To the Graduate Council:

I am submitting herewith a thesis written by Barry R. Durbin entitled, "Culture of Intimidation: Power Relationships, Quiescence, and Rebellion in Oak Ridge, Tennessee." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Masters of Arts with a major in Sociology.

Sherry Cable
Sherry Cable, Committee Chair

We have read this thesis and
recommend its acceptance:

Virginia Seitz

Robert Jones

Acceptance for the Council:

Anne Mayhew
Vice Provost and Dean of Graduate Students

(Original signatures are on file with official student records.)

Culture of Intimidation: Power Relationships, Quiescence, and Rebellion in Oak Ridge, Tennessee

A Thesis

Presented for the
Master of Arts Degree
The University of Tennessee, Knoxville

Barry Durbin
December 2002

Copyright © 2002 by Barry Durbin
All rights reserved.

Dedication

I dedicate this thesis

to my loving family.

My wife Marcy

and my children,

Meghann and Christopher

for all their love,

support, patience,

and encouragement.

Acknowledgments

I owe a tremendous gratitude to so many people for their help throughout this endeavor. First, I owe a special thanks to the workers, residents, and activists in Oak Ridge: to members of Oak Ridge Communities Allied (ORCA) — Janet Michel, Jackie Kittrell, Harry Williams, Mike Knapp, Bob Eklund, Sandra Reid, Romance Carrier, Pam Watson, and Cliff Honiker — for their time and commitment toward this project; to the Oak Ridge workers and residents whose courage to speak out is a true inspiration to others; and to staff at the University of Tennessee Community Partnership Center (CPC) for their outstanding support during this project.

Although it is by University convention that this thesis by copyrighted, I share this work equally with the workers and community of Oak Ridge. The members of ORCA retain full ownership and control of all data collected during this project.

Additionally, I would like to thank my committee: Sherry Cable, Virginia Seitz, and Robert Jones. Their time, effort, and energy made this project possible. I especially would like to thank my chair, Sherry Cable, for her wisdom and patience throughout this project.

Finally, I would like to recognize my family — my parents Buddy and Marylu; my sisters Traci Gaither and Christy Blood; my brother-in-law Lloyd Gaither; my niece Aston Gaither; and my nephews Devon and Dustin Blood — for all their love, support, and encouragement.

Abstract

Studies suggest that quiescence, or the absence of challenge from deprived groups can be explained as a function of power relationships. Power has the potential to influence the decision-making process by monopolizing decision-making arenas. Furthermore, elites that occupy positions of power have the capability to resist challenges from deprived groups by preventing certain issues or grievances from ever being raised. This study's focus is a former nuclear weapons production facility (the former K-25 Gaseous Diffusion Plant) in Oak Ridge, Tennessee, the quiescent nature of workers there, and the subsequent rise of rebellion. I employ a historical perspective using in-depth interviews and secondary data sources to investigate the perceptions of workers on power relationships. I explore the consequences of unequal power relationships on workers. K-25 was the first site built for the Manhattan Project in 1943. Findings indicate that the quiescent nature of K-25 workers cannot be explained by worker apathy or consensus with the status quo. In fact, the perception of quiescence can be explained by power relationships between dominant and subordinate groups. Generalized grievances were present, but were controlled and contained by the Department of Energy (DOE) and its corporate contractors. Even as rebellion emerged, traces of quiescence can still be found among workers in Oak Ridge.

Table of Contents

Chapter **Page**

I The Research Problem……1

II Literature Review……..….6

The Pluralist Model…….7

Elite Manipulation of Public Agendas…….…9

Elite Influence on Socialization……..12

Theoretical Framework……...19

III Research Design…….21

IV Culture of Silence: Suppression of Collective Resistance……..27

Building the Secret City……..27

The K-25 Site……..30

Maintaining Power: Keeping Collective Resistance Down……33

Manipulating the Public Agenda…….34

Economic Dependence……34

Compliance by Coercion…….36

Threat of Sanctions…….36

Invoking Existing Bias……40

Elite Influence on Socialization……..41

The Control of Information……42

National Security……42

Scientific Community…….45

Medical Community……48

Public Information Venues…….51

Workplace Culture……..53

V Breaking the Silence: The Rise of Rebellion……..58

Breaking the Information Barrier……58

Changing Political Climate…….63

Changing Public Policy……..65

Challenging the Power Structure……69

VI Conclusion……..73

The Dimensions and Mechanisms of Power……..74

Outcomes……77

Bibliography……81

Appendices…….86

Appendix A: Interview Guide……87

Appendix B: Analysis Matrices……89

Appendix C: Hall Amendment Responsibilities……95

Vita…….99

List of Tables

Table **Page**

Table 4.1: Summary of Worker Experiences.....89

Table 4.2: DOE's Official View of K-25 Buildings.....92

Table 4.3: DOE's Official View of Worker Health.....94

Table 5.1: Hall Amendment Responsibilities.....96

Table 5.2: The Hall Amendment Leasing Process.....97

List of Abbreviations

AEC.....Atomic Energy Commission

AEHSP.....American Environmental Health Studies Project

CAB .....Citizen's Advisory Board

CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)

CHE.....Coalition for a Healthy Environment

CMI .....Corrective Measures Implementation

CMS .....Corrective Measures Study

CPC .....University of Tennessee Community Partnership Center

CROET .....Community Reuse Organization of East Tennessee

D&D.....Decontamination & Decommissioning

DOE .....Department of Energy

EPA .....Environmental Protection Agency

ETTP .....East Tennessee Technology Part

FFA .....Federal Facilities Act

FOIA .....Freedom of Information Act

IRC.....Information Resource Center

K-25 .....Code name for Oak Ridge Gaseous Diffusion Plant

LOC.....Local Oversight Committee

LEAF.....Legal Environmental Assistance Foundation

NPL .....National Priority List

NRC .....Nuclear Regulatory Commission

NRDC .....National Resources Defense Council

ORCA .....Oak Ridge Communities Allies

OREPA .....Oak Ridge Environmental Peace Alliance

ORGDP.....Oak Ridge Gaseous Diffusion Plant (K-25)

ORHL.....Oak Ridge Health Liaison

ORHA .....Oak Ridge Health Agreement

ORHASP.....Oak Ridge Health Agreement Steering Panel

ORNL.....Oak Ridge National Laboratory

ORO .....Oak Ridge Operations

ORR .....Oak Ridge Reservation

PEIS .....Programmatic Environmental Impact Statement

RCRA.....Resource Conservation and Recovery Act

RFA.....RCRA Facilities Assessment

RFI .....RCRA Facility Investigation

SOCM .....Save Our Cumberland Mountains (Roane County Chapter)

SSAB.....Site Specific Advisory Board

TAG .....Technical Assistance Grant

TDEC .....Tennessee Department of Environment and Conservation

TVA .....Tennessee Valley Authority

X-10 .....Code name for Oak Ridge National Laboratory (ORNL)

Y-12 .....Code name for Oak Ridge electromagnetic separation plant

CHAPTER I

The Research Problem

This thesis is a study of the absence of a challenge. The problem is set in a situation where power relationships have placed an unequal share of adverse health and environmental degradation upon the workers and community of Oak Ridge, Tennessee. With a large concentration of sick workers and environmental degradation in the Oak Ridge area, it is logical to expect a challenge from workers, one that finally came after a long period of silence.

This study's focus is a former nuclear weapons production facility in East Tennessee, the long-time quiescent nature of workers there, and the eventual rise of rebellion. What elements of social life, then, can be drawn upon to explain quiescence and the subsequent resistance from workers? One such element that explains this phenomenon is power. Power, when exercised by elites over non-elites, has the potential to influence the decision-making process by monopolizing decision-making arenas. Furthermore, elites that occupy positions of power have the capability to resist challenges from deprived groups by preventing certain issues or grievances from ever being raised. Why, in situations of obvious inequality, do challenges not emerge? How do deprived groups that are kept from reaching the political agenda raise issues?

Power has a cumulative effect. First, the exercise of power influences who does and who does not participate in the decision-making process by the mobilization of political resources such as votes and jobs. Second, the exercise of power creates barriers that restrict the involvement of non-elites in making decisions and result in a

'mobilization of bias.' Finally, the exercise of power creates a collective consciousness through which non-elites accept their position of inferiority. This acceptance exemplifies what sociologist John Gaventa calls "patterns of non-conflict" against elites (Gaventa 1980:13). In this study, I investigate whether such power relationships can be found surrounding nuclear operations in East Tennessee.

The United States government chose the area of East Tennessee, now known as Oak Ridge, to be the first site developed as part of the Manhattan Project. Subsequently, the government built facilities in Hanford, Washington and Los Alamos, New Mexico. The mission of the Manhattan Project, which began development in 1942, was to produce an atomic bomb before the Germans. The Manhattan Project successfully produced the nuclear bomb dropped on Hiroshima, Japan on August 6, 1945.

The primary mission of the East Tennessee site, originally known as Site X, was the production of the U-235 isotope (a light particle of uranium used in the production of atomic weapons). Atomic production facilities initially used three separation methods to obtain U-235: gaseous diffusion, an electromagnetic process, and thermal diffusion; but government officials quickly discontinued the thermal diffusion process. The government constructed three facilities in East Tennessee: X-10, Y-12, and K-25. Each facility employed a different separation method (Johnson & Jackson 1981).

X-10 was formerly known as the atomic pile. Today it is known as Oak Ridge National Laboratory (ORNL). Operations at X-10 resulted in the transmutation of uranium into small particles of plutonium. The U.S. military used X-10 as a model for constructing the Hanford, Washington site for the production of plutonium. The second site, Y-12, was constructed in 1943 as a giant electromagnetic plant. This process whirls

uranium through a magnetic field that separates the lighter U-235 isotopes from the heavier U-238 isotopes. The third site, K-25, was also constructed in 1943 as a gaseous diffusion plant. This process involves the injection of fluorine gas into a barrier system that separates the lighter U-235 isotopes from the heavier U-238 isotopes. The conditions and workers at K-25 are the focus of my study.

Through their performance of job-related activities, nuclear workers at K-25 have been exposed to a number of hazardous substances such as uranium, plutonium, cyanide, mercury, and beryllium. Some workers claim that exposures led to detrimental health consequences such as cancers, respiratory diseases, cardiac diseases, memory loss, and immune deficiencies. Rather than confronting the corporate and state institutions they blamed for their illnesses, they remained quiet until the 1980s. Why were workers silent about their grievances? Are there still elements of quiescence present among K-25 workers? Why did workers resist when they did? In this study, I analyze the experiences of K-25 workers to explain quiescence and the rise of worker resistance.

This study makes several scholarly contributions to the discipline of sociology and the power literature. It contributes to the discipline of sociology by adding to the conceptual frame formulated by Stephen Lukes and John Gaventa to understand quiescence in toxic communities where obvious inequalities exist.

Second, I lend understanding to how the exercise of power is perceived from the bottom, up. In other words, power relationships are examined from the point-of-view of the non-elite, in this case, the workers. This study provides an empirical instance to identify and understand power relationships between the more powerful Department of Energy and its corporate contractors and the less powerful nuclear workers at K-25.

Finally, I identify the specific mechanisms of power employed by the Department of Energy and its corporate contractors in Oak Ridge. This knowledge gives community organizations a broader base for understanding local grievances and for identifying appropriate targets for future challenges. Community organizations can use this information as a tool to raise consciousness within the community and to recruit support for organizational goals.

In chapter two, I set up the theoretical foundation for the study. I focus primarily on the work of John Gaventa and Steven Lukes who explain quiescence and rebellion in terms of power relationships between the powerful and powerless. I describe the one, two, and three-dimensional perspectives to understanding power relationships that were initially developed by Steven Lukes (1974) as the "three-faces of power." I use this three-dimensional approach as a theoretical framework to study power relationships in Oak Ridge.

Chapter three outlines the research methodology used in the study. I describe the qualitative nature of the study and the types of qualitative research methods that are used. These methods include participant observation, in-depth interviews, and a review of technical documents. I also give a description of the sampling protocol used to identify respondents and the research dilemmas encountered during the research project.

Chapter four establishes the background and historical context in which the study is set. I begin with an historical narrative focused on the building of the secret city and the reservation community. Next, I describe the institutional infrastructure within the City of Oak Ridge and the Oak Ridge Reservation that allowed for the exercise and maintenance of power relationships. I identify the specific mechanisms of power that

workers perceive to be exercised upon them in Oak Ridge and describe the process in which these mechanisms of power were exercised.

In Chapter five, I discuss the structural changes in the power field that led to worker challenges against powerholders. I focus on fractures in the information barrier, changes in public policy, changes in the political climate and the ensuing rebellion.

In Chapter six, I report the results of the study. First, I discuss my study's theoretical implications to the power literature and make some suggestions for future research.

Chapter II

Literature Review

To understand nuclear workers quiescence in Oak Ridge, I employ the literature on power relationships. Quiescence is the political inaction or silence of deprived groups. The literature includes a framework for understanding how elites exercise power over non-elites. Scholars do not agree on a universal definition of power. For the purposes of this study, I use the concept of power developed by Max Weber who defines power as "the ability to achieve desired ends despite resistance from others." In particular, I use John Gaventa's (1980) discussion of the three dimensions of power. Gaventa draws upon the "three faces of power" developed by Steven Lukes (1974). Gaventa, studying an arguably under-developed region in Southern Appalachia, takes issue with other analysts to explain quiescence as a function of power relationships.

Gaventa suggests that conservative democratic theories explain quiescence as "evidence of the legitimacy of an existing order, or as an argument for decision-making by the few, or at least as a phenomenon functional to social stability" (Gaventa 1980:3). Political science theorists have since questioned these conservative theories, arguing that quiescence is instead a reflection of the misuse of power (Bachrach 1969; Walker 1966). According to Gaventa, these theorists argue that quiescence does not necessarily demonstrate consent with the status quo, nor does it deny the classical Marxist ideal that "actions of the dispossessed will serve to counter social inequalities" (Gaventa 1980:3). The very existence of quiescence among deprived groups suggests that unequal power relationships between elites and non-elites have, somehow, been maintained over time.

How, then, are power relationships maintained? Gaventa argues that the cumulative effects of three dimensions of power combine to maintain and shape power relationships between elites and non-elites. Each dimension carries its own mechanisms for which those with power exercise power over those without power, despite the resistance from the powerless. Beginning with the pluralist, one-dimensional perspective on power, I discuss each dimension separately, ending with a more comprehensive, three-dimensional explanation.

The Pluralist Model

In the study of political power and participation, some analysts examine only one dimension of power. These analysts are the Pluralists who argue that inaction by non-elites reflects consensus with the status quo. Other analysts add a second dimension of power for analysis, the mobilization of bias. Following Lukes, Gaventa argues for the inclusion of a third dimension of power, which shapes the conceptions of non-elites.

The pluralist of power, developed by pluralists such as Nelson Polsby (1963) and Robert Dahl (1969), concerns the study of who participates and who gains in the decision-making process. Dahl's idea of power is seen as "A has power over B to the extent that he can get B to do something that B would not otherwise do" (1969:80).

This approach makes three assumptions about political participation. First, the pluralists assume that grievances are recognized and acted upon. According to Polsby, "people participate in those areas they care about the most. Their values, eloquently expressed by their participation, cannot, it seems to me, be more effectively objectified" (1959:235).

Second, the pluralist model assumes that decision-making arenas are open to any organized group and that in the decision-making arenas of fragmented governments, the claims of small, intense minorities receives attention (Polsby 1963:118). To this point, Dahl writes:

> In the United States the political system does not constitute a homogenous class with well-defined class interests. In New Haven, in fact, the political system is easily penetrated by anyone whose interests and concerns attract him to the distinctive political culture of the stratum...The independence, penetrability and heterogeneity of the various segments of the political stratum all but guarantee that any dissatisfied group will find a spokesman. (1961:91, 93).

Dahl (1956) recognizes that there are numerous groups competing in modern societies, but that no single group is powerful enough to dominate the decision-making process or control the entire community. This is true especially with broad issues where the winner of power struggles often varies. But critics of the pluralists model, such as Olsen and Marger (1993) assert that the pluralist model does not involve non-elites in power exertion, but that conflict among competing interests will prevent power concentration and ensure that all interests will be represented (1993:84).

Third, the pluralist model assumes that leaders can be studied as representatives of the mass, not as elites. Gaventa argues that conflict and challenge among leaders assures the political responsiveness of leaders to all groups (1980:6). As Dahl eloquently states, "to a remarkable degree, the existence of democratic ceremonials that give rise to the rules of combat has insured that few social elements have been neglected for long by one party or the other" (1961:114). For the pluralist, then, inaction by deprived groups does not constitute a political problem; rather, political action becomes the problem. Inaction by non-elites, according to the pluralist model, reflects consensus within

deprived groups. Therefore, the question of quiescence is absent from the pluralist approach.

