks about the respondent's level of environmental concern would certainly have been beneficial.

Contributions

This study supports Freudenburg's findings that the recreancy perspective is a better determinant of environmental concern than sociodemographic and ideological variables. The findings indicate that levels of environmental concern are indeed influenced by levels of distrust. Increasing evidence in sociological research supports the claim that only a small percentage of the variance in environmental concern can be explained by sociodemographic and ideological variables. This

thesis serves to illustrate the effects of recreancy on environmental concern, along with other, more commonly studied, sociodemographic and ideological variables.

This study measures environmental concern and recreancy on more levels than Freudenburg's research allowed. In his article, Freudenburg (1993) examined two sets of survey data from areas being considered as potential sites for nuclear waste facilities, as well as 25 case studies of community exposures to toxic wastes. It is this last study that has been partially replicated in this thesis. However, instead of reviewing case studies, an actual city, as well as the surrounding counties, is the focus of this analysis. Keeping in mind that recreancy is a fairly new concept, and limited research has been performed in this regard, no study of recreancy has explored an area the size and nature as Oak Ridge, Tennessee.

In all three studies, his findings showed significantly that recreancy was a determinant of environmental concern. However, his measures of both variables were limited. In this study, six indicators of environmental concern, and seven indicators of recreancy were investigated. This study helps to ensure the validity of Freudenburg's work, as well as contribute a determinant of environmental concern with distinct significance to the field of environmental sociology. Quite possibly, this study could prompt sociologists to pursue future replication of sociological research in this area.

Conclusion

This study explains variation in environmental concern among residents of a known Superfund site by examining levels of distrust, or recreancy. The analysis shows that recreancy explains more of the variation in environmental concern than sociodemographic and ideological variables. Citizens are forced to depend on institutional authority figures to safely carry out certain responsibilities. As citizens' perceptions of distrust in these authority figures grows, the probability of environmental concern significantly increases.

The findings indicate that distrust of government predicts environmental concern. As trust in government institutions declines, concern for the environment and for public health increases. These results suggest that the actions of governmental authorities are a direct cause of citizens' environmental concern.

REFERENCES

Althoff, Phillip, and William H. Grieg. 1977. "Environmental Pollution Control: Two Views from the General Population." **Environment and Behavior** 9:441-456.

Arbuthnot, Jack, and Sandra Lingg. 1975. "A Comparison of French and American Environmental Behaviors, Knowledge, and Attitudes." **International Journal of Psychology** 10:275-281.

Bailey, Kenneth D. 1987. Methods of Social Research. 3d ed. New York: The Free Press.

Beck, Leif C., William L. Trombetta, and Scott Share. 1986. "Using Focus Group Sessions Before Decisions Are Made." **North Carolina Medical Journal** 47(2):73-74.

Borden, Richard J., and Janice L. Francis. 1978. "Who Cares About Ecology? Personality and Sex Differences in Environmental Concern." **Journal of Personality** 46:196-203.

Bosso, Christopher J. 1987. Pesticides and Politics: The Life Cycle of a Public Issue. Pittsburgh: University of Pittsburgh Press.

Brown, Phil and Edwin J. Mikkelsen. 1990. No Safe Place: Toxic Waste, Leukemia, and Community Action. Berkeley: University of California Press.

Bryant, Bunyan, and Paul Mohai, eds. 1992. Race and the Incidence of Environmental Hazards: A Time for Discourse. Boulder, CO: Westview Press.

Bucher, Rue. 1957. "Blame and Hostility in Disaster." **American Journal of Sociology** 62:467-475.

Bullard, Robert D., and Beverly Hendrix Wright. 1986. "The Politics of Pollution: Implications for the Black Community." **Phylon** 47(1):71-78.

Buttel, Frederick H. 1979. "Age and Environmental Concern: A Multivariate Analysis." **Youth and Society** 10:237-256.

