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A Case Study Exploring Research Communication and Engagement in a Rural Community Experiencing an Environmental Disaster

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Introduction

As a means to involve the public in research, the National Institutes of Health (NIH) established the Partners in Research Program and solicited research grant applications from academic/scientific institutions and community organizations that proposed to forge partnerships: (a) to study methods and strategies to engage and inform the public regarding health science, and (b) to increase scientists' understanding of and outreach to the public in their research efforts ("NIH Public Trust," 2009). In this paper, we report on a study funded by the NIH Partners in Research Program, to understand the research milieu (knowledge, acceptance, and research participation) and communication preferences of rural persons experiencing an environmental disaster from amphibole asbestos exposure.

Background

According to the 2010 census, Libby, Montana (MT) is designated rural (pop. 2628) and the surrounding county frontier (pop;. 19,687; 5.4 persons/square mile) ("Libby City, Montana," 2010; United States Census Bureau, 2010). From the 1920s until 1990, vermiculite ore contaminated with amphibole asbestos was mined, processed, and distributed from Libby to more than 200 processing facilities across the United States (U.S.) accounting for 80% of the world's supply (U.S. Environmental Protection Agency, 2007). Vermiculite is a naturally occurring fibrous mineral widely used in industry and construction (U.S. Environmental Protection Agency, 2014). Amphibole asbestos is a toxic mineral associated with lung cancer, mesothelioma, and nonmalignant lung and pleural disorders, including asbestosis, pleural plaques, pleural thickening, and pleural effusions (Amandus, Althouse, Morgan, Sargent, & Jones, 1987; Amandus & Wheeler, 1987; Amandus, Wheeler, Jankovic, & Tucker, 1987). Respiratory compromise can take from 10 to 40 years to materialize following exposure.

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In an analysis of death records, asbestosis mortality in Libby was found to be 40 to 80 times higher than expected and lung cancer mortality 1.2 to 1.3 times higher than expected when compared to Montana and the U.S. respectively (Agency for Toxic Substances and Disease Registry, 2002). In 2000 and 2001, medical screenings of more than 6,668 current and former Libby residents revealed pleural abnormalities in 18% of participants and interstitial abnormalities in less than 1% (*ATSDR Health Consultation: Mortality from asbestosis in Libby, Montana*, 2000; Peipins, et al., 2003). Narrowing the focus to former vermiculite workers and household contacts of workers, pleural abnormalities were found in 51% of the workers and 26% of household contacts. By comparison, the rate of pleural abnormalities in non-asbestos exposed groups in the U.S. ranges from 0.2% to 2.3% (Agency for Toxic Substances and Disease Registry, 2003).

In 2002, the Environmental Protection Agency (EPA) named Libby a Superfund site. Seven years later the first public health emergency in U.S. history was declared under the Superfund Act for the Libby area (U.S. Department of Health & Human Services, 2009). Libby's Center for Asbestos Related Disease (CARD) screens people for asbestos-related diseases (ARD), and in 2012, of the 1,063 people screened, 47% were diagnosed with an asbestos related pulmonary disease. To this day, the disaster in Libby continues to impact multiple generations of individuals as new cases of ARD continue to be diagnosed years after initial exposure.

Objectives

Research to understand the social, physical, emotional, and economic effects of amphibole asbestos exposure, relies on the willingness of individuals to participate in research. In our study, we investigated the community's history of asbestos related research, community-based research infrastructure, and the rural residents' views on and willingness to participate in research. In this paper we are reporting on the following study aims:

Determine the research milieu in the community including:

History of research,

Infrastructure (services and resources) available to support the communication and translation of research,

Rural residents' preferred method of communication about research.

Rural residents' awareness, knowledge, acceptance, and/or resistance to biomedical and behavioral research (engagement).

Identify potential strategies for communicating research opportunities and results to rural residents.

Theoretical Basis for the Study

Three conceptual approaches framed the study: (a) cardinal rules of risk communication and the risk communication model (Covello & Allen, 1988; Covello & Sandman, 2001), (b)

community-based participatory research (CBPR) principles (B. Israel, et al., 2008) and, (c) rural nursing theory (Long & Weinert, 1989).

Cardinal Rules of Communication & Risk Communication Model—The seven cardinal rules of risk communication (Table 1) require acceptance and involvement of the at-risk community and coordinated, open, honest, and clear communication among all stakeholders. Risk communication is a "scientifically based discipline" (Covello & Sandman, 2001)(p. 164) that negotiates the delicate balance between effectively warning and honestly reassuring an at-risk community all while balancing a wide range of human responses. Four obstacles hinder effective risk communication among an exposed population: (a) a complex, uncertain, and incomplete community risk assessment resulting in conflicting interpretations of actual or potential events, (b) distrust resulting from inconsistent and unreliable messages from scientific experts and event managers, (c) selective reporting or distortion of information by the media or inexperienced spokespersons, and (d) the complex process of "psychological and social factors that influence how people process information about risk" (p. 166). Researchers, industry leaders, and government representatives can benefit from recognizing potential impediments to effective communication within a community impacted by an ongoing environmental disaster. (See Table 2)

Community-Based Participatory Research Principles—CBPR supports shared responsibilities for accurately assessing, implementing, and evaluating both context, purpose, and interventions established to improve the community's health (B. A. Israel, Schulz, Parker, & Becker, 1998; Minkler, Blackwell, Thompson, & Tamir, 2003). CBPR is "a partnership approach to research that equitably involves, for example, community members, organizational representatives, and researchers in all aspects of the research process" (B. Israel, et al., 2008) (p. 48). The nine principles guiding CBPR are listed in Table 3.

