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Findings of a community case study of Navajo uranium workers and their families are presented in light of the effects of technological disasters. The workers and their families were exposed to occupational and environmental hazards associated with the mining and milling of uranium. Implications for social work practice and education are presented using the concepts of a therapeutic community and victim typology.

Introduction

There is a growing effort within the scientific community to identify both the short- and long-term consequences of natural and technological disasters. Two areas of concern in the literature are the development of therapeutic communities to help cope with disasters and the identification of different types of victimization. This paper will address these two areas within the context of technological disasters, and will present a case study of Navajo uranium workers. Finally, implications for social work practice are discussed.

Natural and Technological Disasters

Distinctions between the stressors of natural versus technological disasters have been well delineated in the literature (see Baum, Fleming, and Davidson, 1983; Baum, Fleming, and Singer, 1983; and Cuthbertson and Nigg, 1987). Technological disasters, e.g., nuclear plant accidents and toxic spills, indicate the collapse of humanmade systems, while natural disasters, e.g., floods and earthquakes, occur without human intervention.

Technological disasters such as radioactive contamination may leave no visible evidence in the environment, but can lead to chronic stress and sickness. These resulting health effects are

perceived to be unrelated to natural causes, indicating instead a failure of technologies that were once considered under control (Baum, Fleming, and Davidson, 1983). The individual is likely to believe that someone, or some group, is ultimately responsible for the disaster (Baum, Fleming, and Singer, 1983).

Kasperson and Pijawka (1985) have presented a framework for understanding the problems of communities coping with both types of disasters. They point out that technological disasters make the identification of health consequences and liability difficult because of latent effects, whereas natural disasters have immediately observable consequences. For example, when a tornado strikes, a community mobilizes quickly. The disaster agent is known and clearly defined. With a technological disaster, however, the community may not mobilize quickly because of chronicity and/or ambiguity regarding the disaster agent and its consequences. Love Canal, New York, for instance, demonstrated community division in response to the disaster agent. In technological disasters, the nonvictimized members of the community may begin to resent the victimized members because of scientific uncertainties about the hazard, the potential for adverse economic impacts, media attention, and prolonged debate. All of these may increase community division.

Kasperson and Pijawka (1985) also have identified the importance of a therapeutic post-disaster community as a powerful means of stress reduction. Cuthbertson and Nigg (1987) have noted that therapeutic communities tend to develop where there is little ambiguity concerning the disaster agent, creating emotional and physical support, solidarity, unity of purpose, and hopefulness for renewed normalcy. In addition, they state that an effective therapeutic community is identified by the following factors: general consensus on the nature and risk level of the disaster agent; beliefs that the disaster could not have been prevented; indiscriminate, highly visible, and communitywide damage; and obvious and urgent needs toward which feelings and remedial action can be directed.

Cuthbertson and Nigg (1987) have also developed a typology which discusses a therapeutic community that emerges as a response to technological disasters. They assume that a therapeutic community may not develop in technological disasters

because of community conflict, or conflictual adaptation, and divide community groups in two major categories—primary and secondary victim clusters. Primary victims include those individuals who either lived close to or were knowingly exposed to the technologically created hazard that produces negative health effects. Secondary victims include community residents who consider themselves to be adversely affected by the public acknowledgment of a technological event.

Within the category of primary victims there are two subgroups: the hazard-endangered victims and the hazard-disclaimer victims. The hazard-endangered victims perceive the disaster agent as a definite threat to health, while hazard-disclaimer victims do not. Cuthbertson and Nigg (1987) note that hazard-endangered victims generally lose confidence that a supportive social environment will emerge. They feel they are in a crisis situation which will not be resolved and are unable to reduce their anxiety through community support. Group members worry for the immediate and future health of their families and themselves, and may feel suspicious toward experts and government officials perceived as uncaring and unresponsive.

Hazard-disclaimer victims do not perceive a technological agent as hazardous or capable of producing negative health problems. They also do not consider hazard-endangered victims to be the true victims of the technological hazard; instead they see the endangered victims as either augmenting the controversy or as opportunists.

Secondary victims of technological disasters are also classified into two subgroups—the perpetrator victims and the bystander victims. The perpetrator victims are "individuals labeled as unethical, opportunistic, and uncaring by hazard endangered victims and their supporters" (Cuthbertson and Nigg, 1987:478). These may include individuals from businesses and/or government. Victims from this group may believe they have been singled out unfairly and may attempt to prove their innocence.