Buttel, Frederick H., and Donald E. Johnson. 1977. "Dimensions of Environmental Concern: Factor Structure, Correlates, and Implications for Research." **The Journal of Environmental Education** 9(2):49-64.

Capek, Stella M. 1993. "The 'Environmental Justice' Frame: A Conceptual Discussion and an Application." **Social Problems** 40:5-24.

Clarke, Lee. 1988. "Politics and Bias in Risk Assessment." **The Social Science Journal** 25:155-165.

Constantini, Edmond, and Kenneth Hanf. 1972. "Environmental Concern and Lake Tahoe: A Study of Elite Perceptions, Backgrounds and Attitudes." **Environment and Behavior** 4:209-242.

Cutter, Susan Caris. 1981. "Community Concern for Pollution." **Environment and Behavior** 13:105-124.

Dillman, Don A., and James A. Christenson. 1972. "The Public Value for Pollution Control." Pp. 237-256 in Social Behavior, Natural Resources and the Environment, edited by William R. Burch, Jr., Noel H. Cheek, Jr. and Lee Taylor. New York: Harper and Row.

Dunlap, Riley E. 1975. "The Impact of Political Orientation on Environmental Attitudes and Actions." **Environment and Behavior** 7:428-454.

Edelstein, Michael R. 1988. Contaminated Communities: The Social and Psychological Impacts of Residential Toxic Exposure. Boulder & London: Westview Press.

Finsterbusch, Kurt. 1988. "Citizens' Encounters with Unresponsive Authorities in Obtaining Protection from Hazardous Wastes." Presented at the annual meeting of the Society for the Study of Social Problems, August, Atlanta, GA.

------. 1989. "Community Responses to Exposures to Hazardous Wastes." Pp. 57-80 in Psychosocial Effects of Hazardous Toxic Waste Disposal on Communities, edited by Dennis L. Peck. Springfield, IL: Charles C. Thomas Publishers.

Freudenburg, William R. 1993. "Risk and Recreancy: Weber, the Division of Labor, and the Rationality of Risk Perceptions." **Social Forces** 71:909-932.

Freudenburg, William R. and Rodney K. Baxter. 1984. "Host Community Attitudes Toward Nuclear Power Plants: A Reassessment." **Social Science Quarterly** 65:1129-1136.

------. 1985. "Nuclear Reactions: Public Attitudes and Policies Toward Nuclear Power." **Policy Studies Review** 5:96-110.

Freudenburg, William R. and Robert Gramling. 1992. "Community Impacts of Technological Change: Toward a Longitudinal Perspective." **Social Forces** 70:937-955.

Freudenburg, William R. and Timothy R. Jones. 1991. "Attitudes and Stress in the Presence of Technological Risk: A Test of the Supreme Court Hypothesis." **Social Forces** 69:1143-1168.

Freudenburg, William R. and Susan K. Pastor. 1992. "Public Responses to Technological Risks: Toward a Sociological Perspective." **The Sociological Quarterly**. 33:389-412.

Freudenburg, William R., and Eugene A. Rosa, eds. 1984. Public Reactions to Nuclear Power: Are There Critical Masses? Boulder, CO: Westview Press.

Gooch, Geoffrey D. 1995. "Environmental Beliefs and Attitudes in Sweden and The Baltic States." **Environment and Behavior** 27:513-539.

Hamilton, Lawrence C. 1985. "Concern About Toxic Wastes: Three Demographic Predictors." **Sociological Perspectives** 28:463-486.

Hershey, Marjorie Randon, and David B. Hill. 1977-1978. "Is Pollution a White Thing? Racial Differences in Preadults' Attitudes." **The Public Opinion Quarterly** 41:439-458.

Honnold, Julie A. 1981. "Predictors of Public Environmental Concern in the 1970s." Pp. 63-75 in Environmental Policy Formation: The Impact of Values, Ideology and Standards, edited by D. Mann. Lexington, MA: D.C. Heath Company.

Jary, David and Julia Jary. 1991. The Harper-Collins Dictionary of Sociology. New York: Harper-Collins Publishers.