The mechanisms of power within the pluralist model are straightforward. This approach places emphasis on directly observable conflict between elites and deprived groups in the decision-making arena. "Power may be understood primarily by looking at who prevails in bargaining over the resolution of key issues (Gaventa 1980:14). The mechanisms of power in the pluralist model include political resources such as votes, jobs, and directly observable influence. Political actors use these resources in the pursuit of personal, political agendas.

Elite Manipulation of Public Agendas

Critics of the one-dimensional approach argue that the Pluralists' place responsibility for widespread non-participation on the ignorance, indifference, and shiftlessness of the people (Schattschneider 1960). Schattschneider counters this argument by saying:

> There is a better explanation: absenteeism reflects the suppression of the options and alternatives that reflect the needs of the non-participants. It is not necessarily true that people with the greatest needs participate in politics most actively—whoever decides what the game is about also decides who gets in the game (1960:105).

Bachrach and Baratz (1962, 1970) developed the concept of power further by adding a second dimension, which they refer to as power's 'second face.' They explain that power is not just exercised upon participants within the decision-making process, but it also excludes certain participants and issues altogether (1970:8). In this instance, elites use the exercise of power as a means of controlling the conversation in the decision-

making arena. In manipulating the public agenda, powerful organizations develop a "mobilization of bias...in favor of the exploitation of certain kinds of conflict and the suppression of others...Some issues are organized into politics while others are organized out" (Schattschneider 1960:71). Those in power place barriers to participation upon the powerless, thus preventing them from acting upon any existing grievances and pre-determining which political issues are included in any public discourse.

How is quiescence explained within two-dimensional manipulation of the public agenda? Explanations for the appearance of quiescence are entirely different from those offered in the one-dimensional, pluralist model. Crenson (1971), in a study on air pollution in Gary, Indiana associated with US Steel plants, found that "the reputation of power may have been more important than its exercise. It could have enabled U.S. Steel to prevent political action without taking action itself, and may have been responsible for the political retardation of Gary's air pollution issue" (1971:80). Parenti (1970), studying urban blacks in Newark, found that actors and interests have the capacity to thwart some rather modest lower-class claims. Parenti suggests that a more important characteristic of power is the ability to pre-determine the political agenda, rather than to prevail in the struggle. Salamon and Van Evera (1973) in a study of voting patterns in Mississippi found that quiescence is dependent on the "fear" and "vulnerability" of blacks to local power elites, rather than on the apathy of low class blacks. Wolf (1969) explains quiescence among peasants as a function of the political environment of deprived groups. Wolf found that quiescence was not inherent in the traditional values or the isolation of the peasantry, but varied "in the relation of the peasantry to the field of power which surrounds it" (1969:290). Mechanisms or processes of public agenda manipulation aid

in understanding how those holding powerful positions mobilize power against deprived groups.

The mechanisms used to exercise power in public agenda manipulation are more complex and add to the available resources employed in the pluralist model. Bachrach and Baratz write that the second-dimension of power brings with it:

> A set of predominant values, beliefs, rituals, and institutional procedures ('rules of the game') that operate systematically and consistently to the benefit of certain persons and groups at the expense of others. Those who benefit are placed in a preferred position to defend and promote their vested interests (1970:43).

They argue further that the 'mobilization of bias' is sustained through non-decisions. Bachrach and Baratz define non-decisions as:

> A decision that results in suppression or thwarting of a latent or manifest challenge to the values or interests of the decision maker. To be more nearly explicit, nondecision-making is a means by which demands for change in the existing allocations of benefits and privileges in the community can be suffocated before they are voiced, or kept covert; or killed before they gain access to the relevant decision-making arena; or, failing all of these things, maimed or destroyed in the decision-implementing stage of the policy process (1970:44).

Bachrach and Baratz suggest that the mechanisms by which power is exercised in public agenda manipulation can be either overt or covert forms of non-decision-making. Overt forms of non-decision-making can be explained using four processes that are observable and identifiable. First, power is exercised in the form of force. Second, power is exercised as the threat of sanctions that prevent an open and fair forum for discussion. Sanctions come in the form of rewards or punishments that range from intimidation to co-optation—to take over by assimilation into the dominant culture. Third, power elites invoke existing bias upon non-elites to thwart rising issues. The

invoking of existing bias can include the manipulation of symbols, which takes the form of negative labeling. Those in power are able to undermine the legitimacy of individuals or groups with grievances by placing negative labels on them such as paranoid, crazy, or delusional. The fourth form of non-decision-making is the establishment of new barriers that strengthen the mobilization of bias against those challenging the status quo.

Covert forms of non-decision-making, on the other hand, are explained by two processes, which are not so identifiable. Bachrach and Baratz call the first "decisionless decisions," which develops from institutionalized non-participation or from an unintended, cumulative effect of decisions. These are decisions that elites are able to keep out of decision-making arenas. The second process deals with the anticipated defeat "where B, confronted by A who has greater power resources, decides not to make a demand upon A, for fear that the latter will invoke sanctions against him" (1970:42-6). In both of these cases, the processes of power involve events that are unidentifiable and unobservable.

Elite Influence on Socialization

Building upon the one and two-dimensional approaches to understanding power relationships, Lukes argues that "A exercises power over B when A affects B in a manner contrary to B's interests" (Lukes 1974:34). In the third dimension, power is not only exercised over subordinate groups by deciding who participates in the decision-making process as in the pluralist model, or manipulating the public agenda by placing barriers to participation upon subordinate groups, but also by influencing the socialization process of deprived groups. According to Lukes, A not only exercises power over B by prevailing

in key issues or by preventing B from raising those issues, but also by influencing B's perceptions of the issues altogether. Lukes states that this type of power relationship happens when observable conflict is absent between dominant and subordinate groups, although there is the possibility of latent conflict consisting "in a contradiction between the interests of those exercising power and the real interests of those they exclude" (Lukes 1974:24-5).

Lukes argues that it is imperative that the analysis of power avoid the individual explanations of the first two approaches, while allowing "for consideration of the many ways in which potential issues are kept out of politics, whether through the operation of social forces and institutional practices or through individuals' decisions" (1974:24). In doing so, Lukes suggests "the three-dimensional approach offers the prospect of a serious sociological and not merely personalized explanation of how political systems prevent demands from becoming political issues or even from being made" (1974:38). Although Lukes developed the conceptualization of the three-dimensional approach to power, Gaventa tested the concept empirically in a Southern Appalachian community.

Gaventa suspected that the identification of specific mechanisms used by elites to influence the socialization process could be accomplished by "specifying the means through which power influences, shapes, or determines conceptions of the necessities, possibilities, and strategies of challenge in situations of latent conflict" (1980:15). Edelman (1960,1967) suggests that studies of political quiescence not only include the study of social myths, language, and symbols, but also how they are shaped or manipulated within power arenas. It may include a study of what information is communicated and the processes by which the information is communicated (Mueller

1973). It may include studies focused on the development of social legitimations by the dominant upon those that are subordinate (Milliband 1969, Mills 1956). Or it may include the study of how power processes influence the social construction of meaning and the patterns that get B to act and believe in a manner which B would not otherwise do, to the benefit of A and to the detriment of B (Burger and Lukeman 1966).

A number of mechanisms of power used to influence the socialization process are direct and observable. According to Lukes, "thought control takes many less total and more mundane forms, through the control of information, through the mass media, and through the process of socialization" (1974:23). Elites manipulate perceptions by controlling non-elites' access to information for non-elites. Deutsch and Rieselbach (1965) support this notion by saying that communications theory "permits us to conceive of such elusive notions as consciousness and the political will as observable processes" (1965:151). Elites manipulate perceptions through the mass media. In many instances, the media become willing accomplices to further the agenda of power elites, thus giving legitimation to the wants and needs of elites. Powerful elites are able to manipulate non-elites by controlling the socialization process. Mann (1970) and Frey (1971) suggest that through the study of socialization—the theory of how society learns cultural elements such as values, norms, and beliefs—may help to expose the means by which elites maintain dominance or instill legitimacy.

In addition to the direct, observable mechanisms of power, these processes may take more indirect forms. These involve psychological processes within groups that lack power. Gaventa gives three such examples. First, as deprived groups are continuously defeated by elites in the pluralist model, deprived groups resort to inaction due to the

anticipation of defeat by elites, seen in elites manipulation of public agendas. In the long term, "the calculated withdrawal by deprived groups may lead to an unconscious pattern of withdrawal, maintained not by fear of elites, but by a sense of powerlessness within deprived groups, regardless of elite's condition. A sense of powerlessness may manifest itself as extensive fatalism, self-depreciation, or undue apathy about one's situation" (1980:17). The sense of powerlessness may lower the level of demands and promote quiescence within deprived groups.

Second, power is related to the correlation between participation and class-consciousness. According to Pizzorno (1970), "class-consciousness promotes participation, and in turn, political participation promotes class-consciousness" (1970:45). Therefore, according to Gaventa, when subordinate groups or individuals are denied participation in the decision-making process, they "might not develop political consciousness of their own situation or the broader political inequalities" (1980:18). Therefore, non-participation in decision-making arenas decreased class-consciousness. Powerlessness is then transformed into dependency and dependency, in turn, develops into what Freire (1972) calls a "culture of silence" (1972:52). According to Freire, a dependent society is a silent society. With the absence of class-consciousness within dependent societies, the actions of elites are legitimized. As well, the values of the dominant are easily assimilated into the subordinate culture. Within a similar line of argument, Mueller writes that deprived groups "cannot articulate their interests or perceive social conflict. Since they have been socialized into compliance, so to speak, they accept the definitions of political reality as offered by dominant groups, classes or government institutions (1973:9).

Even in instances where deprived groups break their silence, their grievances may remain vague or only partially developed. These instances contribute to the explanation of what Garson (1973) calls "multiple" or "split" consciousness of poor and working-class groups. As long as dominant groups are successful in maintaining a sense of subordination or the defeatist consciousness that grows from non-participation, as seen in the pluralist model of power, "the 'unified' or 'critical' consciousness will likely remain precluded" (Gaventa 1980:19). For Gramsci, deprived groups "can reach the point where the contradiction of conscience will not permit any decision, any choice, and produce a state of moral and political passivity" (1957:67).

The final indirect mechanism of power used by elites to influence the socialization process is described by Garson as the development of a "multiple consciousness", which is characterized by "ambiguity and overlays of consciousness; different and seemingly contradictory orientations will be evoked depending upon the context" (1973:163). This type of consciousness is vulnerable and manipulated by the powerful. Gaventa writes that this manipulation is carried out "through the invocation of myths or symbols, the use of threat or rumors, or other mechanisms of power, the powerful may be able to ensure that certain beliefs and actions emerge in one context while apparently contradictory grievances may be expressed in others" (1980:19). Manipulation serves to distract conflict away from the responsible parties.

Gaventa argues that the three dimensions of power are "interrelated in the totality of their impact" (1980:20). Each separate dimension of power serves to reinforce power relationships. According to Gaventa, once power relationships are developed, they become self-sustaining. Therefore, quiescence can only be understood in terms of the

inertia of the situation (1980:256). Simple observation at a given point in time is not sufficient to understand power relationships in any community. Gaventa writes that a "historical investigation must occur to discover whether routines of non-conflict have been shaped, and, if so, how they are maintained" (1980:256).

In his study, Gaventa examined power relationships between the absentee-company owners of the coal mines and a Southern Appalachian community. He found that in the pluralist model of power, conflicts over inequality issues were seen in the past. Elections in 1890s and court cases in the 1930s revealed conflict between elites and non-elites and the areas' corporate interests, as well as the elite's ability to prevail. He also saw conflict between rank-and-file workers and organizational elites over the establishment of governing procedures in organizing the union. Gaventa argues that, once patterns of dominance have been established within decision-making arenas, power can be manipulated more easily over the decision-making agenda (1980:253). Gaventa concludes by saying:

> Since the formative historical moments, conflict over matters of inequality has been contained primarily within the second- and third- dimensional arenas of power. For this reason, those studies, which apply only the pluralists' assumptions to a study of the Valley will neither discover the hidden faces of power, nor understand how they serve to maintain the area's inequalities (1980:253-54).

Concerning the manipulation of the public agenda, Gaventa concluded that, "the anticipation of defeat by the relatively powerless, often thought to reflect the fatalism of the traditional culture, is not an irrational phenomenon" (1980:254). In the Appalachian Valley, powerholders have benefited from a multitude of resources, which have historically shaped the "mobilization of bias" that serves to maintain a state of

inaction among deprived groups. The mobilization of bias was strengthened by the use of force against challenges in the 1930s and 1970s. Sanctions were used or threatened including threats over pension benefits, health cards, food stamps, the homes of subordinates, and the job tenure of employees, as well as their kin and neighbors. Symbolic resources or negative labels such as 'Catholic', 'communist', 'outsider', or 'troublemaker' were used as a subtle means for discrediting the challenges of deprived groups in Appalachia. Finally, while rebellion gave miners national attention in the 1930s, "fundamental economic demands initially voiced were 'organized out' of the conflict" (1980:255).

With regard to direct, observable mechanisms used by elites to influence the socialization process, Gaventa (1980:255) found that the establishment of basic inequalities in the Appalachian Valley brought its own legitimations, which were seen as a glorification of the new, dominant culture and a degradation of the previously existing culture. The dominant culture was also legitimized by relationships developed in the union, where an ideology of loyalty to the company was predominant among workers and residents. These legitimations continued to be strengthened through the control of information. Gaventa (1980:255) focused on information flows such as local newspapers in the 1930s, communications between leaders and union members, and the modern mass media to suggest a "means through which conceptions of conflict can be directly shaped."

Finally, in the Appalachian Valley, Gaventa saw the kind of manipulation included in the indirect mechanisms used by elites to influence to socialization process "in the shaping of union discontent into support for the corrupt union regime " (1980:256).

Theoretical Framework

In this study, I use aspects of this comprehensive, three-dimensional approach to explain power relationships, quiescence, and the rise of rebellion among nuclear workers at K-25. I use Gaventa's (1980) conception of quiescence as the absence of challenge or silence of deprived groups. I use the experiences of nuclear workers to gain an understanding of historical factors that have impacted current conditions at K-25. I use the second and third dimensions of power as a framework for the rejection of pluralism in the first dimension. Consequently, aspects of this three-dimensional approach that I use in this study lie within the second and third dimensions.

By using this framework, I identify specific instances where perceptions of power have been exercised upon nuclear workers. Specifically, I identify instances where power has been exercised by coercive—to force against individual or group interests—means such as: the use and threat of sanctions; and the use of symbolic resources to legitimize dominant interests. Also, I identify instances where dominant groups re-enforce their interests and shape the ideas and interests of subordinate groups. In particular, I examine elites control of information in order to maintain their powerful position and the means in which subordinate groups accept their position of inferiority and develop a sense of powerlessness.

I use the above framework to address the following questions:

- What are the perceptions of workers regarding the exercise of power in Oak Ridge?

- What consequences for worker health do workers claim as a result of unequal power relationships?
- How has the manipulation of the public agenda been used to thwart collective resistance from K-25 workers?
- How has the historical development of the "reservation community" in Oak Ridge created a sense of powerlessness and lack of class-consciousness?
- How has the elite's control of information been used to shape the ideas and interests of K-25 workers?
- What alterations in the power structure led to the rise of rebellion?

Chapter III

Research Design

Qualitative data sources for this study include in-depth interviews, participant observation, and archival documents. These three sources are combined to give the clearest possible picture of the history of the K-25 site and worker's perceptions of power.

In-depth interviews were conducted with approximately 20 current and former nuclear workers from the K-25 Former Gaseous Diffusion Plant in Oak Ridge, Tennessee. The interviews were conducted using a semi-structured format to provide more flexibility and validity in gathering data. The lengths of interviews were approximately one to two hours. Respondents were identified using a snowball sampling technique, which is described as:

> A procedure implemented by collecting data on the few members of the target population you can locate, and then asking those individuals to provide the information needed to locate other members of the population that they happen to know. Snowball refers to the process of accumulation as each located subject suggests other subjects (Babbie 1998:196).

All respondents were assured confidentiality. The interviews took place at a mutually agreed upon location. The interviews were audiotaped with prior permission from respondents. Audiotaping was necessary to retain the richness and detail of subjects' responses and because direct quotations are used in the written report. I transcribed the interviews.