Bystander victims are community members not living within the exposed area of the technological agent. They perceive themselves as victims because of their association with the issue, expressing concern for their own economic interests

and the community's return to normalcy. Bystander victims were not identified in this study because all of the respondents either worked in uranium mining and milling or lived within an exposed area of the Navajo Reservation.

Cuthbertson and Nigg (1987) state that secondary victims tend to consider themselves casualties of the technological agent's negative effects. Similar to primary victims, secondary victims are likely to lose confidence when there is official unresponsiveness, incompetence, and unaccountability by scientific experts and government officials.

The chart below presents the Cuthbertson and Nigg (1987) typology indicating the relationship between the victim clusters.

Technological Disaster Victim Typology

I. Primary victim cluster—victims who lived close to or were exposed to the disaster agent
   A. Hazard-endangered victim cluster—victims who perceived the disaster agent as a threat
   B. Hazard-disclaimer victim cluster—victims who did not perceive the disaster agent as a threat

II. Secondary victim cluster—victims who perceived themselves as adversely affected by public acknowledgement of the technological event
   A. Perpetrator victim cluster—victims who may believe they have been unfairly identified as causing the technological event
   B. Bystander victim cluster—victims who do not live within the exposed area of the technological agent but feel victimized by their association with the event

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In sum, the therapeutic community and victim typology are important concepts for understanding the process of coping with technological disasters such as the Navajo experience with uranium mining and milling.

Methodology

The purpose of this study was to conduct a social field investigation of Navajo workers in the uranium industry from the late 1940s into the early 1980s. These individuals had uncompensated occupational illnesses related to working in the uranium mines and mills. The author conducted interviews from a purposive sample of 55 Navajo respondents and 33 key informants, combining participant observation and interviews. Because there is no exhaustive sampling frame of Navajo uranium workers, a random sample was not conducted. A purposive and snowball sample was created with assistance from a Navajo tribal key informant. Of the total of 55 respondents, 43 were miners, seven were millworkers (15 widows responded for their deceased husbands), and five were residents whose family members had perceived environmentally-related illnesses. All of these respondents fit in the Cuthbertson and Nigg hazard-endangered group. The study was conducted in 1989 on the Navajo Reservation in Tuba City and Blue Gap, Arizona, and the Shiprock, New Mexico, areas.

The author, who was the only researcher and who does not speak Navajo, worked with two interpreters throughout the project. The one- to two-hour interview schedule was structured with open- and closed-ended questions and included questions regarding occupational histories and environmental and occupational perceptions of hazards. All interviews were arranged and conducted in person by the author with the exception of Blue Gap, AZ. A chapter house official interviewed respondents in this area.

Discussion

The Navajo people are a rapidly growing group of Native Americans. In 1950, Navajo living on the reservation numbered 69, 167; this increased to 165, 005 by 1988 (Navajo Nation, 1988). The tribal land base of 17,202,118 acres is rich in nonrenewable energy sources including coal, gas, oil, and uranium. Because poverty is rampant, with an estimated 43 percent unemployment and approximately 44 percent of families and individuals

living below the poverty line (Navajo Nation, 1988), energy development and the creation of energy-related jobs are serious concerns for the Navajo people. The Navajo Reservation is also likely to be a prime target for nuclear waste storage/disposal and other potential technological hazards.

With the advent of the atomic age, a uranium boom occurred in the Four Corners area (the border junctures of Arizona, Colorado, New Mexico, and Utah) from the 1940s through the 1960s, resulting in the creation of approximately 2,500 mines both on and off the Navajo Reservation (National Institute for Occupational Safety and Health, 1971). In addition, four uranium mills were built on Navajo land during this period to process the uranium ore. While there is no overall statistic for the number of Navajo uranium miners and millers, estimates include up to 3,000.

The miners worked at the first stage of the process digging the raw uranium both out of mines, called dogholes, and above ground in strip mines. The millworkers worked in the second stage of the cycle, processing the ore into a finer substance called yellowcake, or uranium oxides. The negative health effects of this uranium process surfaced twenty to thirty years later, creating a chronic technological disaster threatening both uranium workers, tribal members, and the general environment.