Johnson, Charles W. and Charles O. Jackson. 1981. City Behind A Fence: Oak Ridge, Tennessee 1942-1946. Knoxville: Ulrich Printing Co.

Kazis, Richard and Richard Grossman. 1991. Fear At Work: Job Blackmail, Labor and the Environment. Philadelphia: New Society Publishers.

Kowalewski, David, and Karen L. Porter. 1993. "Environmental Concern Among Local Citizens: A Test of Competing Perspectives." **Journal of Political and Military Sociology** 21(1):37-62.

Knoke, David and George W. Bohrnstedt. 1994. Statistics for Social Data Analysis. 3d ed. Itasca, IL: F.E. Peacock.

Laska, Shirley Bradway. 1993. "Environmental Sociology and the State of the Discipline." **Social Forces** 72:1-17.

McEvoy, James III. 1972. "The American Concern with Environment." Pp. 214-236 in Social Behavior, Natural Resources and the Environment, edited by William R. Burch, Jr., Noel H. Cheek, Jr. and Lee Taylor. New York: Harper and Row.

McStay, Jan R. and Riley E. Dunlap. 1983. "Male-Female Differences in Concern for Environmental Quality." **International Journal for Women's Studies** 6:291-301.

McTeer, J. Hugh. 1978. "Teenage-Adult Differences in Concern for Environmental Problems." **Journal of Environmental Education** 9(2):20-23.

May, John. 1989. The Greenpeace Book of the Nuclear Age: The Hidden History The Human Cost. New York: Pantheon Books.

Milbrath, Lester W. 1981. "Environmental Values and Beliefs of the General Public and Leaders in the United States, England, and Germany." Pp. 43-61 in Environmental Policy Formation: The Impact of Values, Ideology and Standards, edited by D. Mann. Lexington, MA: D.C. Heath Company.

Mohai, Paul. 1985. "Public Concern and Elite Involvement in Environmental-Conservation Issues." **Social Science Quarterly** 66:820-838.

Morgan, David L., and Margaret T. Spanish. 1984. "Focus Groups: A New Tool for Qualitative Research." **Qualitative Sociology** 7:253-270.

Murch, Arwin W. 1974. "Who Cares About the Environment? The Nature and Origins of Environmental Concern." Pp. 9-42 in Environmental Concern: Personal Attitudes and Behavior Toward Environmental Problems, edited by Arwin W. Murch. New York: Arno Press.

Samdahl, Diane M. and Robert Robertson. 1989. "Social Determinants of Environmental Concern: Specification and Test of the Model." **Environment and Behavior** 21:57-81.

Schnaiberg, Allan. 1980. The Environment: From Surplus to Scarcity. New York: Oxford University Press.

Sewell, W.R. Derrick. 1971. "Environmental Perceptions and Attitudes of Engineers and Public Health Officials." **Environment and Behavior** 3:23-59.

Shapiro, Susan P. 1987. "The Social Control of Impersonal Trust." **American Journal of Sociology** 93:623-658.

Sharma, Navin C., Joseph E. Kivlin, and Frederick C. Fliegel. 1975. "Environmental Pollution: Is There Enough Public Concern to Lead to Action?" **Environment and Behavior** 7:455-471.

Short, James F. Jr. and Lee Clarke, eds. 1992. Organizations Uncertainties, and Risk. Boulder: Westview Press, Inc.

Tognacci, Louis N., Russell H. Weigel, Marvin F. Wideen, and David T. A. Vernon. 1972. "Environmental Quality: How Universal is Public Concern?" **Environment and Behavior** 4:73-86.

Van Liere, Kent D. and Riley E. Dunlap. 1980. "The Social Bases of Environmental Concern: A Review of Hypotheses, Explanations and Empirical Evidence." **Public Opinion Quarterly** 44:181-197.

Wall, Glenda. 1995. "General Versus Specific Environmental Concern: A Western Canadian Case." **Environment and Behavior** 27:294-316.