The interviews used in this study were part of study conducted by researchers at the University of Tennessee Community Partnership Center (CPC). The focus of that

study was the reindustrialization of the K-25 site. A coalition of community groups, Oak Ridge Communities Allied (ORCA) was concerned that that the cleanup of existing buildings at the former K-25 site might be inadequate under the reindustrialization strategy and consequently, that the health and safety of workers occupying these buildings might be at risk. ORCA sought technical assistance in evaluating whether the health and safety of workers was ensured and adequate cleanup was being achieved under the reindustrialization strategy. ORCA received a Technical Assistance Grant (TAG) from the Environmental Protection Agency (EPA). TAG grants are tools to fulfill the participation requirements of Superfund legislation. TAGs are intended to provide technical assistance to communities that surround Superfund sites. ORCA contracted CPC to fulfill the technical assistant role and the grant management role for the TAG.

Power was not the focus of the TAG grant research; therefore the interview questionnaire (see Appendix A) does not reflect the orientation towards power for the study. It was not until the completion of the interviewing process that the theme of power emerged. Analytical categories used in data analysis reflect various mechanisms of power's second and third dimensions, which I describe as elite manipulation of public agendas and elite influence on socialization, and offer a rejection of the Pluralist assumptions in the Pluralist model.

Categories reflecting power's second dimension include a theme of power and control. First, respondents spoke about the placement of barriers that limited or derailed worker participation in public meetings and other discussion or informational venues. Second, respondents discussed the threat of negative sanctions to control worker dissent, including the loss of Q-clearance and potential loss of employment. Respondents also

spoke of positive sanctions the allowed for the promotion of "Yes Men" that perpetuated power relationships among workers. Third, respondents described the region's economic dependence upon DOE operations. They described workers' reluctance to come forward with information and their reluctance to complain for fear of job loss.

Categories reflecting power's third dimension continue with the theme of power and control. Respondents described the control of information including DOE's manipulation of the mass media, the control of worker's medical information and the medical community at large in Oak Ridge, and the deliberate omission of data in reporting procedures. Interview data imply a sense of powerlessness and lack of class consciousness among workers. Some respondents accept their deteriorating health conditions, while others express denial of the negative health and environmental consequences of nuclear operations in Oak Ridge.

In-depth interviews were also used because of the small sample size. A survey would have limited the scope and nature of the questions and would have lacked the rich data description from which the power theme emerged. Babbie (1998:291) writes that, in qualitative interviews, "You need to ask a question, hear the answer, interpret its meaning for your general inquiry, frame another question either to dig into the earlier answer in more depth or to redirect the person's attention to an area more relevant to you inquiry."

The second method of data collection was participant observation. Participant observation techniques used include attending environmental organization meetings, attending relevant public meetings, and attending press conferences. Public meetings concerning the K-25 site provided the opportunity to observe community involvement and interaction among workers, residents, and government officials. These meetings

were primarily among community residents, activists, workers, and representatives from the Department of Energy (DOE) and the Tennessee Department of Environment and Conservation (TDEC). I made an effort to keep my impact at a minimum while interacting with community members. Participant observation allowed me to meet and interact with community members on a level other than that of an interviewer. It also allowed me to observe the interaction between government officials and community members. I took extensive field notes at all meetings to allow myself a more active role in understanding the mechanisms used in the exercise of power on nuclear workers in Oak Ridge. I then compiled all field notes and coded them for relevant themes and patterns of behavior.

The third data collection source was archival documents. Archival documents included a review of technical documents related to nuclear operations in Oak Ridge. These documents were obtained from the Department of Energy (DOE) Reading Room, the DOE Information Resource Center (IRC), and from the University of Tennessee Library. This review included correspondence between government agencies such as the Environmental Protection Agency (EPA), DOE, and political representatives; building characterization reports; human health studies; and remediation reports. This review provided an additional tool to juxtapose the official story from DOE and its corporate contractors with the claims made by nuclear workers, as well as a means to document DOE's control of information.

These three data sources allowed for triangulation and the ability to check facts, in turn, strengthening the study and reducing bias. Comparisons between individual data and archival documents allow for the correction of biases in individual sources.

Participant observation provided valuable insight into worker perceptions on past and present concerns at K-25.

Methodological limitations to this study include the repression of archival documentation, the sensitive nature of the subject, the memories of respondents, and the researchers dual role with the community. These limitations have the potential to introduce bias into the research process.

For the most part, archival documentation was readily available. However, some documents remain classified and unavailable for public scrutiny. Classified documents would have filled gaps in information regarding the governmental decisions and perspectives of the K-25 site. Therefore, this study lacks the perspective of the powerholders.

Also, the sensitive nature of the subject matter presented obstacles to data collection. Some respondents were reluctant to discuss sensitive information regarding perceptions of contamination and certain production processes at K-25 for fear of retaliation. The sensitive nature of the subject matter also made respondents reluctant to give out the names of other workers. This reluctance accounted for the study's small sample number.

The respondent's memories became a source of limitation for the study. Many respondents have suffered chemical exposures, which one effect is memory loss. Refer to Appendix B for a list of other effects of exposure. Interview questions required respondents to recall information such as past experiences or stories they had heard from others. Under these conditions, a reliance on respondent's memories increased the chance for error and the chance for bias.

During the research process, I encountered the difficulty of maintaining two separate and distinct roles: researcher and technical advisor. As a staff member at CPC, my role as technical advisor placed me into a different status within the community, where I am regarded as a "regulatory expert." I have represented the organization by speaking at various public meetings such as the Citizens Advisory Board (CAB) meetings, which is a Department of Energy (DOE) sponsored Local Oversight Committee (LOC), whose purpose is to maintain a voice for the public in DOE environmental matters around Oak Ridge.

The next chapter gives a historical perspective of the secret city's development, the structural conditions that allowed for the exercise and maintenance of power in Oak Ridge, and changes to the power structure that led to worker rebellion.

CHAPTER IV

CULTURE OF SILENCE: SUPPRESSION OF COLLECTIVE RESISTANCE

This chapter provides a historical examination of the development of institutional power by the Department of Energy and its corporate contractors in Oak Ridge. I begin with the development of the "Secret City." Next, I discuss the historical structure of power in Oak Ridge, focusing on the control of information surrounding national security concerns and the scientific culture that facilitated a silent and docile workforce.

Building the Secret City

The story of Oak Ridge begins in 1942 when the United States Army entered into discussions with the Tennessee Valley Authority (TVA) for unusual amounts of electrical power to build a secret plant in East Tennessee. Military scouts chose a tract of land near the town of Clinton, Tennessee to build this secret plant. This secret plant was part of the Manhattan Project. The Manhattan Project was the result of a growing atomic threat from Germany during WWII. The United States military's goal for this project was to produce an atomic weapon in a three-year period.

The U.S. military chose this section of East Tennessee because it provided a series of isolated ridges to hide the facilities, an abundant source of water, easy access to the TVA electrical empire, and an abundant labor source from the nearby city of Knoxville, Tennessee. On November 15, 1942, the U.S. District Court ordered the seizure of 52,600 acres located in portions of Anderson and Roane Counties, forcing approximately 37,000 residents from their homes (Overholt, 1987). Landowners claimed

they had been coerced, underpaid, and ill-treated by the military, but little action was taken because a veil of secrecy had fallen upon East Tennessee as the United Stated entered into WWII (Brown and McDonald, 1977).

The United States military, at this point, had successfully displaced approximately 1,000 families to construct the secret city. As construction began, workers were recruited throughout the United States. At that time jobs were scarce, so the promise of employment brought thousands of people to the area. Approximately 75,000 people came to the secret city[1], even though no one knew what exactly they would be doing. These workers and plant operators lived in primitive housing on the northeastern portion of the reservation, making it the fifth largest city in Tennessee at the time.

Barbed wire fences were constructed around the reservation while the government tightly controlled all activities in order to accomplish the mandate from President Franklin D. Roosevelt of paramount secrecy and security (Robinson, 1950). Four admission gates were established to the reservation at Elza, Edgemoor, Solway, and Oliver Springs on April 1, 1943. The government mandate of secrecy required workers and visitors to carry identification badges or special visitors passes to have access through the heavily guarded gates. Workers in the secret city chose Oak Ridge as the name for their government town. They chose this name from a nearby ridge known as "Black Oak Ridge," which runs through the reservation.

The historical context in which Oak Ridge was formed is important to remember because a historical perspective lays the foundation to explain the development and maintenance of power relationships. The military developed the reservation community

[1] Information taken from "Citizen's Guide to Oak Ridge', as part of the Oak Ridge Education Project and published by The Foundation for Global Sustainability, May 1992.

at a time when America had entered World War II. American troops were deployed in Europe and in the South Pacific; the Japanese had bombed Pearl Harbor just nine months before the Manhattan Project sites were chosen; and Germany was believed to be in the process of developing an atomic weapon. The project drew an extraordinary amount of resources, including the world's best minds and unlimited material resources. For example, according the Foundation for Global Sustainability, the U.S. mint loaned over 14,700 tons of silver to be used in the electromagnetic isotope separation processes at Y-12 when copper was in short supply.

Workers at the Oak Ridge facilities were not privy to information concerning their activities until the atomic weapons they had unknowingly help build were dropped on Hiroshima and Nagasaki, Japan in August 1945, ending World War II.

Within a year of WWII's end, over 40,000 workers left the reservation community, while thousands stayed behind to help build a post-war community. In 1946 the Atomic Energy Act was passed, which created the Atomic Energy Commission (AEC). The AEC took over control of the Manhattan Project and the Union Carbide Corporation was awarded the chief nuclear operating contract in Oak Ridge. Union Carbide became responsible for operations at all three facilities in Oak Ridge in 1947.

The new post-war era had now begun for the secret city. The gates that had restricted entry into the reservation were opened to visitors in 1949. By 1955, the government sold the homes that housed reservation workers to residents. Residents, by this time, had become dependent upon the government to provide public services such as water, public transportation, and garbage disposal. Residents were reluctant to give up,

but reached an agreement with government officials for continued funding. The city of Oak Ridge was officially incorporated in 1959 after an unsuccessful attempt in 1953.

The K-25 Site

The K-25 site is one of three facilities constructed in Oak Ridge as part of the Manhattan Project. K-25, also known as the Oak Ridge Gaseous Diffusion Plant (ORGDP) was the world's first plant to separate uranium ^{235} from uranium ^{238} using the gaseous diffusion process. Plant construction began in September 1943 and the first stages of operation began in February 1945. The Union Carbide Corporation operated the plant.

The main gaseous diffusion process building, named K-25, is a huge U-shaped structure. The total area of the main K-25 building covers approximately 44 acres (Robinson 1950:81) with each of its long sides measuring 2450 feet with a total length of nearly one-mile. The entire plant encompasses approximately 1,000 acres.

The initial mission of the K-25 plant was to supply enriched uranium as feedstock or raw material for the Y-12 plant's enrichment facilities. The main production building, K-25, remained in nonstop operational mode through the 1950s and into the early 1960s as additional facilities were constructed in Paducah, Kentucky and Portsmouth, Ohio. These three plants were responsible for producing all the enriched uranium for the United States commercial and military purposes. By 1964, the United States had developed a surplus of weapons grade uranium and the main K-25 process building was shut down. Other enrichment buildings with the K-25 complex continued producing lower grades of

uranium for nuclear reactors. The remaining enrichment buildings at the K-25 complex were put on standby in 1985 and shut down in 1987.

Upon the end of the "Cold War," the Department of Energy began to dismantle its nuclear arsenal. Retiring plants, such as the K-25 site, were no longer useful and cost millions in surveillance and maintenance expenses. DOE's gaseous diffusion facilities are among the nation's largest contaminated surplus facilities in the world.[2] The mission of K-25 changed from the enrichment of uranium to a mission of environmental management including the restoration of the physical environmental, the management of hazardous waste, and the management of underutilized assets. Organizational changes and budget cutbacks forced DOE to seek alternative methods for accomplishing their environmental management mission.[3] The alternative method chosen was reindustrialization. In 1997, K-25 was renamed the East Tennessee Technology Park (ETTP) to reflect this new mission.

The Department of Energy chose reindustrialization to offset the impacts of a reduced workforce after closing in 1987. Reindustrialization was also chosen as a strategy to stimulate economic growth in the region. This strategy is meant to turn the site from a liability to an asset by cleaning up contaminated property and making it available to the public sector without changing ownership[4]. According to DOE, reindustrialization recognizes the continuing value of workers, facilities, and equipment. The goals of reindustrialization include using buildings and equipment that have been idle, accelerating cleanup of the physical environment by the development of nearby

---

[2] Taken from the Environmental Restoration and Waste Management Site Specific Plan for the Oak Ridge Reservation[ER/WM SS Plan]. 1991, p. 5-41.
[3] Taken from Fact Sheet: Reindustrialization of Oak Ridge: Office of Worker & Community Transaction.
[4] Hunt, Craig S. 2000. "Experimental Approach". *Civil Engineering.* February.

land, recruiting new industries to the region, and diversifying the economy of the surrounding communities. How are these goals met?

In November 1995, DOE established the Community Reuse Organization of East Tennessee (CROET) to help reach the goals set for reindustrialization. CROET is an economic development organization whose purpose is to recruit private sector companies to use idle buildings and equipment at the former K-25 facility. Private sector companies are recruited using innovative leasing agreements that allow private industry to use idle facilities and equipment left over from uranium enrichment operations, thereby creating job opportunities for displaced workers.

The leasing process involves four steps[5]. First, the needs of private sector companies are matched with opportunities at ETTP. Second, reviews are conducted regarding national security issues, health and safety of workers, and environmental conditions at the proposed facility. Third, reports of building conditions and an inventory of building assets are prepared. Fourth, once all conditions for lease are satisfied, the lease is consummated.

The 41-member CROET Board oversees all of the organization's activities and provides a forum for discussing the area's wide array of political, cultural, financial, business, and environmental issues related to DOE's operations in Oak Ridge. Board membership includes representatives from the governor's office, local governments, the Site Specific Advisory Board (SSAB), and DOE employees. The CROET board also includes ex-officio (non-voting) positions for DOE-ORO representatives and

[5] Taken from a presentation of the reindustrialization process by Susan Cange, Office of Reindustrialization, Department of Energy.

representatives from congressional offices of the region. The CROET board approves leases for potential tenants.

Maintaining Power: Keeping Collective Resistance Down

The institutional structure within which Oak Ridge was built provides a critical framework for understanding how power relationships were maintained between DOE, its corporate contractors and nuclear workers at K-25. In this section, I take a historical perspective to outline the structural development of power relationships in Oak Ridge, which resulted in the creation of a dependent and silent community in the face of inequality.

The DOE's and its corporate contractors' use of structural mechanisms successfully thwarted any collective resistance against the power structure for approximately four decades. The power theme emerged within this study's data as discrepancies between DOE's official story of K-25 buildings and worker's experiences in those buildings surfaced. Specifically, the review of technical documents including various environmental, health, and safety reports of K-25 buildings failed to match the experiences of workers. Appendix B details these contrasting views.

I explain these opposing views as a function of power relationships. Therefore, based on the workers' perceptions of power relationships, I identified mechanisms elites used for manipulating of the public agenda and influencing the socialization process of deprived groups. This development serves as a rejection of the pluralist model of power. Therefore, mechanisms within the pluralist model are not included in this discussion. In the following sections, I discuss each mechanism separately.

Manipulating the Public Agenda

The manipulation of public agendas carries with it mechanisms that place barriers to non-elite's participation in decision-making arenas. First, the economic dependence upon the defense industry in the region compelled worker compliance. Second, DOE and its predecessor organizations used coercive measures such as the threat of sanctions to control worker dissent and ensure compliance with organizational norms. These institutions also invoked existing bias such as the use of symbolic resources, which placed negative labels on individuals to coerce compliance. Third, these barriers came in the form of derailing worker participation in public meetings and other information forums.

Economic Dependence

From initial construction of the nuclear reservation to present day Oak Ridge, DOE has maintained an economic domination in the region. The defense industry has been the major employer in the region for over 60 years. Not only are area residents dependent upon DOE for employment, but regional businesses and municipalities are also dependent upon DOE for revenues. Regional dependence on the nuclear industry encouraged worker loyalty. The internalization of loyalty fostered worker's silence about environmental and health concerns surrounding nuclear production activities (Cable, Shriver, & Hastings 1999).

It is important to remember the historical and economic context in which the town of Oak Ridge was born. First, the United Stated economy was still in the process of

recovery from the "Great Depression" of the 1930's. Unemployment rates were high. Wages were low. Therefore, any job was a welcome job, regardless of the working conditions. Second, with the exception of the scientific community, the local labor pool consisted of an unskilled and uneducated workforce. Mix (1998:27) suggests that the Army chose this area for the Manhattan Project because "residents were considered to be unquestioning people who needed jobs so badly that they would not raise an argument."