Initially, the uranium industry was favored by some Navajo because it created jobs as well as much needed revenues for the Navajo Nation. Many Navajo took pride in assisting the United States government in developing the materials for atomic weapons and energy. However, in the 1970s uranium miners who developed lung cancer and/or respiratory problems were noticed by an Indian Health Service pulmonary specialist, Dr. Leon Gottlieb. Navajo workers were never informed of the hazards of radiation, despite the fact that previous studies demonstrated how working with uranium was hazardous (National Institute for Occupational Safety and Health, 1971). There is no word in Navajo for radiation. Prior to the creation, in 1969, of the Mine Safety and Health Administration, workers in the study said they were not provided with personal protective equipment, such as masks, earplugs, and dosimeters or radiation monitoring badges. In addition, they were allowed

to wear uranium covered clothing home for laundering. One miner noted:

> There was no ventilation. The blast from the mine, the air was so dusty and smoky all over, that you couldn't see. Still, we had to go back into the mine after the blast. Our children used to play in the shower room after everybody left for home. There were no masks, no safety glasses and no earplugs.

Workers have since indicated that if they had been informed of the occupational hazards, they would have reconsidered uranium industry employment. Navajo workers felt that, in addition to being exposed to unsafe work practices, they were betrayed by the United States government, particularly the Atomic Energy Commission (AEC) and the United States Public Health Service (USPHS). A cover-up by the USPHS, in the name of national security, kept crucial health information from the workers (see John Begay v. U.S. of America, 1985). In the 1950s, the mining companies agreed to supply the USPHS with miners' names for an epidemiologic study on radiation effects with one provision. The USPHS agreed not to inform the workers of the potential health hazards associated with radiation while they were monitoring their health nor to inform them that their illnesses were radiation-related upon diagnosis. One Navajo supervisor interviewed by the author reported that he was told by his employer not to inform his workers about any of the dangers or health effects of radiation. He stated, "They told us to only tell [the workers] about safety—not about radiation dangers."

All miners in the study reported that the mines were largely unventilated. Drinking water was often collected from the walls of the mines, and workers often ate their lunches with unwashed hands. They wore their dirty workclothes home, exposing their family members to contaminated materials. Similarly, the millworkers wore their yellowcake-covered clothing home and exposed family members to uranium oxides. Some miners also reported they were forced to enter the unventilated mines directly after blasting, unlike Anglo workers who worked with them.

Because of the cover-up and lack of explanation by experts and government officials, the Navajo people were not able to make informed decisions about the hazards of nuclear development. It was not until recently that evidence of occupational illnesses and the identification of environmental hazards on the reservation led to the concept of a technological disaster. A miner's wife explains, "There used to be old people. But I don't think the new generation will live to 100 anymore. They might be 50 or 60 and then they are gone because of the [contaminated] areas they live in."

In addition to the long-term negative health results of mining and milling, the uranium industry was responsible for leaving minewastes and mill tailings on the Navajo Reservation. The abandoned mines, minewastes, and tailings provided play areas for Navajo children. One miner's daughter explained, "We used to herd the sheep to the [abandoned] mines and play there. In the winter, the sheep would sleep in the mines to get out of the cold." The Department of Energy (DOE) Abandoned Mine Lands (AML) Reclamation office, in an attempt to rectify the situation, is engaged in abating the hazards associated with the numerous mines. Uranium mills have or are in the process of being dismantled and buried along with the thousands of tons of mill tailings.

The Navajo, in experiencing a chronic technological disaster, are ambiguous about health problems and the environment. Radiation is insidious; it cannot be seen, felt, or smelled, and presents a difficult hazard for community members to identify. While a health emergency was recognized recently pertaining to the uranium workers overall, there has been considerable confusion by the rest of the Navajo population about the environment. Questions abound concerning latency and exposure to the technological hazard. A widow who lives next to a dismantled mill explained, "We are poor people. The people at the mill [after it was abandoned] didn't put up any fences and didn't tell anyone in the family that the mill area might be hazardous to our health. I want to talk to the owners to ask for compensation." She also indicated that "other people" had been to her house asking questions about health problems. This worried her.

Unique cultural factors greatly affect interpretation of events. The Navajo, for instance, are a people who live in clans and are tied to the land. Hence it is unusual for Navajo people, especially the traditional Navajo, to relocate to another locality, or tribal chapter. One worker stated, "I don't think there's anyplace that's safe. Uranium is everywhere. We were going to build at [another town] but decided not to as it is unsafe because of the kids." Some Navajo may be fatalistic about prophecies concerning energy development. Such prophecies state that the ground is not to be disturbed and, if this occurs, health problems will prevail. One Navajo community resident explained that a medicine man told her that the development of uranium would bring negative consequences to the Navajo.