APPENDIX

ORHASP SURVEY INSTRUMENT

QUESTIONNAIRE: ORHASP SURVEY
Social Science Research Institute
University of Tennessee, Knoxville
October 23-30, 1993

READ THE FOLLOWING... "Hello, I'm YOUR NAME calling from the Social Science Research Institute at the University of Tennessee in Knoxville. Your number has been chosen so that we may ask you some questions as part of a survey we are doing to find out what people think about the quality of the natural environment in your area. The survey will last less than twenty minutes, and all your responses will be completely confidential. It is important that we interview you so that the opinions of people like you be represented. Do you mind if I ask you a few questions. First, are you eighteen or older?" [If not, ask to speak to someone 18 years old or over.] *SEE INSTRUCTIONS FOR CHOICE WITHIN THE HOUSEHOLD.

[Note: throughout survey, an '8' is for Not Sure and a '9' for NO ANSWER]

1. First, I'd like you to think about the quality of the natural environment in the United States. Would you say the quality of the environment is excellent, good, fair or poor?

1 EXCELLENT 2 GOOD 3 FAIR 4 POOR 8 N/S

2. What about the community you live in? Would you say the quality of the environment in your community is excellent, good, fair or poor?

1 EXCELLENT 2 GOOD 3 FAIR 4 POOR 8 N/S

[Note: If respondent asks what is meant by "community," say, "your city or town or the city or town you live closest to."]

3. Again, thinking about your community, what do you think about the quality of the air? Would you say it is excellent, good, fair or poor?

1 EXCELLENT 2 GOOD 3 FAIR 4 POOR 8 N/S

4. What do you think about the water quality of the rivers, lakes and streams in your area? Generally speaking, is it excellent, good, fair or poor?

1 EXCELLENT 2 GOOD 3 FAIR 4 POOR 8 N/S

5. What about the quality of the ground water in your community? Would you say it is excellent, good, fair or poor?

1 EXCELLENT 2 GOOD 3 FAIR 4 POOR 8 N/S

6. Where do you get your drinking water, from a community water supply, from a well, from bottled water, or some other source?

1 COMMUNITY SUPPLY 2 WELL 3 BOTTLED WATER 4 OTHER 8 N/S

7. How would you assess the quality of your drinking water from the standpoint of health? Would you say it is excellent, good, fair or poor?

1 EXCELLENT 2 GOOD 3 FAIR 4 POOR 8 N/S

8. I'd like to ask you about your overall level of trust in the scientific and technological enterprise. When it comes to protecting the environment, would you say you have a high level of trust, some trust, or no trust in the scientific and technological enterprise?

1 HIGH LEVEL 2 SOME 3 NONE 8 N/S

9. Now I'd like to ask you a couple questions about the activities at the federal reservation in Oak Ridge where the U.S. Department of Energy has plants located. First, do you think that activities at the Reservation in Oak Ridge have created any health problems for people living in the nearby communities? [IF 'YES', ASK] How serious would you say these problems have been, not serious, somewhat serious, or very serious?

1 NO PROBLEMS
2 NOT SURE ACTIVITIES HAVE CREATED HEALTH PROBLEMS
3 NOT SERIOUS PROBLEMS
4 SOMEWHAT SERIOUS PROBLEMS
5 VERY SERIOUS PROBLEMS
6 NOT SURE HEALTH PROBLEMS HAVE BEEN SERIOUS

10. Do you think these activities have created any health problems for people who work at the plants on the Reservation? [IF 'YES', ASK] How serious would you say these problems have been, not serious, somewhat serious, or very serious?