Workers' had claimed illnesses since the end of WWII. They suspected that their illnesses were caused by work related exposures. Workers, however, were reluctant to speak out about their suspicions. One worker, commenting about a fellow employee's reluctance to speak out stated:

> When I was a supervisor, I had a lady in laundry that got in some stuff. They checked her and sent her to Baptist Hospital. Then periodically they would check her urine. They called her down and were doing more tests on her and then called me down and told me "whatever you do, do not tell her how bad this is." I didn't want to do that. I told her. I mean I wouldn't want it to be done to me. She didn't pursue it or anything. She said, "Well I've got to work." That is what most people did. They had to work. They had families.

This sentiment holds true for many workers. When questioned about why they didn't leave K-25 for alternative employment, one worker remarked, "What else can I do? You can't make decent money anywhere else. I've got a family to support." Another worker commented:

> People don't trust DOE out there. They don't trust Bechtel-Jacobs and they're all afraid of their job and they set that up that way out there. That's the way they want it. They want you to be afraid because then you're not going to come forward with information.

In addition to the regions economic dependence upon DOE operations, DOE and its corporate contractors maintained its dominant power position over workers by coercive means.

Compliance by Coercion

DOE's effort to silence workers came in what Bachrach and Baratz (1970) describe as "overt forms of non-decision-making." The manipulation of the public agenda, in this form, can be seen in four separate processes: the use of force, the threat of sanctions, the invocation of existing bias, and the establishment of new barriers that strengthen the mobilization of bias.

In this study, K-25 workers perceived Oak Ridge's power elite to use coercive measures in maintaining their dominant power position. This study's data suggest that coercive measures used to maintain power relationships in Oak Ridge include the threat and use of sanctions, the invocation of existing bias that includes the manipulation of symbolic resources, and the establishment of new barriers to participation in decision-making arenas. DOE and its corporate contractors directed most coercive tactics at controlling worker dissent. I begin with DOE's use and threat of sanctions.

Threat of Sanctions

DOE's efforts to control worker dissent were both overt and identifiable. With the passage of time, the number of workers who became disillusioned with DOE and who felt betrayed by DOE grew. The main reason for this sense of disillusionment is the fact that a large number of workers become ill. Workers efforts to either gain information

about possible toxic exposures or force plant management to remedy unsafe working conditions were met with hostility, while workers who conformed to organizational norms were rewarded.

Because the region is economically dependent upon the nuclear defense and research industry for jobs, the loss of employment was an effective sanction to impose upon workers to encourage compliance. One worker recalled:

> I got in trouble over for there for raising concerns about PCB storage in our building..... I was working part time then, but when I came in on Wednesday everybody would just come up to me, "what do you think about all that stuff they have put out there?" I said, "What are you talking about?" They said, "all those PCB's." I said, "Where is it?" Another technician showed me. I started complaining. I complained there at the site. It just seemed very inappropriate that you store that type of thing in the type of building we were in and, of course, I am kind of afraid too after all I have been through at K25, but I complained. I also complained to EPA and the Tennessee Department of Environment Conservation, but that got me in a lot of trouble. It shouldn't but it did.

She elaborated on the sanctions imposed upon her for speaking up by saying, "They fired me about three weeks later. I was called in and the same man that I had all that trouble with about the PCB, he was very rude and arrogant. They fired me right there on the spot."

In addition to the loss of employment, DOE threatened to take away health insurance and other benefits to coerce workers into compliance. DOE had a vested interest in limiting their liability as worker claims of toxic exposures began rising. Workers' dependency upon DOE paved the way for the their use of threats to discontinue medical benefits, which sick workers desperately needed to improve their quality of life. One worker commented that the cancer rate had tripled in the past 20 years in the Oak Ridge area. I questioned this worker further about his claim. He said, "If they (local

doctors) would admit it. One of the doctors told us personally, but they are all afraid to talk because of Dr. Reid and they control if you want to be on our insurance you will keep your mouth shut." Another worker describes the enforcement of these types of sanctions:

> Just like the shift supervisor that is talking now, they done him basically like they done me. We are going to put you in a special job, take you out of your position and put you in this special assignment job and then all of the sudden this special assignment job no longer is needed, so bye. If you start— and I have seen it happen time and time again— if you start making waves, creating any kind of conflict they will get you one way or the other, but they will get you. People are not going to talk especially ones that are still employed there or got ties out there. They are not going to tell you anything.

DOE also used the loss of security clearance, especially the loss of a Q-clearance, as a negative sanction to encourage compliance. Q-clearance is a high-level clearance that allows workers access to all areas of the facility. A loss of Q-clearance would place heavy restrictions as to the type of job that could be performed and the salary that could be earned by an individual. Therefore, maintaining a Q-clearance is important for an individual's continued employment at facilities like the K-25 facility. One worker described how her security clearance was taken away after she spoke up about her safety concerns:

> Well, right after he put out that evaluation of me, my security clearance was suspended. Then I had the legal right to appeal the suspension of the clearance. Well, I went through two times of going to DOE with attorneys and fighting what they were doing with my clearance, and I lost.

She claimed that her negative evaluation was the result of her complaining to management about unsafe working conditions. I questioned this worker about what it meant to loose your security clearance. She replied:

> Well, what it meant was that after I lost that second appeal about another three weeks after that, after I got the little letter here at the house saying that I had lost my appeal and they were revoking or totally taking away the security clearance.

> You know, I was working at Y-12 then, but I am working in a totally uncleared area and I'm thinking well, big deal! What do I care? I didn't need it anyway. I worked in this building with all these temp systems workers, little high school girls just out of high school probably never would see a clearance, but I thought well it doesn't matter, I don't need clearance for what I am doing anyway. Like I told you, even when I got in the field, I only had one instance of anything classified. They fired me.

DOE and its corporate contractors used instances like these to make examples out of individuals. Workers, after witnessing such coercive instances, became afraid to come forward with medical claims or any other concerns they had. One worker tells of a co-worker who was afraid to come forward after learning she had high levels of cyanide in her body. She stated, "I know one woman, a finance officer, who got checked and hers was high, but she would never report it to K-25 medical because she was so afraid of retaliation. She went on to say:

> And then another guy who was one of the, like the next-to-the-top manager of our group there, he said, "I could never take this test because I couldn't stop taking aspirin long enough to take the test. You couldn't take aspirin, it would interfere with the test." And this guy was like a black belt in judo. He was a pretty healthy person and real active, but he had been getting sicker and sicker. So he wouldn't get tested either. So, see, a lot of people were coming forth as saying, yeah I know I have been poisoned. And other people were saying I don't even want to know, I'm not even going to go get tested or whatever.

Another worker spoke of sanctions imposed on workers who attended the video-taped meeting. He told me, "We never once slammed K25, but still yet 13 days later not only did my wife and I lose our jobs, but several of the people at that meeting also lost their jobs."

Invoking Existing Bias

The second coercive mechanism used to maintain power relationships in Oak Ridge is the invocation of existing bias. DOE, being the powerholder, was able to invoke existing biases within the dominant organizational culture in order to thwart any rising issues, such as toxic exposures, among workers and community members who questioned environmental and health conditions at the DOE sites. DOE's invocation of existing bias was seen in their use of symbolic resources. Symbolic resources took the form of negative labeling in an effort to undermine the legitimacy of aggrieved individuals or groups. Additionally, DOE invoked the symbolic resources of patriotism to encourage compliance.

As the number of ill workers increased, individuals began coming forward to question DOE's health and safety practices. DOE and its corporate contractors, however, moved quickly to squelch any collective resistance. One worker describes DOE's response to their complaints. She stated:

> I got a one-hour evaluation with Dr. Carpenter (a psychiatrist) and he had me sit down at a computer and take the Minnesota Multiphasic and the Nelan tests where you answer all the true/false and yes/no questions. He came out about three weeks later with his little written evaluation of me and it said I was 'psychotic' and 'paranoid delusional.'

She eventually won a malpractice lawsuit against Dr. Carpenter and was awarded a substantial amount of money.

The above passage describes the ritualistic nature of DOE's efforts to undermine workers toxic exposure claims. Workers would be sent to a DOE sanctioned psychiatrist to invoke negative labels upon individuals through arguably legitimate means. Once

negative labels were placed upon workers, DOE was able to justify the use of sanctions to punish those who did not conform to the organizational norms of secrecy and compliance. This worker went on to say, "Nobody had ever said anything about me being psychotic or delusional. I'm thinking this is not good. Well, right after he put out that evaluation of me, my security clearance was suspended."

The use of symbolic resources was not limited to negative labeling. Initially, DOE used the symbol of patriotism to build unity among workers and instill a sense of pride for being part of the war effort. A recent documentary produced by Lockheed Martin titled "The History of K-25" workers celebrate after the bombing of Hiroshima. These celebrations demonstrate worker patriotism and pride for being part of the war effort. The use of patriotism as a symbolic resource continued through the Cold War era, although the mission of K-25 had changed. However, not all workers accepted the symbol of patriotism as a justification for DOE's continued secrecy. One worker, who rejects DOE's justification, stated:

> When I hired in to K-25 it was not a defense installation. It enriched uranium for use in commercial reactors. That was it's sole purpose for being, according to DOE. So you can't just tie it right in there with Y-12… and you know I am a hot war veteran, so I am not really interested in being a cold war veteran. I didn't go out there to serve my country, I went out there to feed my family when I hired into the Union Carbide Corporation. I didn't hire into any bomb making efforts or anything else and I treated that as a job and was proud to have it when I got it.

Elite Influence on Socialization

Elites influence on socialization carries with it mechanisms that, when combined with mechanisms of the pluralist model and those used to manipulate public agendas, shape the conceptions and interests of deprived groups by influencing the socialization

process. In this study, workers perceived the exertion of power directly through DOE's control of information. Also, worker's experiences led to the inference of power relationships that are not observable, including a sense of powerlessness or the failure of workers to develop a collective consciousness about the inequalities they faced.

The Control of Information

The direct mechanism used to influence the socialization process of workers, which is clearly observable, is the control of information. DOE's ability to control the flow of information surrounding nuclear operations in Oak Ridge was a paramount reason for the lack of challenge from workers. Workers were not given adequate information concerning the health risks of job related activities to make an informed decision or an opportunity to protect themselves from possible exposures. In this section, I examine four processes by which DOE controlled workers' access to information: national security implications; the isolation of the scientific community; the control of the medical community; and the control of public information venues.

National Security

The political climate and national security policy during WWII[6] and "Cold War" eras allowed DOE to control the dissemination of information, which restricted public access to information and restricted public participation in decision-making arenas. Pasternak (1993:171) asserts, "The United States had, and continues to have, a genuine interest in controlling the flow of information in order to maintain America's nuclear

[6] "Hot War" is a term some workers use to describe the time period during WWII.

superiority and to halt the spread of nuclear proliferation." Under this national security umbrella, DOE and its predecessor agencies have demanded absolute secrecy regarding every aspect of nuclear operations. But this secrecy has prevented access to information that has little or nothing to do with national security.

During the "Hot War" years, the United States government set up the Intelligence and Security Division, which worked closely with the Federal Bureau of Investigation (FBI). Robinson (1950), in his book "The Oak Ridge Story," claims that these agencies went to places such as Belgium, France, the British Isles, the Belgian Congo uranium ore fields, Canada, and South America to plug information leaks. These agencies examined library books to see if sections on uranium and atomic energy were scanned too frequently; fingerprinted over 300,000 people working on the Manhattan Project; educated atomic workers on how to talk and act with outsiders; scanned science reports and newspaper articles for references to atomic energy; visited area pastors who skirted the issue of atomic energy in their sermons; and even tracked down and reprimanded a woman in Kansas City who asked a telephone operator in Oak Ridge if that was the place they were "smashing all those atoms" (Robinson 1950:70).

The end of WWII brought in a new era of national security issues, as well as for operations at K-25. The Soviet Union became the largest threat to U.S. national security. The U.S. government placed the label "Evil Empire" upon the Soviet Union to legitimate the use of national security policy to control the dissemination of information (Chomsky 1987:98). This era also saw the creation of the Atomic Energy Commission (AEC). Nuclear weapons production fell under the operational umbrella of the AEC. The AEC, as a strategy to maintain secrecy, exempted military and government agencies from

external regulation. This policy would become crucial as nuclear operations resulted in massive environmental degradation and claims of adverse health effects.

During the 1950s, the United States began the first post-war military buildup, which resulted in a tripled military spending (Chomsky 1987). Chomsky explains that this sudden military buildup "was the reaction to the Korean War, which was interpreted as proof of Moscow's intent to take over the world (1987:99)." The struggle to maintain nuclear superiority was the foundation on which those overseeing this country's nuclear arsenal legitimated the total secrecy surrounding all aspects of nuclear operations. DOE used this national security justification for secrecy until the end of the "Cold War" in the late 1980s. One worker, who rejected DOE's justification for secrecy said:

> Classification covers up more than you can imagine and it has almost got me to a point, I am not quite there yet, to where I don't care about classification. You know, this stuff has been classified to keep it quiet. It is not being classified because it is going to harm national security or anything else. It is DOE's way of using that under the guise of national security to keep that information suppressed.

While another worker commented:

> I don't know if you ever heard of the word discretionary function. It made me sick to my stomach the first time I heard it, but it means they had the right to do whatever they wanted to do to you out there in the best interest of the nation and national security and all that. I still don't like the term or that principle, but during Cold War some people argued maybe there was somewhat of a justification there, but not during later years like during the time I worked out there. Why did they have the right to do that to people? You know even with beryllium, what would have given them to right to expose my friend Mack who has beryllium disease? What gave them the right to subject him to that and now he has this fatal disease. They say, "Oh, we can do that to you." Almost like you would do that to a soldier or something. Then the government with their sovereign immunity, you can't really hold them accountable for anything.

Scientific Community

Those responsible for the implementation of the Manhattan Project isolated scientists working on the project from the larger community of scientists in an effort to secure the code of silence. These isolated scientists were responsible for the creation of highly specialized scientific data that were tightly controlled and secluded from outside scrutiny. These scientists rejected and lacked trust in scientific communities outside the nuclear community, especially the social sciences. As a result, environmental and health problems arising from nuclear operations in Oak Ridge were seen as scientific, ignoring any social implications of rising concerns.

The isolation of DOE scientists is not a phenomenon specific to Oak Ridge. Lawless (1993) argues that, in the case of DOE, the theoretically self-correcting nature of science failed, which led to the mismanagement of nuclear wastes and to environmental damage. Lawless concluded that:

> DOE recruited socio-centered scientists who came to rely upon DOE management for research funds; the interdependent interests of the scientists and DOE management constructed the worldview that nuclear weapons wastes and the environment were safely protected; and as the evidence of failure mounted, to protect their mutual interests, the scientists and managers became allies to weaken the environmental rules, to isolate themselves from the scientific mainstream, and to marginalize the innovative scientists who could have helped them, preventing science within DOE from self-correcting (1993:271-272).

Nuclear scientists have also shown hostility toward the outside scientific community, toward residents who make claims of environmental mismanagement, and toward workers who make claims of toxic exposures and adverse health conditions. These hostile attitudes are prevalent at public meeting venues, various local oversight

committee meetings, and from the Community Reuse Organization of East Tennessee (CROET) who is responsible for economic development in Oak Ridge.[7] As I collected data for this study, I experienced this hostility first-hand. For example, during one public meeting that focused on land use of adjacent property to K-25, DOE officials opened the meeting by scolding audience members by telling them to "be quiet and listen to the experts and representatives for political entities." The meeting facilitator constantly reminded the audience to call upon their "unused skills of listening" and reminded audience members to "think clearly and be precise with comments."

The Local Oversight Committee (LOC) and the CROET board, which is made up of ex-DOE officials, display the same hostility toward outsiders. I spoke at one LOC meeting regarding my research at K-25. During my speech, I was met with relentless questioning of my credentials, motives, and my intentions of publicizing the results of my study in what I perceived to be an attempt to delegitimize and discredit my efforts. An ex-CROET board member described the hostility other board members had toward her and other community representatives to the board. She said:

> Oh, it was so awful. You'll have to go to a CROET meeting sometime. It was all these DOE...White men is suits…All these DOE related guys, you know it was a huge bunch of people. I mean the history of it started with this bunch of guys meeting behind closed doors, but they were supposed to be a public entity. So then they started talking to some of the others like some of the county executives to try to seem like a public entity. Then we found out about it and then there was also a labor organization and the NAACP. We all found out about CROET and the fact that we were being left out. And so, we tried to figure out a way to get people from our groups on the CROET board. But anyway, so it was all these DOE pinhead guys and they were all people like county executives, and the and people who were tied to the industries that they were recruiting. I mean, it was the most corrupt bunch and there were all these conflicts of interest all over the place. So I would try to say something and I was trying my best to carry the voice of the people, but I was like the only one

[7] See Chapter V for a detailed description of CROET.