It is first important to note that in the scientific community, there is now little ambiguity in identification of the disaster agent. Research, for the most part, supports the relationship between uranium mining and lung cancer (Butler et al., 1986; Gottlieb and Husen, 1982; National Institute for Occupational Safety and Health, 1971; Roscoe and Mason, 1984; Samet et al., 1984). In 1990, the Radiation Exposure Compensation Act was passed by Congress, providing compensation for the Navajo uranium miners and the atomic downwind residents. However, this took place only after decades of work-related exposure to the technological hazard.

As previously stated, ambiguity still prevails among the Navajo concerning the general environmental contamination associated with the uranium processes on the reservation. It is at this point in the cycle of the disaster where the Cuthbertson and Nigg typology becomes particularly relevant. Of the primary victims, there are two distinct groups: those considering themselves to be hazard-endangered victims, and those who are hazard-disclaimers. The hazard-endangered victims believe they were exposed to uranium through either the workplace or the environment. Members of the group include people with ill or deceased family members. The families may be concerned about the ongoing threat of illness, given the latency of radiation exposure. The therapeutic community did emerge for many uranium miners and their families once the correlation between their illnesses and exposures was made; however, a therapeutic

community has not fully developed for the millworkers or the general Navajo population exposed to tailings and minewastes.

Many examples of hazard-endangered victims were identified in the study. One traditional Navajo elder explained she has experienced social isolation because she lives on mining land. She said that relatives and friends would not attend a ceremony at her hogan, a traditional Navajo home, because they feared contamination from the mine waste. Her cattle drink from the nearby pond, which she believes is contaminated, and her sheep graze on the land. Adding to her fears, she explained how "someone from the government" came out to test her hogan and land for radioactivity and never informed her of the results. Because of these factors, she felt lonely and isolated and at a loss about what to do.

A sheepherder, who has experienced illness in her family, explained that the government told her not to graze her sheep on the contaminated land. She was worried because her sheep had been grazing all over the land for a number of years, and feared she or others would eventually become ill from eating the sheep.

Residents also felt contempt for the government and the companies who exploited the workers, their families, and tribal members. Many felt they were used as guinea pigs to further the government's atomic program. There was also ambivalence among the hazard-endangered cluster to discuss their concerns with the media and other experts. Respondents stated repeatedly that they did not feel it would "do any good to talk about it because nothing happens." Yet, because of pending legislation, lawsuits, and compensation claims, respondents were motivated to keep the issue alive.

Thirty of the fifty-five respondents, representing the hazard-endangered group, expressed concern that materials used in the construction of their homes and outbuildings were hazardous. For example, one worker pointed out that the stairsteps to his home were taken from the uranium mill outside Tuba City, Arizona. He did not know if they were radioactive, but wondered if they could be hazardous. Other concerned respondents had used scrap metal for various purposes which was taken from the mines or the dismantled mills. Some millworkers and their

families were provided with cinder block homes at the millsite. These cinder blocks had been made from radioactive materials and have since been demolished. All of the millworkers and their families indicated concern that they had been exposed to excessive levels of radiation as a result.

In what is known as Red Valley, Arizona, some area residents' homes had been built of radioactive materials. The government built second homes for these residents but neglected to dismantle some of the original contaminated homes. As a result, some families were living in both homes. In another example, a miner's widow had a contaminated bread oven and hogan on her property which were bulldozed by the government. She claimed the debris were still left on her land and feared continuing exposure which she thinks could result in health problems.

In Blue Gap, Arizona, the residents live near abandoned mines which are not on the DOE's abatement list. The author was informed that many of the residents believed cancers and other health problems are connected to the abandoned mines. One resident expressed concern that the drinking water was affected and wondered why Blue Gap was not on the abatement list. When the researcher contacted a DOE Abandoned Mine Land officer, she was informed that the situation did not present sufficient risk for abatement.

The hazard-endangered victims developed a sense of solidarity and sense of control over the years through chapter house associations and support groups, including the Uranium Radiation Victims' Committee of Navajo Uranium Miners. These groups helped to provide technical assistance, to educate about the disaster agent and its consequences, and to mobilize around legislative activities.

The hazard-disclaimer cluster included key informants and uranium workers. They were initially exposed to the disaster agent but later believed the hazard had been mitigated. This has led to a lack of consensus and solidarity among tribal members. Not all of the uranium workers who were contacted experienced health problems, and some of them did not feel that the disaster agent was a hazard. Some key informants and other workers believed that some of the workers were opportunists

and were trying to seek compensation without a documented occupational illness. Those individuals who could be identified as part of the victim-disclaimer group believed that the uranium had been cleaned up for the most part and posed no serious health threat.