1 NO PROBLEMS
2 NOT SURE ACTIVITIES HAVE CREATED HEALTH PROBLEMS
3 NOT SERIOUS PROBLEMS
4 SOMEWHAT SERIOUS PROBLEMS
5 VERY SERIOUS PROBLEMS
6 NOT SURE HEALTH PROBLEMS HAVE BEEN SERIOUS

11. Have you heard anything about the Oak Ridge Health Study now underway, which is examining possible impacts of the Oak Ridge Reservation on public health in the surrounding area? [IF 'YES' ASK] Would you say that you know a lot, a little or nothing at all about the Oak Ridge Health Study?

1 NO-HAVE NOT HEARD ANYTHING
2 HAVE HEARD OF IT-KNOW A LOT
3 HAVE HEARD OF IT-KNOW A LITTLE
4 HAVE HEARD OF IT-KNOW NOTHING AT ALL
8 N/S

12. [ASK ONLY IF RESPONDENT HAS HEARD OF STUDY] From what source did you first learn about the Oak Ridge Health Study, newspapers, radio, television, word of mouth, or some other source?

01 NEWSPAPERS
02 RADIO
03 TELEVISION
04 WORD OF MOUTH
05 GOVERNMENT AGENCIES [VOLUNTEER]
06 INTEREST GROUPS/ACTIVISTS [VOLUNTEER]
07 NEWSLETTERS [VOLUNTEER]
08 N/S
09 OTHER RESPONSE
99 NO RESPONSE

13. [ASK ONLY IF RESPONDENT HAS HEARD OF STUDY] How would you rate the performance of the Oak Ridge Health Study thus far? Would you say it has been excellent, good, fair or poor?

1 EXCELLENT 2 GOOD 3 FAIR 4 POOR 8 N/S

14. [ASK ONLY IF RESPONDENT HAS HEARD OF STUDY] Do you think the Oak Ridge Health Study will have an impact on public health in your community? [If YES] Do you think it will it make matters [ROTATE] better or worse?

1 YES--BETTER 2 YES--WORSE 3 NO--WON'T HAVE AN IMPACT 8 N/S

15. [ASK ONLY IF RESPONDENT HAS HEARD OF STUDY] Do you think the people doing the Oak Ridge Health Study have done an excellent, good, fair or poor job in communicating with the public about what they are doing?

1 EXCELLENT 2 GOOD 3 FAIR 4 POOR 8 N/S

I'm going to read you a list of information sources. For each one I read, please tell me whether you regard it as a major source of information, a minor source of information, or not a source of information about environmental issues in your area?

16. Newspapers	1 MAJOR SOURCE	2 MINOR SOURCE	3 NOT A SOURCE	8N/S
17. Radio	1 MAJOR SOURCE	2 MINOR SOURCE	3 NOT A SOURCE	8 N/S
18. Television	1 MAJOR SOURCE	2 MINOR SOURCE	3 NOT A SOURCE	8 N/S
19. Federal agencies	1 MAJOR SOURCE	2 MINOR SOURCE	3 NOT A SOURCE	8 N/S
20. State agencies	1 MAJOR SOURCE	2 MINOR SOURCE	3 NOT A SOURCE	8 N/S
21. Local government agencies	1 MAJOR SOURCE	2 MINOR SOURCE	3 NOT A SOURCE	8 N/S
22. Environmental groups	1 MAJOR SOURCE	2 MINOR SOURCE	3 NOT A SOURCE	8 N/S
23. Martin-Marietta Corporation	1 MAJOR SOURCE	2 MINOR SOURCE	3 NOT A SOURCE	8 N/S
24. Oak Ridge Assoc. Universities	1 MAJOR SOURCE	2 MINOR SOURCE	3 NOT A SOURCE	8 N/S
25. Friends and family	1 MAJOR SOURCE	2 MINOR SOURCE	3 NOT A SOURCE	8 N/S

26. When you are sick, where do you go first for medical help--[ROTATE] a doctor in the community; a doctor outside of the community; a pharmacist; the local health department; a hospital emergency room; a hospital clinic; or other?