> there who was. So the guys on the board were so condescending, so rude and patronizing. And you can't get anyhere really because they were going to do what they wanted to do.

Without confirmation of the validity of these specialized data, outside scientists, residents, and workers had no way to counter claims made by DOE's scientific community. The isolation of scientific information resulted in a worldview that accepted processes at K-25 as safe and environmentally sound. For decades, workers accepted the government's claims that health and environmental aspects of nuclear processes were safe. They trusted the United States government to protect their best interests through the provision of a safe environment in which to live and raise their children, and a safe working environment, free from toxic exposures.

The isolation of the scientific community and the highly technical nature of the information created under these circumstances led to a breakdown in the dissemination of public information surrounding nuclear operations in Oak Ridge. A gap now exists between the highly technical nature of scientific information and the community's ability to understand this technical information. This information gap not only hinders the community's ability to understand the nature of nuclear operations, but also misplaces the burden of accountability onto workers who make claims of toxic exposures. Therefore, the burden of accountability is far greater for workers than it is for the DOE and the government contractors. Claims of toxic exposures and adverse health conditions fall within the current dichotomy of a burden of proof versus a burden of responsibility, which workers have the burden of proving that their illnesses were caused by working conditions at the K-25 facility. One worker stated, "CHE (Coalition for a Healthy

Environment) and a few other groups and ragtag workers are having to prove that we were made ill when DOE owns the proof and we have no access to it other than our bodies." Therefore, the ability of workers to prove claims of exposure becomes a cumbersome and difficult task, if not an impossible task. Workers attempted to counter information obstacles placed upon them by DOE by carrying out thousands of documents not available for public scrutiny from the K-25 site. One worker stated, "Once we figured out we were being exposed and lied to about it, I started bringing home and document I could get my hands on. I did this on a daily basis and now I have a whole garage full of documents."

Medical Community

As with all other structural aspects of Oak Ridge, the United States government controlled the medical community. The government built the town's only hospital and managed contracts with area doctors to service the facility. Government contractors were also the major employer in the region and provided medical benefits to a majority of community residents. As workers became ill, the need for medical benefits would become an absolute necessity for sick workers and would also become a point of leverage for DOE and its corporate contractors to maintain the code of silence.

The tightly controlled medical community in Oak Ridge led to the obstruction, concealment, and falsification of workers' medical records. This type of control mechanism served to limit DOE's liability for sick worker claims. One worker spoke of how DOE handled workers' medical information by saying:

> It's a lie because there are people who were exposed. They weren't going to tell anybody that they had been exposed to certain things that could harm then in

> later years because they were afraid of repercussions. I talked to a lady from Y12 where they done full body counts and she was telling me that they did a full body count on a gentleman and his whole body was just hot with radiation. Her supervisor told her, "you do not tell anybody outside this office. You keep what we have found quiet." Because they knew if they ever had to start saying one person, then it was probably going to snowball.

Oak Ridge workers reported numerous such stories. By intentionally keeping personal medical information from workers, DOE shaped the workers' conceptions about their health and safety. Workers trusted the government to keep them out of harms way. Instead, workers claim that DOE operations in Oak Ridge have subjected them to numerous types of exposures, which caused their illnesses. One worker talked about increased cancer rates in Oak Ridge and how the medical community reacted to DOE's pressure to cover up worker illnesses. He stated:

> There have been the doctors that know it that would admit it. There has been probably triple the rate of cancer in the last twenty in the area of Oak Ridge, if they would admit it. One of them told us personally, but they are all afraid to talk because of Dr. Reid (a local oncologist) and they control you. They say if you want to be on our insurance, you will keep your mouth shut.

DOE's treatment of Dr. Reid intimidated other area physicians; much in the same way DOE's treatment of select workers intimidated other workers. DOE used Dr. Reid as an example to encourage the silence of other doctors. One worker spoke of this intimidation by saying:

> One of the people in the group had a doctor that had been their doctor ever since he had been a baby. Once this started coming out, he just told him, I can't be your doctor anymore. I refuse to treat you. Another doctor kept the medical records of the two to three people that he was seeing in a different place so it wouldn't be readily available. Sure enough his office was broken into.

Another worker told me:

> DOE is not going to do anything cause there is too many big people that's got too much money and even the lawyers and the doctors...the doctors in this area won't even tell you that you've got lead poising or heavy metals… They won't tell you cause they don't have anybody that's even qualified to tell you that you have heavy metal in you. Dr. Reid, they run him out of Oak Ridge. This is one of the things I really want to specifically talk about. Dr. Reid told people ten years ago. He recognized that with all the people coming to him, that people were sick. They were really sick with heavy chemicals or metals in their body. He was, what do they call this type of person, a specialist, as a matter of fact, he's about the only one that's around. They rode him out of Oak Ridge. Told him…tried to say that he was on drugs...everything in the world that you could think of. And tried to discredit his license, it cost him millions to keep his license.

In time, workers began to question medical records and proceeded to acquire copies of their medical records through legal channels. DOE continued to exercise control mechanisms to thwart any collective resistance from workers by obstructing and falsifying records. Two workers talked about the manipulation of medical records by saying:

> We went to each doctor ourselves and got copies. Before, at the plant, we had to get authority before we could get our medical records...and we don't know that we got them all, because some of the people in the group got some of theirs with pages missing and parts blocked out.

While another worker stated:

> One of my jobs there was to classify injury and illnesses and write up reports for DOE. At some point we took over doing this for K-25 and that is when I found the folders that had all of the people's medical reports in it that had the cyanide like Janet and a few other people. The supervisor and I sat down and we read those things. She said that sounds just like you. We had heard about them, but we didn't know really what to think. Then I read one of them and it was a friend of mine that I knew, that I hadn't talked to in a long time, but I knew that this woman was not a complainer...Those reports were never filed with DOE.

DOE's attempts to control the flow of information not only included framing issues in a national security frame, isolating the scientific community, and controlling the

medical community, but also included attempts to control the dissemination of information through public venues.

Public Information Venues

DOE and its supporting organizations controlled the agendas for information venues, such as public meetings and the mass media. These control mechanisms served to squelch opposition and limit the dissemination of pubic information. Suppression of public information by those in dominant positions of power increased as dissent among workers increased due to inequalities and as workers began to organize. Typically, those in power resist change and strive to maintain the status quo.

Initially, K-25 workers organized as they realized their health was deteriorating from workplace exposures. Workers organized for the purpose of challenging DOE's official position that contaminants were never introduced at the site. DOE responded to this organization in a way that was typical of the dominant ideology of resisting change and the suppression of opposition. One worker described an attempt by workers to organize. She stated:

> So this other group of people that were, I don't know if they were just healthier or more, whatever, just had more energy to deal with it, they formed this little cyanide working group and they tried to work with management, you know, to help them find the sources, to alert people to it. And management, of course, made a big show of cooperation and held some meetings with people which were all video taped. So the people in the audience were all video taped so they would know who was attending these meetings. So, they never did any of the recommendations that the workers had asked for and they basically just ignored the whole thing.

Another worker spoke of how DOE chose venues to discourage participation. They said:

> I don't know how you would get the public out there. Just go look at the people who at one time were interested and tried to attend these public meetings. DOE

> has all these little tricks that they do. If you read an ad in the paper and decided you wanted to go to that meeting, you go to Pollard Auditorium and there would be a sign on the door, "We're sorry, the meeting has been moved to the Museum of Science and Energy." You'd truck over there. Well, there'd be a sign there, "We've moved to Oak Ridge High School Auditorium." Well, by that time you're 30 minutes late you, so you just go home. That has been done over and over, over the years. And people who would actually attend have realized this and they've stopped.

Second, DOE and its corporate contractors are able to control the dissemination of public information by controlling public meeting agendas. I attended several public meetings during the data collection phase of this study and representative of the DOE usually began each meeting with a warning to concerned citizens about asking "stupid" questions. DOE officials called upon the "unused skills of listening" of audience members. These officials told the audience to "be quiet and listen to the experts and representatives for political entities," such as the mayor and U.S. Congressman Zack Wamp. They bring with them an air of superiority. Once the meetings begin, DOE officials, other government officials, and members of the City Counsel and Mayors office aligned with DOE's official positions dominated the meeting. DOE representatives structure the meeting to limit public participation. As a result, residents and workers attending these meetings were left with little or no chance to voice their concerns. One worker validated my experience by commenting on the structure of these meetings:

> They totally dominate. These are structured. Very, very structured. The people who are running it are experts at it. They're trained on how to handle crowds and how to handle individuals.

Finally, elites in Oak Ridge influenced the local media to be willing participants to control information flow. Workers perceive the local media as a vehicle for DOE to pursue its own agenda. One worker stated:

> Sometimes the papers are afraid to write, or even print what some of the people have called and told us because DOE is so big here and runs this town. It's their livelihood. They're afraid to put it in print.

Another worker commented on how to disseminate information to the public. She said:

> I would say give a lot of the information to the Tennessean (newspaper based in Nashville, TN), but that didn't work before. The Tennessean was regularly having articles about Oak Ridge. They only have the Tennessean once a week in Oak Ridge and it got to the point where you could not buy one. Someone was making the point to buy them up as soon as they hit the market.

DOE's overall manipulation of information flow served several functions. First, it served the legitimate purpose of keeping nuclear secrets from those who threatened national security. Second, it served to shape the conceptions of workers and hinder the worker's development of a class-consciousness that recognized the apparent public health inequalities that existed. DOE withheld pertinent information regarding health and safety issues at K-25 from workers. Workers, as a result, did not know that their health was at risk; therefore they did not develop grievances against those who operated the facilities in Oak Ridge. In effect, DOE thwarted the collective resistance of workers before any grievances emerged. DOE not only used direct, observable mechanisms such as the control of information, but they also used indirect mechanisms that are more problematic to study.

Workplace Culture

Indirect mechanisms used by elites to influence the socialization process are far more complicated to study than the more observable mechanisms used to manipulate public agendas. Gaventa (1980) raised the question of how do we study something that is

not there in his Appalachia study. Certainly, this question holds true for this study as well. I used the experiences of K-25 workers to infer indirect elements of elites influence on socialization, including a sense of powerlessness and the lack of class-consciousness. These mechanisms of power were aided by DOE's development of a workplace culture.

DOE acted as an agent of socialization to establish normative behaviors of workers. They instructed workers on how to speak and act around outsiders (Robinson 1950). As part of the defense industry, DOE developed a military culture among workers. Workers were socialized to be obedient, unquestioning, and patriotic. Some workers described this culture as a "Good Ole Boy" system. One worker stated:

> We had a management culture out there that existed off of the good ol' boy system. In all the twenty years I was there, they didn't promote people who had the ability necessarily. They promoted "yes" men. People they could control. People they could count on so if they had to cover something up and out there, something is happening all the time.

DOE and its corporate contractors promoted individuals who felt comfortable with the dominant organizational culture of obedience, and promoted individuals who performed without question. Some workers described a scenario comparable to the current "don't ask, don't tell" military policy on homosexuals. One worker expresses:

> One time there was another building that we ran some tests in. We didn't normally do tests in there, but my boss took me aside and told me not to go into that building. He said there was some maintenance stuff going on in there. He didn't explain and I didn't ask.

Another worker said:

> There was a work ethic, if you will, that we just didn't really question. First of all, we were told not to question because some of the materials were classified and we were told to do what you were told and not worry about what the other guy's doing or what's going on in the next building. "That's none of your business." There are classification issues. So we kind of respected that, plus I,

> and most of my co-workers were the same way because we talked about it, we were gullible, naive.

Other workers elaborated on how this workplace culture is learned through the interactions of management, as well as through interactions with others workers. One worker said:

> One of the things that they do is, they sit you down and they give you a Safety Manual. This is when you first hire in. They tell you to leave it and you leave that stuff and you don't retain it. You might be a small person and you might know that the stuff is hazardous, but when you go out into the working area and the supervisors are treating it casually and the workers are treating it casually, then you treat it casually. You don't think, you just don't think.

Management socialized workers to accept DOE's claims that workers were safe from toxic exposures. Routinely, management told workers that the solid form of uranium found at the K-25 facility would not harm them. As one worker stated:

> Breathin' it, contactin', and injestin' it. And that's the 3 ways you can get poisoned. And that's the 3 ways that was not given to us to protect ourselves. They said it's alright, you can eat this stuff and it won't bother you. I've been told that by the older people so many times.

A second worker said, "In my later years, I knew it was hazardous, but I was lied to for a good may years. I was told that there's not a thing out here that will hurt you." This worker went on to say:

> And I've been told on many occasions that, well like chlorine tri-fluoride, I had a guy tell me one time tryin' to get me to wade into some ClF_3, to close a valve. I wouldn't go. He said, "Aw, go ahead, it won't hurt ya." I said well then you go. If it won't hurt ya, you shouldn't mind doin' it. Stuff like that and I've heard statements made as far as uranium is concerned that you could eat it and it wouldn't bother you. As a matter of fact, I told one guy, said, well I don't have any more sense that you do, you eat a spoon full and I will.

As a result of DOE's efforts to cultivate a docile, obedient workforce, workers trusted the government to protect them from harm. Workers accepted DOE's claims of

safe working conditions and the DOE's code of silence. Workers described their trust in those responsible for the operation of K-25. One worker commented:

> And it was inconceivable to me that these people would have allowed me to be in harms way. So really, even when I became ill, it took me about a year to get over this denial thing. I just couldn't believe that this could happen. But it did happen.

Another worker said:

> I guess I suspected that I might be being exposed all along, but you know I am a trusting person or was up until that point. I believed what management said that I was not being harmed.

DOE's and its corporate contractors' exercise of power had a cumulative effect upon workers. Workers suffered the effects of public agenda manipulation, which prevented them from participating in the decision-making process. The powerful forces in Oak Ridge coerced and intimidated workers in order to encourage compliance. DOE controlled the flow of information to thwart any rising of collective resistance among workers. Also, DOE engaged in the socialization of workers, which taught workers to comply with management demands without question and created a sense of powerlessness among many workers. One worker made the statement:

> They called her down and was doing more tests on her and they called me down and they told me whatever you do, do not tell her how bad this is. I didn't want to do that. I told her. I mean I wouldn't want it to be done to me. She didn't pursue it or nothing. She said well I have got to work. That is what most people did. They had to work. They had families.

Another worker spoke about the general public denial that nuclear operations have harmed public health and the environment. I infer this denial to represent a lack of class-consciousness to the inequalities workers faced. He said:

> The JQ public, in general, doesn't give a whip. They're sick of hearing all this. Most of them don't believe it. It's just inconceivable that our government would

> do that to us, to most people. It's the same way with our military. I mean look at our veterans (laughing), I'm sorry, I'm as patriotic as the next person, but it's sickening when you see what our own government has done to people. Our own people, who are supposed to be representing us. I mean your Zac Womps and your Fred Thompsons, the good ole boys in that exclusive club that they belong to.

Then, how are these rigid power structures fractured? How do challenges arise from such power relationships? In the next chapter, I look at the rise of rebellion in Oak Ridge, as challengers were able to penetrate and alter the dominant power structure.

CHAPTER V

BREAKING THE SILENCE: THE RISE OF REBELLION

After decades of silence, challenges to the dominant power structure in Oak Ridge emerged. Workers and residents developed a new class-consciousness that recognized the existence of inequalities. This new consciousness initiated the mobilization of collective resistance against the power structure in Oak Ridge. Workers, for the first time, challenged DOE and its corporate contractors to ameliorate the environmental degradation and compensate for the negative health conditions of workers that were consequences of nuclear operations in Oak Ridge.

I begin this chapter with how workers and residents broke the information barrier by using the Freedom of Information Act (FOIA) and the judicial system. Next, I examine the changing political climate, which offered a new openness to the public. This new openness led to changes in public policy that required DOE to comply with federal environmental laws and placed the Oak Ridge Reservation on the Superfund National Priority List (NPL). Finally, I discuss the emergence of activism surrounding nuclear operations in Oak Ridge.

Breaking the Information Barrier

For some time, workers had suspected that production process at K-25, as well as other facilities on the Oak Ridge Reservation (ORR), were not safe or environmentally sound. Workers knew that DOE had used open-pit dumping to dispose of production wastes for 40 years. Workers were also aware that they were performing job-related

duties that brought them into contact with hazardous materials and waste products without being properly trained or without being required to use proper protective equipment, such as respirators or protective clothing. But without the proper information to back up their claims, most workers for decades trusted DOE's claims that production processes at K-25 were safe for workers and for the environment.