One resident who lived across the road from a family who had received considerable publicity because of health problems and possible contamination, believed he, his family, and land were safe. He was not concerned for his livestock and believed the well water, which is tested by the Navajo Tribe, was also safe for consumption. Given the ambiguity, it is possible that tribal members in this cluster may be reducing cognitive dissonance to anesthetize themselves against the disaster agent and its consequences.

The other category of secondary victims are perpetrator victims. They include the United States government, particularly the Atomic Energy Commission (AEC). They repeatedly denied they were culpable for exposing uranium workers to hazards. They also claimed to be unaware of the dangers of radiation (see Begay et al.). Later, the government stated that because of national security, certain risks needed to be assumed. It is also clear uranium companies knew about the dangers of radiation and were reluctant to install safety measures because of associated costs (Ringholz, 1989).

These examples point out the usefulness of the victim typology and the therapeutic community in addressing the psychosocial aspects of technological disasters. The typology is helpful in delineating various groups within a community lacking solidarity, and it is a valuable tool for examining community conflict and cohesion. It must be kept in mind, however, that the clusters are ideal types and therefore groups may not be mutually exclusive and exhaustive with respect to the cluster categories.

The Navajo study also demonstrates how difficult it is for the therapeutic community to develop in a technological disaster. In this case, given the chronic nature of the disaster cycle, the therapeutic community only emerged upon recognition that the uranium miners' illnesses were work-related. For the other tribal members, the therapeutic community has not fully

emerged, primarily due to various groups' ambiguities about the disaster agent and its consequences.

Implications for Social Work

The implications for social work practice in technological disasters are not well defined. Coulter and Noss (1988:298) assert that, in response to technological disasters, "Social work intervention at the public health level to forestall the crises described should become routine." They suggest that informed social support networks are needed along with traditional avenues of social support, including advocacy, crisis intervention, community organizing, and individual work. It has been noted that disaster victims usually turn to family and friends, coworkers, local community groups and related others for help before they turn to government agencies and helping professionals (Garbarino, 1985; Stone and Levine, 1985).

Social workers need to be familiar with problems of occupational and environmental hazards and consequences in their communities. They may be some of the first people within the community to recognize a technological disaster through their clients and professional colleagues. As a result, social workers may be instrumental in providing crucial information regarding entitlement programs and health benefits as well as legal and health referrals. In addition, social workers need to take detailed client occupational histories concerning employment data and hazard and exposure information to help document the hazard.

Because of the chronic nature of many technological hazards, the therapeutic community may not emerge, leaving victims without social supports. It is then useful to utilize the typology presented by Cuthbertson and Nigg (1987), which offers a mechanism for differentiating victim clusters. It also provides the social worker with different frames of reference in viewing the problem and working with clients and the community. The typology becomes useful to the social worker in terms of providing a "map" of the technological disaster. It may then be used for community organizing and mobilizing to promote solidarity, lessen ambiguity, and create consensus toward building a therapeutic community. In individual

practice, the typology can assist the social worker in understanding the client's frame of reference toward the disaster. This knowledge will then assist the social worker with intervention strategies.

In working with Native Americans affected by technological disasters, it is important to recognize their specific cultural and economic situations. In the case of the Navajo, relocation because of technological damage is not likely to occur given their clan-based social structure. The lack of ability to relocate, due to the confines of the reservation boundaries, may contribute to a sense of futility and powerlessness among some of the victims. By contrast, non-Indians would be more likely to relocate under similar disaster conditions since they are not clan-based.

When working with Native American victims of technological disasters, it is important to understand the ramifications of their poverty, their lack of resources, and their remote rural nature. The social worker may need to make home visits to clients; it is likely they will not have telephones, transportation, or other means of accessing social services.

In general, the Navajo experience is unique in terms of a chronic technological disaster, blending cultural and socio-environmental issues. Uranium workers and community residents were not able to make informed choices early on regarding the disaster agent because of covert governmental activities. Because the Navajo did not have adequate information regarding the latent nature of the disaster agent, there was a lack of ability to bring the issue to the forefront. Only when health problems emerged among exposed workers and residents did legal and health experts become involved in the disaster.

In sum, social work practice that is informed and sensitive is crucial in responding to technological disasters. In addition, rapid mobilization becomes essential especially when social support structures normally associated with natural disasters do not emerge. By incorporating the victimization typology into their practices, social workers may assist communities in forming therapeutic communities thereby furthering community cohesion and a return to normalcy.