1 A DOCTOR IN THE COMMUNITY	2 A DOCTOR OUTSIDE OF THE COMMUNITY
3 A PHARMACIST	4 THE LOCAL HEALTH DEPARTMENT
5 A HOSPITAL EMERGENCY ROOM	6 A HOSPITAL CLINIC
7 OTHER	8 N/S

27. How concerned do you think the people running the Oak Ridge Reservation in the past were about protecting public health, not at all concerned, somewhat concerned, or very concerned?

1 NOT AT ALL CONCERNED 2 SOMEWHAT CONCERNED 3 VERY CONCERNED 8 N/S

28. How about protecting the health of their workers?

1 NOT AT ALL CONCERNED 2 SOMEWHAT CONCERNED 3 VERY CONCERNED 8 N/S

29. What about the people who currently run the Oak Ridge Reservation? Would you say they are not at all concerned, somewhat concerned, or very concerned about protecting public health?

1 NOT AT ALL CONCERNED 2 SOMEWHAT CONCERNED 3 VERY CONCERNED 8 N/S

30. How about protecting the health of their workers?

1 NOT AT ALL CONCERNED 2 SOMEWHAT CONCERNED 3 VERY CONCERNED 8 N/S

31. Generally speaking, would you say the Oak Ridge Reservation has had a positive or negative [ROTATE] impact on the region's economy, or has it not had any impact?

1 POSITIVE IMPACT 2 NEGATIVE IMPACT 3 NO IMPACT 8 N/S

32. Next I'd like to ask you a series of questions about various organizations and the environment. How much trust do you have in what the U.S. Department of Energy says about the effects of the Oak Ridge Reservation on the surrounding environment? Would you say D.O.E. is very trustworthy, somewhat trustworthy, or not at all trustworthy?

1 VERY TRUSTWORTHY 2 SOMEWHAT 3 NOT AT ALL 7 NOT HEARD OF 8 N/S

33. How about the U.S. Environmental Protection Agency? Would you say E.P.A. is very trustworthy, somewhat trustworthy, or not at all trustworthy?

1 VERY TRUSTWORTHY 2 SOMEWHAT 3 NOT AT ALL 7 NOT HEARD OF 8 N/S

34. How about the Tennessee Department of Environmental Conservation?

1 VERY TRUSTWORTHY 2 SOMEWHAT 3 NOT AT ALL 7 NOT HEARD OF 8 N/S

35. How about the Tennessee Department of Health?

1 VERY TRUSTWORTHY 2 SOMEWHAT 3 NOT AT ALL 7 NOT HEARD OF 8 N/S

36. What about Martin-Marietta Corporation?

1 VERY TRUSTWORTHY 2 SOMEWHAT 3 NOT AT ALL 7 NOT HEARD OF 8 N/S

37. How about the Oak Ridge Health Agreement Steering Panel?

1 VERY TRUSTWORTHY 2 SOMEWHAT 3 NOT AT ALL 7 NOT HEARD OF 8 N/S

38. Generally speaking, do you think environmental groups are very trustworthy, somewhat trustworthy, or not at all trustworthy when it comes to statements about the environment?

1 VERY TRUSTWORTHY 2 SOMEWHAT 3 NOT AT ALL 7 NOT HEARD OF 8 N/S

39. Finally, how about your local government officials?

1 VERY TRUSTWORTHY 2 SOMEWHAT 3 NOT AT ALL 7 NOT HEARD OF 8 N/S

40. Do you think it is a good idea or a bad idea [ROTATE] to create a citizens advisory panel to oversee activities at the Oak Ridge Reservation?

1 GOOD IDEA 2 BAD IDEA 8 N/S

41. Are you aware of any environmental contamination in your county that you believe is a threat to public health?

1 NO 2 YES 8 N/S

42. [IF YES TO PREVIOUS QUESTION] WHAT IS THAT? WHERE DO YOU THINK IT COMES FROM?
[LIST MAXIMUM OF 3 'PROBLEMS']

_____

_____

_____

43. Have you or any member of your household experienced any health problems that you believe were caused by environmental contamination coming from the Oak Ridge Reservation?