However, things started to change in 1983 when DOE was forced to release information under the Freedom of Information Act (FOIA). FOIA requires that government agencies disclose public information regarding their operations. With the passage of the FOIA, the burden of proof shifted from the individual to the government. Those seeking information were no longer required to show a need for information. Instead, the "need to know" standard was replaced by a "right to know" policy, so the government now had to justify the need for secrecy.

The FOIA sets standards for determining which records must be disclosed and which records may be withheld. The law also provides administrative and judicial remedies for those denied access to records. Above all, the statute requires Federal agencies to provide the fullest possible disclosure of information to the public.

Responding to state pressures and FOIA requests from a local journalist, DOE admitted losing an estimated 2.4 million pounds of mercury from the Y-12 plant into the environment, including large discharges into Poplar Creek.[8] This admission is important for K-25 workers because Poplar Creek flows from Y-12 through the K-25 facility. Therefore, releases from Y-12 into Poplar Creek affected workers at K-25 because water

[8] Citizens Guide to Oak Ridge, p. 4.

from Poplar Creek was used throughout K-25 and eventually contaminated K-25's sanitary water supply.

This news sent shock waves through the community and raised suspicions about environmental degradation. In the months that followed, congressional investigations and newspaper reports revealed that DOE and Union Carbide (the government contractor operating the Oak Ridge facilities at the time) had known about these releases as early as 1970, and provided indisputable evidence of a DOE cover-up. Prior to the release of information, DOE had classified reports concerning mercury contamination as "Business Confidential," which blocked their release. DOE had used the cover of national security as a convenient shield to block the release of non-sensitive information, which had nothing to do with national security.

DOE's release of information regarding mercury releases initiated the development of the community's new class-consciousness. Furthermore, citizens used DOE's release of information as a resource for collective resistance in the emergence and mobilization of grassroots environmental activism. National environmental organizations used the revelations of environmental neglect to launch a legal battle with DOE to force DOE to comply with the Resource Conservation and Recovery Act (RCRA).[9]

According to Fiorino (1995), the courts have significantly affected environmental legislation by setting or reshaping agency priorities, by redefining the relationships between EPA and other agencies such as DOE, and by defining the analytical basis for agency policies. Environmental groups used the courts to redefine the relationships between DOE and EPA. In 1984, the Legal Environmental Assistance Foundation

[9] Citizens Guide to Oak Ridge, page 5.

(LEAF) and the Natural Resources Defense Council (NRDC) began legal action against DOE for violating the 1976 Resource Conservation and Recovery Act (RCRA) requirements for the disposal of hazardous waste.[10]

RCRA sets standards for licensed waste management facilities. RCRA requires that safe and secure procedures are in place when treating, transporting, storing, and disposing of hazardous wastes. RCRA allows EPA to require corrective action for releases that are continuous and releases that migrate beyond a facility's boundary. RCRA provisions are a similar to those of the Comprehensive Environmental Response, Conservation, and Recovery Act (CERCLA)[11] for determining if a site requires environmental restoration.[12]

Initially, a RCRA Facility Assessment (RFA) is conducted to determine if further investigations are necessary. The RFA focuses only on identified releases from individual sites and does not require sampling. If a problem exists, the EPA requires the owner/operator of the site to conduct a RCRA Facility Investigation (RFI) and a Corrective Measures Study (CMS) to measure the nature, extent, and rate of contamination within EPA oversight. Finally, RCRA requires implementation of solutions through a process called Corrective Measures Implementation (CMI). The owner/operator of the site is responsible for performing corrective action, for taking appropriate measures to operate and to maintain the chosen remedy, and for the monitoring of results.

---

[10] Citizens Guide to Oak Ridge, p. 5
[11] See section on Changing Political Climate for a more detailed discussion on CERCLA
[12] Taken from Principal laws and Regulations Affecting the Cleanup Program: Fact Sheet.

As a result of legal action, the Federal courts ruled that DOE must comply with RCRA laws and removed DOE's Atomic Energy Act exemption from outside environmental regulation. This decision fractured yet another aspect of DOE's power structure and forced DOE to comply with current environmental standards for hazardous and radioactive wastes. DOE had previously been able to avoid complying with RCRA by mixing hazardous waste with radioactive wastes. At that time, RCRA legislation regulated hazardous wastes, while DOE and the Nuclear Regulatory Commission (NRC) regulated radioactive wastes. DOE facilities nationwide felt the impact of this decision as DOE spent approximately one billion dollars on remedial action programs. However, the use of legal measures and FOIA requests were not the only actions used to penetrate DOE's dominant power structure.

In addition to legal measures and the use of FOIA, DOE's treatment of Dr. Reid and the Secretary of Energy Richardson's admission that DOE covertly exposed people confirmed worker suspicions of toxic exposures. Dr. Reid was an oncologist who arrived in Oak Ridge in 1991 after being recruited by the Oak Ridge hospital. Immediately, he observed uncommon patterns of illness among his patients, including rare forms of cancer (Shriver, White, and Kebede 1998). Eventually, he diagnosed many patients with heavy metal poisoning. Shriver, et al. argues that, "Reid's work legitimated residents' concerns and helped shape a new perspective on illness in Oak Ridge (1998:469)."

Dr. Reid tried to acquire medical information about the substances his patients had been exposed to. This action ended his medical career in Oak Ridge. DOE officials asked Reid to leave his position at the hospital, which he refused to do. At that point,

DOE used coercive measures to silence Reid. They placed negative labels on him, such as drug abuser, quack, and troublemaker, to undermine his legitimacy as a medical professional. They revoked his parking privileges at the hospital, disconnected his office phones, forced his nurses to quit, and ordered an investigation into his medical competence, which would leave a permanent scar on his record.

DOE eventually admitted to exposing workers without their knowledge. Bill Richardson, Secretary of Energy during the Clinton Administration, publicly admitted that DOE covertly exposed workers. Secretary Richardson's admission cleared the way for the Nuclear Workers Compensation Bill. One worker spoke of this admission during a discussion of workplace exposures. He said,

> …I checked out some emergency response gear and took a radiation meter up there and sure enough, the floor was highly radioactive. That's the only way you can protect yourself out there. I you didn't protect yourself out there, you weren't going to be protected. Another interesting point, Secretary Richardson admitted this. He said they covertly exposed people. He said that they did it because of national defense.

The legitimation of workers suspicions helped to reshape worker perceptions and mistrust of DOE, which had originally been manipulated and shaped by DOE's influence on the socialization process. In the next section, I examine the changing political climate and its influence on rise of rebellion.

Changing Political Climate

Concomitant to the use of FOIA and legal avenues, public interests benefited from a changing political climate as the 1980s came to an end. This period was exemplified by a new openness between public and private interests. In 1989, the

Secretary of Energy proclaimed his intentions to develop a new culture of openness throughout DOE.[13] However, this new culture would be slow to develop as it clashed with DOE's power structure.

The end of the Cold War and the collapse of the Soviet Union also happened in 1989, which forced the United Stated to re-think its policies concerning national security. For example, the U.S. no longer needed to sustain its nuclear weapons stockpile or speed up the development of nuclear weapons programs. As a result, nuclear weapons facilities, like those in Oak Ridge, shifted priorities from nuclear weapons production to weapons disassembly, waste-cleanup, and energy research and development.

The Environmental Protection Agency (EPA) also placed the Oak Ridge Reservation on the National Priority List (NPL) in 1989, which is part of CERCLA. CERCLA, also known as Superfund, was enacted in 1980 as a response to contamination in Love Canal, New York. It provides for the funding, study, and implementation of cleanup efforts that are not covered under RCRA provisions.[14] CERCLA consists of three phases: conducting a preliminary assessment; conducting a thorough study of the site, exploring cleanup alternatives, and selecting a remedial action plan; and designing and implementing the chosen plan of action. Figure 5.1 details the phased process of cleanup.

As part of CERCLA requirements, scientists at ORNL conducted three studies in 1990 analyzing the historical releases of cesium and mercury into the Watts Bar Reservoir. Those studies showed that DOE had released massive amounts of contaminants into creeks that drain the ORR. This news launched a flurry of activity in

[13] Citizens Guide to Oak Ridge, p.5.
[14] Taken from Principal Laws and Regulations Affecting the Cleanup Program: Fact Sheet.

the Oak Ridge area, including the emergence of grassroots environmental activism. This activism led to changes in public policy that expanded the oversight authority over ORR operations to include other state and federal agencies outside of DOE.

Changing Public Policy

DOE hesitated to discuss the findings of the 1990 reports with the public, but complied with public meeting requests after pressure from the local and national media. In 1991, citizens groups pressured DOE to conduct a Programmatic Environmental Impact Statement (PEIS) after DOE recognized that they would not be able to meet tightening environmental laws and announced plans to reconfigure the Oak Ridge nuclear complex. The PEIS required public participation in the planning process for DOE's plans.

In August 1991, DOE held the largest public hearing in the history of Oak Ridge during the scoping process of the PEIS. More than 300 citizens spoke over a two-day period. Most voiced opposition to DOE's plans for weapons production facilities in Oak Ridge. Concerned citizens also made it clear that Oak Ridge and the surrounding communities were still economically dependent upon DOE's operations.

Additionally, DOE signed three agreements with the State of Tennessee that would change public policy in a way that fostered greater public participation in decision-making arenas. This action empowered citizens and workers to have a more active voice in public decision arenas. These agreements included the Federal Facilities Agreement

CERCLA Cleanup Process

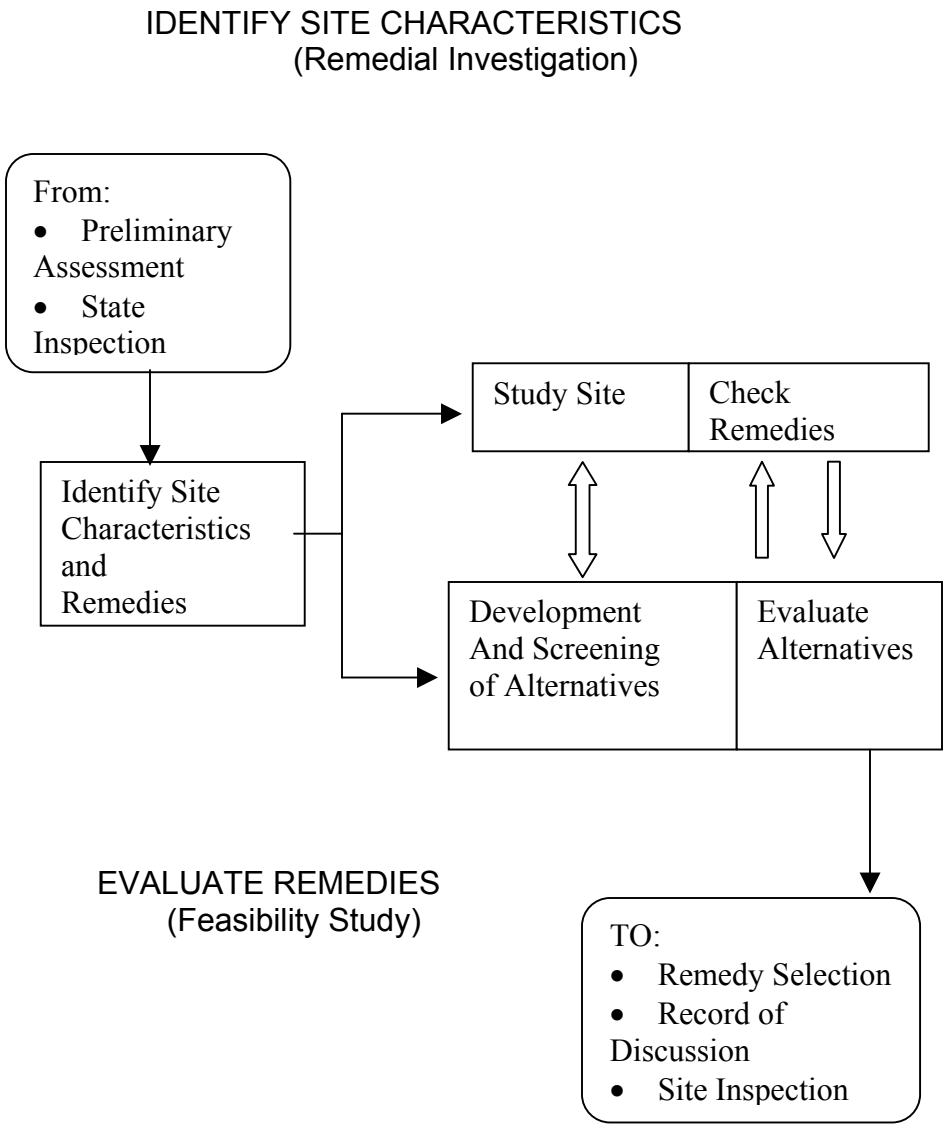

Figure 1: CERCLA Cleanup

(FFA), an Environmental Oversight Agreement (EOA), and the Oak Ridge Health Agreement (ORHA).

The FFA amended the Solid Waste Disposal Act and states that all federal agencies, such as DOE and the military, are subject to all substantive and procedural requirements of federal, state, and local solid and hazardous waste laws in the same manner as any private party, including CERCLA and RCRA. The FFA involved DOE, the State of Tennessee, and EPA. The FFA provides a broad-based, clean-up strategy that includes legally binding milestones for clean-up activities. Refer to Figure 1 for details of the CERCLA cleanup process.

DOE also signed an Environmental Oversight Agreement. This agreement provided funds for the state to oversee DOE activities as they impact the environment. In the past, state agencies were not able to exercise proper oversight due to funding deficiencies.

Last, DOE signed the Oak Ridge Health Agreement with the State of Tennessee. This agreement provided funds to conduct an independent assessment of the effects of nuclear operations on the populations living near the nuclear reservation, downstream, and downwind. The state created an Oak Ridge Health Agreement Steering Panel (ORHASP) to oversee the study. The study was conducted by private contractors, which were selected by the state.

Accompanying these agreements, a changing administration brought a new climate on risk that brought attention to the risks of environmental degradation and environmental justice (Fiorino 1995). Fiorino argues that "issues of environmental justice became particularly important in the first years of the Clinton administration as

many grassroots groups and other critics pushed IPA to reexamine national policies regarding the siting of waste facilities, the cleanup of Superfund sites in minority and low-income communities, exposures to lead and other inner-city health problems, and the effects of pesticides on migrant workers" (1995:42). The Clinton administration also created an Office of Environmental Policy to coordinate policy across agencies.

As new health and safety concerns emerged with the initiation of DOE's reindustrialization strategy, EPA and DOE issued this policy statement to establish procedures for leasing property at DOE facilities on the National Priority List (NPL), known as the Hall Amendment. The DOE's Office of Worker and Community Transition and EPA's Federal Facilities Restoration and Reuse Office are responsible for final interpretation of this policy statement. Both parties agreed to follow the document "Improving Communication to Achieve Collaborative Decision-Making" for guidance in resolving conflicts.

Section 3154 of the 1994 National Defense Authorization Act allows the Secretary of Energy to lease unneeded DOE properties that are to be closed or reconfigured. At NPL sites, the Hall Amendment gives EPA the authority to concur with DOE that conditions of the lease agreement are consistent with safety and protection of public health and environment. It is the Secretary of Energy's responsibility to seek EPA concurrence, but the Secretary may enter into a lease agreement without EPA concurrence if the EPA administrator fails to respond within 60 days. Refer to Appendix C, Table 5.1 Hall Amendment Responsibilities and Table 5.2 The Hall Amendment Leasing Process for summarizes of the roles and responsibilities of various entities with

regard to leasing of DOE property and the leasing activities that require agreement between DOE and EPA.

Challenging the Power Structure

The fracturing of the information barriers, changing political climate, and changing public policy, fostered the emergence of grassroots activism in Oak Ridge. A sociological analysis of grassroots activism in Oak Ridge is beyond the scope of this study. Therefore, my intention in this section is to document worker resistance through the emergence of grassroots activism.

Over the past two decades, numerous grassroots environmental health and safety groups have emerged in the Oak Ridge area. These groups focused on a variety of issues including: nuclear proliferation, environmental degradation, environmental racism and justice, and worker health. Since the focus of this study is on nuclear workers, I concentrated my efforts on one group who advocates for worker health.

Coalition for a Healthy Environment (CHE), formed in 1996 from the need for community support and research involving the illnesses of workers at the Department of Energy Nuclear Facilities (K-25, X-10 and Y-12) and the citizens of Oak Ridge, Tennessee. CHE's interest is in helping those who have been harmed by the contamination and operations of the Department of Energy facilities. CHE seeks medical treatment for its members, as well as others in the community, and wants to ensure that future generations will not be harmed by DOE operations.