Rural Nursing Theory—Rural nursing theory concepts (Lee, 1998; Lee, Winters, Boland, Raph, & Buehler, 2013; Winters, 2013) informed our understanding of characteristics of rural persons and communities. These include: hardiness, self-sufficiency, independence, work oriented, distrusting of "outsiders" and "newcomers," and trustful and respectful of "old timers" (persons who have lived in the community for an extended period of time (Long & Weinert, 1989).

The three complementary conceptual approaches provided a path for examining and categorizing the evidence of this case. All three models represented: (a) a mechanism for understanding the unique characteristics of community members, their social networks, and community dynamics, and (b) a framework for interpreting the convergence of themes (R. K. Yin, 2009) generated from a variety of data sources.

Methods

Case study research methods (R. Yin, 1994) were applied to achieve the study aims. The Libby community Superfund site represented a single, critical case characterized by long-

term and diffuse exposure of residents to amphibole asbestos. Survey, interview, and historical/archival data were used to inform the case and corroborate the findings. In Table 4 the sources of evidence triangulated in order to summarize and draw conclusions related to the project aims (R. K. Yin, 2009) are delineated.

The research team consisted of two principal investigators and co-investigators from a local specialty clinic devoted to asbestos health care, research, and outreach services (the Center for Asbestos Related Disease [CARD]), and academic partners from Montana State University (MSU) College of Nursing. A community advisory panel (CAP) of local residents from a broad range of community subsystems were engaged in every phase of the research process from proposal development to dissemination (Viswanathan, et al., 2004). Approval to conduct the study was obtained from the MSU Institutional Review Board.

Data Sources and Data Management

A database developed by the research team to categorize and organize the data and document the chain of evidence for each phase of the study contributed to outcome reliability and construct validity (R. K. Yin, 2009). Data sources used to corroborate the case based on the convergence of multiple sources of evidence for single case studies are listed in Table 5.

Results

The core of this case (the research milieu) required investigation into four areas: (a) the community's history, (b) the availability of research infrastructure, (c) effective communication resources, and (d) past and present engagement in research. The results are reported around these four themes or study *propositions*, co-mingled with the theoretical constructs of risk communication, CBPR, and rural nursing theory.

Proposition I: Community History and the Erosion of Trust

For more than three decades, research has been conducted in Libby to identify the type of asbestos contaminating the community, the extent of contamination and exposure pathways, and the physical effects of exposure. Most notable were reports from the mortality study (*ATSDR Health Consultation: Mortality from asbestosis in Libby, Montana*, 2000; Peipins, et al., 2003) and medical screenings conducted by ATSDR revealing a high death rate from asbestosis and widespread pulmonary abnormalities in Libby residents. Additional studies detailed the extent of asbestos contamination in and around Libby in soil, tree bark, and home and business building materials (Agency for Toxic Substances and Disease Registry, 2003; Ward, Spear, Hart, Webber, & Elashheb, 2012).

Unlike the Love Canal toxic waste event in 1978 or the Chernobyl nuclear disaster in 1986 (Environmental Protection Agency, 1979; World Nuclear Association, 2012) where populations were evacuated and relocated away from the exposure site, residents of Libby remained in place in 2000 as the EPA launched the amphibole asbestos cleanup of hundreds of commercial, residential, and public properties in Lincoln county. Workers outfitted in respirators and hazmat suits in restricted zones began the painstaking process of removing

asbestos contaminated materials from homes, business structures, gardens, lawns, and public sites in and around Libby as residents went about their work, play, and daily activities.

Focus groups conducted in 2006 with 71 Libby residents (Cline, 2007) found a community conflicted about the cause (mining or lifestyle) and responsibility (mining company or individual) for ARD and a “stigma” associated with being diagnosed. In other studies (N=386), more than 34% of participants exposed to Libby amphibole asbestos exhibited psychological distress (Weinert, et al., 2011), were less satisfied with access and financial aspects of care (Winters, et al., 2011) than persons with other chronic illnesses, and demonstrated poorer health-related quality of life when compared with the general population. In a study (Cook & Hoas, 2007) to examine the ethical implications residents faced when dealing with uncertainty and distress that accompany environmental contamination, researchers found that recovery in Libby was far from complete, noting that communication between researchers and community members was critical and further research was needed to better understand the long term health effects and impact of the man-made disaster on persons and communities exposed to Libby amphibole asbestos.