1 YES 2 NO 8 N/S

44. [If answer to previous question is 'YES' ask] What type of problem? _____

45. How important do you think it is to study the actual occurrence of disease or other health-related conditions in the population living in the vicinity of the Oak Ridge Reservation? Would you say it is not important, somewhat important, or very important?

1 NOT IMPORTANT 2 SOMEWHAT IMPORTANT 3 VERY IMPORTANT 8 N/S

46. Next I'd like to ask you a couple of questions about East Fork Poplar Creek. First, have you heard of this body of water?

1 YES 2 NO [SKIP NEXT QUESTION] 8 N/S [SKIP NEXT QUESTION]

47. [Ask only if respondent has heard of East Fork Poplar Creek.] In your opinion, does the Creek pose a threat to the health of people living nearby? If so, how much of a threat does it pose, a major threat, a minor threat, or no threat at all?

1 MAJOR THREAT 2 MINOR THREAT 3 NO THREAT 8 N/S

48. Next I'd like to ask you a couple questions about Watts Bar Lake. First, have you heard of this body of water?

1 YES 2 NO [SKIP NEXT QUESTION] 8 N/S [SKIP NEXT QUESTION]

49. [Ask only if respondent has heard of Watts Bar Lake.] In your opinion, does Watts Bar Lake pose a threat to the health of people living nearby? If so, how much of a threat does it pose, a major threat, a minor threat, or no threat at all?

1 MAJOR THREAT 2 MINOR THREAT 3 NO THREAT 8 N/S

50. [Ask the following question only if respondent has heard of Watts Bar Lake] How often do you engage in recreational activities on Watts Bar Lake, never, sometimes, or often?

1 NEVER 2 SOMETIMES 3 OFTEN 8 N/S

51. Would you say that you are reluctant to engage in recreational activities on Watts Bar due to concerns about water quality?

1 YES 2 NO 8 N/S

52. Would you be reluctant to eat fish from Watts Bar Lake *due to concerns about water quality*?

1 YES 2 NO 8 N/S

[Note: If respondent indicates reluctance or unwillingness to eat fish from Watts Bar due to any reason other than concern for effect of water quality on fish, code as 2 'no'.]

Next, I am going to read you a list of substances. For each one I mention, tell me whether you have heard of that substance. If so, I'd like you to tell me whether you believe the substance was ever released from any of the plants on the Oak Ridge Reservation.

53. First, have you heard of mercury? 1 YES 2 NO 8 N/S

54. [If YES] Do you believe mercury was ever released from any of the plants on the Oak Ridge Reservation?

1 YES 2 NO 8 N/S

55. Next, have you heard of radioactive cesium? 1 YES 2 NO 8 N/S

56. [If YES] Do you believe that radioactive cesium was ever released from any of the plants on the Oak Ridge Reservation?

1 YES 2 NO 8 N/S

57. Next, have you heard of radioactive iodine? 1 YES 2 NO 8 N/S

58. [If YES] Do you believe that radioactive iodine was ever released from any of the plants on the Oak Ridge Reservation?

1 YES 2 NO 8 N/S

59. Next, have you heard of uranium? 1 YES 2 NO 8 N/S

60. [If YES] Do you believe that uranium was ever released from any of the plants on the Oak Ridge Reservation?

1 YES 2 NO 8 N/S

61. Next, have you heard of PCBs? 1 YES 2 NO 8 N/S

[If YES, follow-up with both of the following questions.]

62. Do you believe that PCBs were ever released from any of the plants on the Oak Ridge Reservation?

1 YES 2 NO 8 N/S

63. Do you think that there are other significant local sources of PCBs getting into the environment?

1 YES 2 NO 8 N/S

64. Have you attended any public meetings in the last year at which environmental issues were discussed?

1 YES 2 NO 8 DON'T RECALL

65. [Ask only if response to previous question was 'YES'] I'm going to read you a list of types of meetings. For each one, please tell me if you attended that type of meeting during the last year?

a. Department of Energy meetings	1 YES	2 NO	8 N/S
b. Local environmental groups	1 YES	2 NO	8 N/S
c. The Oak Ridge Health Agreement Steering Panel	1 YES	2 NO	8 N/S
d. local government meetings	1 YES	2 NO	8 N/S

These last few questions will allow us to compare your answers to those of others. Again, your responses are completely confidential.