By 1996, DOE chose reindustrialization as a means to accomplish their environmental management goals at K-25. During this time period, a flurry of activity occurred in Oak Ridge. Not only had DOE announced its reindustrialization plans for K-25, but reports of child health impacts from exposures in the Scarboro community. Scarboro is an all black community isolated from the City of Oak Ridge. Scarboro is also the closest community to any of the nuclear facilities in Oak Ridge. DOE held frequent public meeting during this time.

In an effort combine resources, representatives from five local environmental health and safety groups decided to meet informally to discuss current issues in Oak Ridge. As part of the federal requirements of CERCLA for community participation, DOE formed the Site Specific Advisory Board (SSAB), which was made up of DOE officials, business leaders in the community, and a few citizen representatives. These community representatives participated in the informal discussion between local environmental groups. After realizing that this was not a legitimate process, the citizen members resigned at the same time and joined leaders of other local grassroots environmental organizations. The resigning members of SSAB, along with other local activists, formed a coalition Oak Ridge Communities Allied (ORCA).

The formation of ORCA consisted of five local, environmental health and safety groups including: Coalition for a Healthy Environment (CHE), Oak Ridge Health Liason (ORHL), Save Our Cumberland Mountains (SOCM Roane Co. Chapter), Oak Ridge Environmental Peace Alliance (OREPA), and American Environmental Health Studies Project (AEHSP). ORCA was concerned that the cleanup of existing buildings at the former K-25 site may be inadequate under the reindustrialization strategy, and

consequently, that the health and safety of workers occupying these buildings, at present and in the future, may be at risk. To accomplish their goals, ORCA applied for an EPA Technical Assistance Grant (TAG).

Congress established the TAG Program in 1986 to help communities affected by Superfund sites understand and comment on site-related information, and thus participate more effectively in cleanup decisions. EPA believes it is important for communities to be involved in decisions related to nearby Superfund sites. For this reason, community outreach activities are underway at each of nearly 1,300 sites on the National Priorities List (NPL). Decisions about a site cleanup usually are based on a range of technical information such as: studies of site conditions; the kinds of wastes present at the site; and the kinds of technology available for performing necessary cleanup actions.

Through a facilitated planning process, ORCA identified specific tasks to be completed as part of the TAG grant. First, to evaluate through a document review and other means whether the health and safety of workers is ensured and adequate cleanup is being achieved under the reindustrialization strategy. This can include the collection, review, evaluation, and analysis of technical information related to reindustrialization, as well as qualitative reviews solicited from ORCA members such as interviews with former workers in certain sites.

Second, to engage in an information analysis and planning process with ORCA through facilitated discussions, retreats, workshops, community meetings, and other means to develop a plan for ORCA to most effectively use the technical information on reindustrialization that will be being collected and analyzed.

In effect, the TAG is a means by which communities are able to bridge the gap between the highly technical nature of information surrounding Superfund sites and the community's ability to understand that information. The TAG policy also provides a means to break the isolation barrier within the scientific community, which further penetrates the dominant power structure in Oak Ridge.

CHAPTER VI

CONCLUSION

The historical pattern of quiescence among the working-class patriots in Oak Ridge, in this instance, was explained as a function of power relationships. The pattern found was one where challenges from those facing perceived inequalities were thwarted or suspended by the power elite in an effort to protect the status quo. The coalescent nature of power and the exercise of its various mechanisms seem far more pervasive than power relationships found in Gaventa's (1980) study of the Appalachian Valley. Currently, the pattern of power relationships in Oak Ridge serves to strengthen and maintain the normative social order established by those responsible for the enforcement of the secrecy mandate. Although the passage of time has brought changes to the power structure, which led to the emergence of rebellion, patterns of inequality have remained among various aspects of the Oak Ridge community.

Methodologically, a historical perspective allowed for patterns of quiescence and rebellion to be revealed. A bottom, up view of contemporary Oak Ridge has allowed for a rare look at the various dimensions of power as they work to maintain quiescence and suppress collective resistance. However, the study was methodologically limited as power was not the focus of the original research endeavor. The power theme only emerged during the data analysis stage of research. I anticipate that a power-focused questionnaire would have allowed for an even clearer analysis of power relationships.

In this study, I have concentrated my efforts on documenting the structural conditions that forged a collective silence among K-25 workers and documenting

changes to that structure that led to challenge against the power elite. In general, I can conclude that the quiescent nature of K-25 workers cannot be adequately explained by worker apathy or consensus with the status quo. In fact, the perception of quiescence, in this empirical instance, can be explained by the power relationships between dominant and subordinate groups. Generalized grievances were present, but were controlled and contained by the DOE and its corporate contractors. Even as rebellion emerged, traces of quiescence can still be found among workers in Oak Ridge. This approach has not only explained various aspects of community interactions, but also the interrelationships between the powerful and powerless within the theoretical framework lain out in Chapter Two.

The Dimensions and Mechanisms of Power

The methodological limitations of this study hindered any investigation into the first dimension of power. The very nature of the "Secret City" leads to the conclusion that the pluralist perspective cannot adequately explain power relationships in Oak Ridge. Therefore, there is no evidence to suggest that the quiescent nature of K-25 workers is a result of a natural apathy within the community. It is for this reason that explanations for patterns of inequality can be found within the second and third dimensions of power.

In the second dimension of power, most grievances of the nuclear workers remain hidden, while some are expressed more overtly. A closer examination of power relationships in Oak Ridge reveals a more latent conflict. Although latent conflict has emerged, it is not a certainty that grievances will be heard in decision-making arenas. Throughout the history of Oak Ridge, rising challenges have been defeated repeatedly.

Historically, the powerful have taken advantage of accumulated resources from the mobilization of bias, which has served to thwart any potential challenge.

Organizational practices have benefited the power elite at the expense of the powerless: in the execution of the secrecy mandate, the complexity and bureaucratic nature of the organization, and the exemption of outside regulation. Organizational values of secrecy, loyalty, and obedience have replaced traditional values to shape the choices of the powerless as seen by the regions economic dependence upon the DOE operations. The mobilization of bias was strengthened by the use of coercive mechanisms. The DOE used or threatened sanctions such as the loss of employment, loss of health benefits, and loss of Q-Clearance against workers to coerce compliance with organizational norms. Additionally, the DOE used symbolic resources — 'paranoid', 'delusional', 'psychotic', 'drug addict', 'patriotism,'— to undermine the legitimacy of worker claims.

The third dimension of power, in combination with mechanisms from the first and second dimensions, produces a cumulative affect upon power relationships. As the powerful established inequalities in Oak Ridge, they also established their own legitimations, as seen in the socialization of workers in the values and norms of the new dominant culture. Another legitimations can be found in the establishment of a predominant ideology of loyalty and patriotism, which served to shape the interests and wants of workers at their own expense. Today, these predominant values continue to be strengthened through processes that are specifiable and directly observable. An examination of information flows — in the classification of information linked to national security issues, in the communication from management to the workers, in the

isolation of technical information, and in public information venues — suggests that conceptions of conflict can be directly shaped.

The direct mechanisms of power's third dimension are re-enforced by indirect processes that are not clearly observable. Continual defeat of worker challenges — to working conditions, to health and safety concerns, and to environmental degradation — gave rise to a sense of powerlessness, which affected the collective consciousness of workers about grievances and potential opportunities for challenge. Workers accepted their roles of inferiority and failed to develop a political consciousness for four decades. Once the powerless failed to recognize grievances or initiate challenge, power relationships were sustained without much action from powerholders.

As anticipated, power relationships can only be understood in terms of the dimensions and mechanisms of power and the interrelationship between each dimension, with each dimension serving to re-enforce the other. Issues absent from the public agendas in the first dimension help shape conceptions regarding issues for any future public agenda. Mechanisms of the second dimension shape the wants and needs of the powerless, while mechanisms in the third dimension re-enforce and strengthen the symbolic and coercive resources of the second dimension.

As a consequence, challenges only arise when power fields are altered. In Oak Ridge, power fields were altered by: the acquisition of information through FOIA requests, the use of legal action, the change in regulatory policy that placed the Oak Ridge Reservation (ORR) on the Superfund list, and the Clinton administration's new political climate of "openness," causing the emergence of challenge against the powerful.

Challenges from workers have not been sustained. Workers still exhibit a great deal of quiescence, despite any past challenges, which signals the presence of hidden conflict. For example, the reluctance of many workers to speak with me, the reluctance of workers to confront management regarding their claims of unsafe working conditions, and the reluctance of workers to report their illnesses to the K-25 medical staff. Studies focuses on power relationships can assist in the understanding of how power is maintained, as well as how power relationships can be altered for successful challenge.

To overcome the effects of power's third dimension, the powerless must develop a collective consciousness that recognizes the inequalities of their situation. They must recognize grievances and bring formerly latent issues to the public agenda. Oak Ridge saw this process as information on mercury releases became public. For the first time, workers were able to legitimate their concerns. Once grievances are recognized, the powerless must take action. Challengers must mobilize resources, material or ideological, to counter the mobilization of bias by dominant groups. Also, challengers need to overcome barriers that prevent their participation in decision-making arenas. It is only when the issues of deprived groups are raised in public decision-making forums that strides toward equality can be made.

Outcomes

Previously, I addressed questions concerning the nature of quiescence and the subsequent rise of rebellion. Within the historical and theoretical context of this study, I explained these phenomena by specific mechanisms of power's second and third

dimensions. Having answered these questions, what are the displaying outcomes of unequal power relationships in Oak Ridge?

In addition to the community's continued dependency upon the DOE for jobs and public revenues and the severe degradation of the local environment, power relationships resulted in the adverse health conditions of workers. The code of silence prevented individuals from learning the true nature of their work environment and the possible effects from exposures to hazardous materials. The DOE controlled the flow of information concerning worker exposures and coerced the medical community into delegitimizing worker health claims. Consequently, workers became ill at alarming rates. Approximately 95% of the respondents in this study suffer deteriorating health from exposures they attribute to their work at K-25.

Some workers asked that I not write of their illnesses, while others spoke candidly regarding their deteriorating health conditions. To merely list the enormous array of illnesses suffered by K-25 workers would not give adequate justice to these courageous individuals. Here, I see my role not as a voice for the community, but rather as a vehicle to empower community members to speak for themselves. Using these principles, I chose to disseminate descriptions of the health outcomes through the worker's voices. I close with workers describing the consequences of exposures they suffered while working at K-25.

> I believe that I have been affected neurologically. I've personally lost my ability to concentrate. My short-term memory is just capoot, I mean if you tell me something, you'd better make sure that I've got it wrote down and up in front of me somewhere because thirty minutes after you've told me I've forgotten it. That's very disturbing to me, to be quite frank with you. I contribute my heart condition to my work at K-25 and the exposures that I've got out there. My

heart condition followed all of the symptoms and the protocols that I could find on the internet relating that enlarged left ventricle, aneurisms in the left ventricle, etc, etc. You know, just one thing after another. I've have brain lesions that I believe that can be connected to my work at K-25. I have adult onset diabetes that developed while I was working at K-25 and that's a real signal right there to people who are looking at a site.

I first started having thyroid problems in the mid 80s. Then I had a hysterectomy in the early 80s. In 1990, I developed some respiratory problems and went to the doctor for another reason. He listed to me breath and put me in the hospital. He called in a pulmonary doctor and asked me what I had been exposed to, by this time I was working at Y-12. I can't name you things because when you work at plants out there you are exposed to everything and you know nothing. Since then I have been diagnosed with suppressed immune system, peripheral neuropathy. I have memory loss. They removed my thyroid.

It caused your teeth to decay and some of the problems had to do with if you were (I wasn't planning on having any more children) but if you worked with the degreaser you probably would not have children. Everything that you worked with it had its dangers and I am going through a lot of it at this stage to different counselors and testing, which God has been very good to me and let me go on and I am thankful because I have gotten a test that they did for samples and they found two were positive to some of the chemicals that I worked in that caused bladder cancer, so I have to go back to rechecked. In the meantime, I was operated on for lung cancer and they told my doctor and my family how bad it was. I was also operated on for thyroid cancer, which they removed my left lymph node. All of these chemicals I worked with, these are the things that they caused. Even down to the bones. Sometimes now I think it breaks down everything it can in your system and then it settles into your bones. And as you can see you see more people hopping or on canes, walkers, wheelchairs and they are not old people, they are young people that never, some of them might be arthritis, but I think it is a great deal to do with what we worked with and what we have breathed not only at the work place, but where we live.

I was so sick it was all I could do to get to work everyday. That I would be driving to work, well I would get up in the morning and take a shower and be so exhausted that I would have to go back to bed. Just from taking a shower. So it would just take me forever to get ready for work, and then I would be driving to work just falling asleep. Fist thing in the morning. It didn't matter whether I had had a good nights sleep or not, you know. And I was just so sick and just barely hanging on and in 1996 I missed one-third of the year due to illness and doctor appointments.

> They thought they really had it made out there making good money and now they're all sick. That's the case with a lot of people with their health.. They thought they were good; this is their livelihood and a place to retire from and al. Now some of them are sitting at home, if they still own their home. I mean, if they haven't lost it or whatever. They're sick. They're going to be sick for the rest of their life and they're going to barely exist for the rest of their life.

The only individual in this study that did not currently have a serious illness expressed his expectations of getting cancer. He remarked:

> I fully expect to have cancer. I really do. Especially since I've become involved with this medical study that we are in now. Just about all of my co-workers, maintenance people, and most of the operators working there for any length of time are now having cancers or leukemia of one kind or another, colon cancer, a lot of lung cancers. Everybody's lungs are screwed up, scared or some kind of lung problems.

Bibliography

Bibliography

Bachrach, Peter. 1969. "The Theory of Democratic Elitism: A Critique." London: University of London Press.

Bachrach, Peter and Morton S. Baratz. 1962. "The Two Faces of Power," *American Political Science Review,* Vol. 56, Pg. 947-52.

Bachrach, Peter and Morton S. Baratz. 1970. "Power and Poverty: Theory and Practice." New York: Oxford University Press.

Berger, Peter L. & Thomas Lukemann. 1966. "The Social Construction of Reality." New York: Doubleday and Co.

Brown, Anthony & Charles McDonald. 1977. "The Secret History of the Atomic Bomb." Delta.

Cable, Sherry, Thomas Shriver & Donald Hastings. 1999. "The Silenced Majority: Quiescence and Government Social Control on the Oak Ridge Nuclear Reservation." *Research in Social Problems and Public Policy*. Vol. 7. Pg. 59-81.

Capek, Stella M. 1993. "The 'Environmental Justice' Frame: A Conceptual Discussion and an Application." *Social Problems.* Vol. 40 (1), February.

Carter, Lewis F. & William Willard. 1993. "Issues of Restricted Scope in Social Impact Assessment: Case Study of Assumptions about Impacts of teh Proposed Hanford Hight-Level Nuclear Waste Repository." *Research in Social Problems and Public Policy.* Volume 5, pages 243-268.

Chomski, Noam. 1987. "On Power and Ideology: The Managua Lectures." US: South End Press.

Crenson, Matthew A. 1971. "The Un-Politics of Air Pollution: A Study of Non-Decision-Making in the Cities." Baltimore: John Hopkins Press.

Dahl, Robert A. 1956. "A Preface to Democractic Theory." Ill: University of Chicago Press.

Dahl, Robert A. 1961. "Who Governs? Democracy and Power in an American City." New Haven: Yale University Press.

Dahl, Robert A. 1969. " The Concept of Power", in Roderick Bell, David M. Edwards, R. Harrison Wagner, eds., "Political Power: A Reader in Theory and Research." New York: Free Press.

Duetsch, Karl W. & Leroy Rieselbach. 1965. "Recent Trends in Political Theory and Political Philosophy", *The Annuls of the American Political and Social Science.* Vol. 360. Page 151.

Edelman, Murray. 1960. "Symbols and Political Quiescence," *American Political Science Review, Vol. 54.* Pages 695-704.

Edelman, Murray. 1967. "The Symbolic Uses of Politics." Urbana: University of Illinois Press.

Freire, Paulo. 1972. "The Pedagogy of the Oppressed." Harmondsworth, Middix: Penguin Books.

Freire, Paulo. 1972. "Cultural Action for Freedom." Harmondsworth, Middix: Penguin Books.

Frey, Frederick W. 1971. "Comment: ON Issues and Non-Issues in the Study of Power", *American Political Science Review, Vol. 65.* Pages 1081-1101.

Garson, David. 1973. "Automobile Workers and the American Dream", *Politics and Society, Vol. 3.* Pages 163-179.

Gaventa, John. 1980. "Power and Powerlessness: Quiescence and Rebellion in an Appalachian Valley." Ill: University of Chicago Press.

Gramsci, Antonio. 1971. "Selections From the Prison Notebooks."...ed. and trans. By Quinton Hare and Geoffrey Nowell-Smith. London: Lawrence and Wishart.