References

Barton, A. H. (1970). *Communities in disaster: A sociological analysis of collective stress situation.*Garden City, NY: Doubleday, Anchor Books.

Baum, A., Fleming, R., & Davidson, L. M. (1983). Natural disaster and technological catastrophe. *Environment and Behavior, 15,* 333–354.

Baum, A., Fleming, R., & Singer, J. E. (1983). Coping with victimization by technological disaster. *Journal of Social Issues, 39*(2), 117–138.

See Begay et al., vs. The Kerr-McGee Corporation et al. 499 F. Supp. 1324, 13 May 1980; Begay et al., vs. The Kerr-McGee Corporation et al., 499 F. Supp. 1317, October 1, 1980; UNC Resources, Inc. et al., vs. Banally et al., 518 F. Supp. 1046, 16 July 1981; Begay et al., vs. United States of America, and Anderson et al., vs. United States of America, 591 F. Supp. 991, 10 July 1984.

Blaufarb, H., & Levine, J. (1972). Crisis intervention in an earthquake. *Social Work, 17*(4), 16–19.

Burt, R. S., & Minor, M. J. (1983). *Applied network analysis.* Beverly Hills: Sage.

Butler, C., Samet, J. M., Black, W. C., Key, C. R., & Kutvirt, D. M. (1986). Histopathologic findings of lung cancer in Navajo men: Relationship to U mining. *Health Physics, 51*(3), 365–368.

Caplan, G. (1974). *Support systems and community mental health.* New York: Behavioral.

Cassel, J. (1976). The contribution of the social environment to host resistance. *American Journal of Epidemiology, 104,* 107–123.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38,* 300–314.

Coulter, M. L., & Noss, C. I. (Fall 1988). Preventive social work in perceived environmental disasters. *Health and Social Work,* 378–382.

Garbarino, J. (1983). Social support networks: Rx for the helping professions. In J. Whittaker & J. Garbarino (Eds.), *Social support networks: Helping in the human services* (pp. 3–28). Hawthorne, NY: Aldine.

Good Tracks, J. G. (1973). Native American noninterference. *Social Work, 18*(6), 30–34.

Gottlieb, L. S., & Husen, L. A. (1982). Lung cancer among Navajo uranium mine rs. *Chest, 81,* 449–452.

Grossman, L. (1973). Train crash: Social work and disaster services. *Social Work, 18*(5), 38–44.

Kasperson, R. E., & Pijawka, K. D. (1985). Societal response to hazards and major hazard events: Comparing natural and technological hazards. *Public Administration Review,* Special Issue, 7–17.

Maguire, L. (1983). *Understanding social networks.* Beverly Hills: Sage.

National Institute for Occupational Safety and Health and National Institute of Environmental Health Sciences. (1971). *Radon daughter exposure and respiratory cancer: Quantitative and Temporal Aspects.* Springfield, VA: National Technical Information Service.

Navajo Nation. (1988). *Navajo Nation FAX 88: A statistical abstract.* Window Rock, Navajo Nation, AZ: Navajo Nation.

Nuckolls, K. B., Cassel, J., & Kaplan, B. H. (1972). Psychosocial assets, life crisis, and the prognosis of pregnancy. *American Journal of Epidemiology, 95,* 431–441.

Ringholz, Raye C. (1989). *Uranium frenzy: Boom and bust on the Colorado Plateau.* New York: W. W. Norton and Co.

Roscoe, R. J., & Mason, T. J. (1984). Progress report. Lung cancer mortality among underground uranium miners with low lifetime exposures to radon daughters. Proceedings of the Third Collaborative Workshop.

Samet, J. M., Kutvirt, D. M., Waxweiler, R. J., & Key, C. R. (1984). Uranium mining and lung cancer in Navajo men. The *New England Journal of Medicine, 310*(23), 1481–1484.

Seroka, C. M., Knapp, C., Knight, S., Siemon, C., & Starbuck, S. (1986). A comprehensive program for postdisaster counseling. *Social Casework, 67,* 37–44.

Shader, R. I., & Schwartz, A. J. (1966). Management of reactions to disaster. *Social Work, 11,* 88–104.

Stone, R. A., & Levine, A. G. (1985–86). Reactions to collective stress: Correlates of active citizen participation at Love Canal. *Prevention in Human Services, 4,* 153–177.

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