66. Generally speaking, are your views on political matters conservative, moderate or liberal [ROTATE]? [If 'conservative' or 'liberal' ask] Would you say your views are very conservative/liberal...?

1 VERY CONSERV. 2 CONSERV. 3 MODERATE 4 LIBERAL 5 VERY LIBERAL 8 N/S

67. How many miles do you live from the Oak Ridge Reservation (the plant that is closest to you)?

[READ LIST]
1 WITHIN 1 MILE
2 2-5 MILES
3 6-10 MILES
4 11-20 MILES
5 MORE THAN 20 MILES
8 N/S

68. Which county do you live in? [If Anderson or Roane County] Do you live inside the city limits of Oak Ridge?

01 ANDERSON COUNTY--OAK RIDGE
02 ANDERSON COUNTY--OUTSIDE OAK RIDGE
03 ROANE COUNTY-INSIDE OAK RIDGE
04 ROANE COUNTY--OUTSIDE OAK RIDGE
05 CAMPBELL COUNTY
06 CLAIBORNE COUNTY
07 MEIGS COUNTY
08 MORGAN COUNTY
09 RHEA COUNTY
10 UNION COUNTY 99 NO RESPONSE

69. [Ask only if not Oak Ridge] What is the name of the community that you live in [or closest to]? _____

70. What is your zip code? _____

71. How long have you lived in this area, that is your community and the surrounding counties? _____

72. Do you or any member of your household work at any of the facilities at the Oak Ridge Reservation?

1 YES 2 NO

73. What is your age? (code years... leave blank for no answer) _____ [2 DIGITS]

8

74. Which of the following best describes your level of education, not a high school graduate, a high school graduate, some college, a college graduate, or a graduate or professional degree?

1 NOT HS GRADUATE
2 HS GRADUATE
3 SOME COLLEGE
4 COLLEGE GRADUATE
5 GRADUATE/PROFESSIONAL DEGREE

75. What is your marital status? Are you single, married, divorced, or a widow or widower?

1 SINGLE 2 MARRIED 3 DIVORCED 4 WIDOW(ER)

76. Do you have any children under 18 currently living with you ? 1 YES 2 NO

77. What is your race? Are you Black or African-American, White, Hispanic, Asian or Pacific Islander, or American Indian?

1 BLACK 2 WHITE 3 HISPANIC 4 ASIAN 5 AMERICAN INDIAN

78. Counting income from all sources, including earnings from all jobs, unemployment insurance, pensions, welfare, and so on, and counting income for everyone living in your home, which of the following ranges did your household income fall into last year? [Read quickly.]

1 LESS THAN $12,500 3 $25,001 - $35,000 5 $50,001 +
2 $12,501- $25,000 4 $35,001 - $50,000 8 UNSURE

SAY YOU ARE DONE, AND THANK THE RESPONDENT AND SAY GOOD-BYE: FILL IN THIS PAGE IMMEDIATELY. CHECK THAT YOUR SHEET IS FILLED IN NEATLY SO THAT IT CAN BE READ BY THOSE ENTERING THE DATA. MAKE SURE THAT ANY TWO COLUMN BLANKS HAVE LEAD ZEROS (02) IF APPROPRIATE. **Fill in the rest from Dialing Form**

_____ Write in Phone # here. Include the area code for all #'s. NO DASHES (e.g. 5551212)

_____ Respondent's sex] 1 MALE 2 FEMALE

_____ County Code **(3 digits)** from phone sheet.

_____ Put your first and last initial here.

VITA

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