Hardert, Ronald A. 1993. "Public Trust and Governmental Trustworthiness: Nuclear Deception at the Fernald, Ohio, Weapons Plant." *Research in Social Problems and Public Policy.* Volume 5, pages 125-148.

Johnson, Charles W., Charles O. Jackson. 1981. "City Behind the Fence: Oak Ridge, Tennessee, 1942-1946." University of Tennessee Press.

Lawless, W.F. 1993. "Interdependence and Science: The Problem of DOE Military Nuclear Weapons Waste Management." *Research in Social Problems and Public Policy.* Volume 5, pages 271-288.

Lodwick, Dora A. 1993. "Rocky Flats and the Evolution of Mistrust." *Research in Social Problems and Public Policy.* Volume 5, pages 149-170.

Lukes, Steven. 1974. Power: A Radical View. London: MacMillan.

Lukes, Steven, Ed. 1986. "Power." New York: New York University Press.

Mann, Michael. 1970. “The Social Cohesion of Liberal Democracy”, *American Sociological Review, Vol. 35.*

Milliband, Ralph. 1969. “The State in Capitalist Society: An Analysis of the Western System of Power.” London: Weidenfeld and Nicolson.

Mills, C. Wright. 1956. “The Sociological Imagination.” New York: University of Oxford Press.

Mueller, Claus. 1973. “The Politics of Communication: A Study in the Political Sociology of Language, Socialization and Legitimation.” New York: Oxford University Press.

Olsen, Marvin E., Editor. 1970. “Power in Societies.” New York: The Macmillan Company.

Olsen, Marvin E. & Martin N. Marger, Editors. 1993. “Power in Modern Societies.” CO: Westview Press.

Overholt, James ed. 1987. “These Are Our Voices: The Story of Oak Ridge, 1942-1979.” Oak Ridge: Kingsport Press

Parenti, Michael. 1970. “Power and Pluralism: A View From the Bottom.” *Journal of Politics.* pages 501-30.

Pasternak, Douglas. 1993. “The Department of Energy’s Black Hole.” *Research in Social Problems and Public Policy.* Volume 5, pages 171-177.

Pizzorno, Allesandro. 1970. “An Introduction to the Theory of Political Participation”, *Social Science Information, Vol. 9. Page 45.*

Polsby, Neslon W. 1963. “Community Power and Political Theory.” New Haven: Yale University Press.

Robinson, George O. 1950. “The Oak Ridge Story.” TN: Southern Publishers, Inc.

Salamon, Lester & Stephen Van Evera. 1973. “Fear, Apathy and Discrimination: A Test of Three Explanations of Political Participation,” *American Political Science Review.* Pages 1288-1306.

Schattschneider, E.E. 1960. “The Semi-Sovereign People: A Realist’s View of Democracy in America.” New York: Holt, Rinehart and Winston.

Sheak, Robert J. & Patricia Cianiolo. 1993. "Notes on Nuclear Weapons Plants and Their Neighbors: The Case of Fernald." *Research in Social Problems and Public Policy.* Volume 5, pages 97-122.

Shrader-Frechette, Kristin. 1993. "Risk Methodology and Institutional Bias." *Research in Social Problems and Public Policy.* Volume 5, pages 207-223.

Shriver, Thomas E., Deborah A. White, & AlemSeghed Kebede. 1998. "Power, Politics, and the Framing of Environmental Illness." *Sociological Inquiry*. Vol. 68 (4) Fall, pages 458-75.

The Oak Ridge Education Project. 1992. "A Citizen's Guide to Oak Ridge." TN: Foundation for Global Sustainability.

Verba, Sidney & Norman H. Nie. 1972. "Participation in America: Political Democracy and Soical Equality." New York: Harper & Row.

Walker, Jack E. 1966. "A Critique of the Elitist Theory of Democracy." *American Political Science Review,* Vol. 60, Pg. 285-95.

Wolf, Eric. 1969. "Peasant Wars of the Twentieth Century." London: Faber and Faber.

Appendices

Appendix A

Interview Guide

The interview will be structured around the following areas of inquiry: A) the participant's work experience at K-25, B) information that the participant has about hazardous materials at K-25, C) the participant's perceptions and knowledge of the relationship of personal and community health and working at K-25, D) information about the cleanup and reindustrialization of K-25, E) the participant's thoughts on how ORCA might use information gathered in this study, and F) any additional information that the participant would like to share. The interview will be semi-structured around these areas of inquiry using appropriate follow-up and probing questions such as those listed below.

A. Please tell us about your work experience and knowledge of the K-25 facility:

1. What time period did you work at the K-25 facility?
2. What were your duties?
3. In which buildings did you work?

B. We would also like to know if you have any information about hazardous materials in the K-25 facility:

4. At the time you were working, did you knowingly come into contact with any hazardous material? If so, what kind?
5. If not, did you learn later on that you had been working with hazardous materials? What kind?
6. When and how did you learn this?
7. What kinds of things did you observe about the handling of materials while working at K-25?
8. Do you feel that you were given adequate training and safety equipment to perform your duties at K-25? Explain.

C. Please let us know what you think about the relationship between health and work at K-25.

9. Do you think that your health has been impacted by working at K-25? Explain.
10. Do you think that the health of others has been impacted by working at K-25? Explain.

D. We would like information about the cleanup and reindustrialization of K-25.

11. What information, if any, do you have regarding the cleanup of buildings that have been targeted for reindustrialization? How have you learned this?
12. Do you feel the buildings that have been leased at K-25 are safe for workers who now occupy those buildings? Explain.

E. Do you have any thoughts on how local environmental groups might use information gathered in this study?

13. Based on your knowledge of K-25 and the hazards present either now or in the past at the site, what information do you feel should be included in future public meetings concerning the site?
14. What is the best way to get this information to the public?
15. Would you be willing to participate in any public meetings on this subject? If so, in what capacity?

F. Is there anything else you would like to share with us?

Appendix B

Analysis Matrices

Table 4.1
Summary of Worker Experiences

Time Period	Buildings	Type of Employment	Health Effects (Respondent	Chemical Exposures	Health Effects (Co-Workers)
1976-1996	all	Security	Heart attack, Reactive Airway Disease, Neurological damage, loss of memory, brain liasions, adult diabetes	Nickel, Beryllium, UF6, Plutionium, mold, Cyanide, arsenic uranium, silver, aluminum, lead	Soar throats, sinus infections, eye problems
1994-1996 (onsite)	1001, 1037, 1401, cafeteria,	Administrative (White-collar)	Nickel Poisoning, Cyanide Poisoning, Chronic Fatigue	Cyanide, nickel, radiation,	Cyanide Poisoning
1973-1996	all, 1401	Process Operator/ Decon-tamination		UF6	Cancer, Respiratory Disease
1975-1996	all, 1401, 1007	Cafeteria worker	Heart Attack, Cyanide Poisoning, lost sense of smell, chronic fatigue	Cyanide, UF6	Cyanide Poisoning
1973-1995	All	Fireman	Chronic Soar Throat, blood in urine, adult diabetes, Heart Attack, Immune Deficiency	UF6, Chromium, Arsenic	Chronic Soar Throat, blood in urine, adult diabetes, Heart Attack, Immune Deficiency, Beryllium Disease

Table 4.1 Continued					
Time Period	**Buildings**	**Type of Employment**	**Health Effects (Respondent)**	**Chemical Exposures**	**Health Effects (Co-Workers)**
1979-1986	J-Lab, 1200, 1220, 1225, 1052, 1600, K-25	Engineering Technician	Thyroid problems, Hysterectomy, respiratory problems, suppressed immune system, peripheral neuropathy, memory loss, brachiectasis	UF6, resins	Bladder Cancer
1969-1999	All	Maintenance Mechanic	Heart Attack, (expects to have cancer)	Acids, Plutonium, Neptunium, techniesium, uranium, UF6, Nickel, Mercury,	Luekemia, Colon Cancer, respiratory disease
1944-1984	All	Hazardous Disposal	Nodule on lungs	Acids, ClF3, UF6, Beryillium	Asbestosis, Beryillisis, turberculosis, neurological damage, cancers,
1992-1996	All	Fireman/EMT	Chronic Soar Throat/sinus, adult diabetes, Chemical Encephalopathy,Slee p Apnea	Radiation	Heart Attack, Loss of Memory
1974-1996	Y-12/K-25, 1401, (1037) barrier building, Power House,	Janitor, Asbestos worker, maintenance mechanic apprentice	Loss of memory, Cyanide Poisoning, Receeding gums, Repiratory disease, Thyroid disease	Nickel, Asbestos, UF6, PCB, heavy metals, (everything), Cyanide	Cancers, Respiratory disease
1974-Present	All	Instrument Mechanic		UF6	

Table 4.1 Continued					
Time Period	**Buildings**	**Type of Employment**	**Health Effects (Respondent)**	**Chemical Exposures**	**Health Effects (Co-Workers)**
1977-1996	All	Janitor	Loss of Memory, Fibromyalgia, chemical encephalopthia, stomach problems, Chronic kidney/bladder infections, Chronic Fatigue, loss of hair, loss of hearing	Nickel, UF6, Beryllium	Cancers, Respiratory disease
1976-1996	All	Security	Loss of Memory, Chronic Fatigue, Stomach problems,	HF, UF6, Nickel, Beryllium	Cancers, Respiratory disease
1974-1980	1976-1996	All	Security	Loss of Memory, Chronic Fatigue, Stomach problems,	HF, UF6, Nickel, Beryllium
1987-1996	1976-1996	All	Security	Loss of Memory, Chronic Fatigue, Stomach problems,	HF, UF6, Nickel, Beryllium
1970-1998	1976-1996	All	Security	Loss of Memory, Chronic Fatigue, Stomach problems,	HF, UF6, Nickel, Beryllium
1990-1995	1976-1996	All	Security	Loss of Memory, Chronic Fatigue, Stomach problems,	HF, UF6, Nickel, Beryllium

Table 4.2.
DOE's Official View of K-25 Buildings

Building	Hazardous Material	DOE's Official Position	EPA's Official Position	TDEC's Official Position	DOE's Classifications
K-1401	Fluorine, chlorine trifluoride, UF6 (Uranium), Hydrocarbon oils, Fluorocarban oils, Degreasers, caustics, acids, trichloroetheylene, trichloroethene, methyl-ethyl-ketone (MEK), carbon tetrachloride, freon, mercury, chromium, cutting oils, aromics, acetones, epoxy, paints.	No hazards present with leased portions and no further remediation or cleanup	Not suitable to lease		rooms E41/2, E4, and 255 are classified
K-1036			Not suitable to lease		
K-1220	Asbestos, PCBs (Laydown area)	No hazards present with leased portions	Not suitable to lease		Information on most areas are classified
K-1095	Asbestos, paints, resins, thinners				
K-1098	B25 boxes, radiation			Suitable for use as a classroom. Insufficient info for future remediation .	
K-1004-J	cesium, technetium, uranium, neptunium, californium, and plutonium	Lack of funds prevents further remediation			
K1037					Classified
K-1201	Lubricating oils,	Area has been remediated			

Table 4.3.
DOE's Official View of Worker Health

Building	Hazardous Material	Possible Exposures	Health Impacts
K-1401	Fluorine, chlorine trifluoride, UF6 (Uranium), Hydrocarbon oils, Fluorocarban oils, Degreasers, caustics, acids, trichloroetheylene, trichloroethene, methyl-ethyl-ketone (MEK), carbon tetrachloride, freon, mercury, chromium, cutting oils, aromics, acetones, epoxy, paints.	Radiation, Asbestos, PCBs	All risks are within EPA target range
K-1220	Asbestos, PCBs (Laydown area)	Radiation on the third level	Total risk within EPA targe range
K-1095	Asbestos, paints, resins, thinners	No exposures identified	No health impacts listed
K-1098	B25 boxes, radiation	No exposures identified	No health impacts listed
K-1004-J	cesium, technetium, uranium, neptunium, californium, and plutonium	Radiation (Cs-137)	No health impacts listed
K1037	Classified	Classified	Classified
K-1201	Lubricating oils	Radiation near vacuum pump	No health impacts listed

Appendix C

Hall Amendment Responsibilities

Table 5.1
Hall Amendment Responsibilities

Responsible Party	Responsibilities
The Secretary of Energy	Responsible for delegating to DOE field organizations the authority to make leasing determinations.
The Environmental Protection Agency	EPA's authority to review and concur with leasing decisions is delegated to the Assistant Administrator for Solid Waste and Emergency Response and to Regional Administrators. Responsibility may be delegated even further.
Department of Energy Field Organizations	DOE field organizations may lease property under the "Hall Amendment" they consider appropriate to ***promote national security*** or the ***public interest***. DOE field organizations will consult with EPA to determine whether environmental conditions of the property are consistent with safety and the protection of public health and the environment. DOE field organizations may enter into a lease without EPA concurrence if EPA's Regional Administrator fails to respond within 60 days. DOE field organizations are responsible for making determinations if leased property meets environmental, health, and safety requirements and for seeking EPA concurrence. The DOE Field Management Office may retain and use rental money for administrative expenses, the maintenance and repair of leased property, or environmental restoration activities. DOE field organizations are responsible for the day-to-day administration, monitoring, enforcement, and execution of the leases.

Table 5.2
The Hall Amendment Leasing Process

Step in Leasing Process	Comment & Section Reference
DOE, working with existing public participation mechanisms and EPA, identifies property for potential lease.	DOE will interact primarily with Community Reuse Organizations and local site-specific advisory boards, where such bodies exist. Early involvement of regulators is preferable. (Section III.B.6.)
DOE consults with EPA on the data and analyses necessary for leasing data package.	DOE should ensure that leasing actions would not impact milestones in the IAG unless EPA and the State, as appropriate, agree upon such impacts. (Section III.B.1.)
DOE develops, in consultation with EPA, a leasing data package containing site characterization data and other required information.	(Section III.B.2.)
DOE may negotiate with the lessee to perform cleanup.	DOE, not the tenant, retains ultimate responsibility for compliance with the IAG. DOE will ensure that all cleanup actions are consistent with the IAG and will not interfere with planned IAG activities. For activities such as certain Decontamination and Decommissioning (D&D) activities not governed by the IAG, such activities performed by lessees will be conducted in accordance with DOE policy and guidance pursuant to the lease agrement, and made available to the public in accordance with applicable law and regulations. (Section III.B.4.)

Table 5.2. Continued	
Step in Leasing Process	**Comment & Section Reference**
DOE may need to review its environmental permits and initiate modification to those permits. The lessee may have to acquire it's own permits and/or licenses.	DOE's preferred approach to commercialization is to not subsidize the commercial entity by including it within DOE's environmental permits. New permitting activities may require specific public participation requirements pursuant to the permit program involved. (Section III.B.7.b.)
DOE develops terms and conditions for lease including, in consultation with EPA, those terms and conditions necessary to provide appropriate environmental and safety assurances.	In the event of lessee obligations or if use restrictions are needed, DOE will need to specify how lease contract provisions will be monitored, maintained, and enforces. DOE will need to include a long term DOE access clause or have servicing arrangements monitoring. (Section III.B.7.)
DOE makes a determination that the proposed lease is consistent with safety and the protection of public health and the environment and submits the determination, together with the applicable lease terms and conditions (above) and the rest of the leasing data package to EPA and formally requests concurrence.	(Section III.B.2. and III.B.8a.)
Not later than the submittal to EPA, DOE notifies public of proposed leasing action, and the availability of the relevant leasing document for review.	(Section III.B.6.b.)
DOE provides public comments and any DOE responses to EPA in a timely manner.	(Section III.B.6.c.)
EPA concurs with, or rejects, the DOE determination.	(Section III.B.8.c.)

VITA

Barry R. Durbin was born in Okmulgee, Oklahoma on January 14, 1963. He grew up in Dewar, Oklahoma where he graduated from Dewar High School. He completed his Associates of Science degree from Tulsa Junior College in December 1993 and completed his undergraduate degree at the University of Tulsa. He graduated with his Bachelor of Science degree in December 1995 with a major in Environmental Policy and a minor in Chemistry. After four years of professional experience in the environmental consulting/compliance field, he began his graduate studies at the University of Tennessee. He graduated with a Master of Arts degree in December 2002 with a major in Sociology with a concentration in Environmental Sociology.

While competing his Masters degree, he served as Technical Advisor for Oak Ridge Communities Allied (ORCA). ORCA is a grassroots environmental organization in Oak Ridge, Tennessee who received a Technical Assistance Grant (TAG) from the Environmental Protection Agency (EPA). His role was to disseminate technical information regarding a former nuclear weapons production facility in Oak Ridge to the public.