A search of archival records found an erosion of trust after areas cleaned by the EPA and believed to be safe (elementary school and school track) were determined to have dangerous levels of contamination. As recently as 2011, materials thought benign and safe (wood chips and landscaping bark) were discovered contaminated with Libby amphibole asbestos. Published fact-based timelines from various sources ("Chronological order of events," 2009; Libby Legacy Project, 2012; University of Montana National Rural Bioethics Project, n.d.), detailed Community Advisory Group (CAG) minutes (Environmental Protection Agency (EPA), 2012), newspaper articles (Missoulian, 2001), trial testimony, and legal proceedings (University of Montana, 2009) have supported the convergence of evidence and negative impact of the public’s lived experience on trust.

Communication obstacles between the public and scientific or technical experts, business, community, and political leaders and policymakers provide evidence of enhanced public skepticism and mistrust. Principles of effective/ineffective risk communication (Covello & Sandman, 2001) are evident throughout the post-mine period (1990-present) with scientific uncertainty complexity, and conflicting reports leading to increased public wariness. The overarching theme investigators found in the archival records supports the finding that past experiences (with scientific/technical experts) influenced current trust and public engagement. In response to a survey question posed in this study, “what message would you like to send to researchers,” residents responded with “be honest with reports,” “be fair,” “communicate better,” “provide more newspaper coverage,” “publish in non-biased manner,” “do the job right,” and “fix things if they go wrong.” (See Figure 2: Convergence of Evidence History).

Proposition II: Infrastructure to Support Communication and Translation of Research

Libby residents have access to an ARD specialty clinic within the community. As noted on the CARD website (Center for Asbestos Related Disease, n.d.), the provision of specialty healthcare and screening of those affected by Libby amphibole asbestos is the primary goal of the center. The secondary goal is to stimulate research to (a) further understanding of

disease mechanisms, (b) improve early disease detection and intervention, and (c) develop effective health management strategies to improve health outcomes for individuals and communities.

CARD health care providers and staff serve as liaisons (gatekeepers) between the Libby community and outside researchers and are known for their successful partnerships with researchers from around the U.S. Their motto “CARD Research is a Community Project” recognizes that community members, not just patients, play an important role in supporting Libby amphibole asbestos health research (Center for Asbestos Related Disease, n.d.). The sense of connectedness and familiarity between community members is common in rural communities as is a weariness of “outsiders” (Bushy, 1998). From 1981 to 2011, 17 studies were conducted in Libby or on the amphibole asbestos found there by investigators from governmental agencies, universities, and medical centers, and additional studies are in the proposal development stages (Center for Asbestos Related Disease, n.d.). As community insiders with an existing research infrastructure, the CARD health care providers and staff are well positioned to facilitate research communication, acceptance, and engagement among Libby residents.

The federal government also provides infrastructure within Libby through the asbestos removal process. Since 1999, over 3600 properties in Libby and 1200 in nearby Troy, MT have been screened and 1460 businesses and residences mitigated resulting in the removal of approximately 900,000 cubic yards of contaminated material (Environmental Protection Agency, 2011). For more than 15 years, EPA has served as a local employer and the source of information and funding for environmental research. Even so, the EPA was treated as a visitor to the community and often referred to as an “outside” federal government resource (See Figure 3: Convergence of Evidence: Infrastructure).

Proposition III: Communication Resources

Using identical questions, participants were asked (see Table 5) in interviews (n=21) and two surveys (n=120 and n = 127) to identify the most common, effective, trusted, and preferred methods to communicate about research. Residents completing the *surveys* indicated a local newspaper from a list of 17 possible communication sources available to the community as the most common (62%), effective (65%) trusted (54%), and preferred (59%) method to communicate about research. The *residents interviewed* agreed that the local newspaper was the most common method of communicating messages about research (72%) and added the local radio station as the second most common communication source (61%). Interviewees identified “word of mouth” as the most effective (67%) but least trusted (50%) form of communication.

The three *researchers interviewed* (see Table 5) were asked about the process they used to communicate about their study. Several avenues of communication were identified, including publications in scientific journals, dissemination of findings to the local CAG group, and participation in community forums. Excellent examples of public forums include: (a) the annual *Research Rally* sponsored by CARD where scientists from around the U.S. share information about their research and engage the public in dialogue about Libby amphibole asbestos (Center for Asbestos Related Disease), (b) the 2002 *New Directions and*

Needs in Asbestos Research Conference (University of Montana, 2002), and (c) the *Libby-Minamata Environment Project*, a series of events to compare the human and institutional response to environmental degradation in Libby, MT (amphibole asbestos) and Minamata, Japan (mercury). Scientific publications, CAG minutes, and well attended public forums were not identified by residents as the most common, preferred, or effective means of communication. Each researcher noted the need for improvement in communication and the importance of having a liaison/gatekeeper in Libby that could facilitate bi-directional communication between the community members and the researchers.

The *community assessment* of Libby (see Table 5) revealed insufficient communication resources available to residents, a finding consistent with other rural/frontier communities. Insufficiencies included once or twice weekly local newspapers, no local television station, inconsistent Internet access, limited cell phone service, and one local radio station broadcasting community information during morning hours only.

Proposition IV: Community Engagement

Investigators surveyed residents about their knowledge of, and engagement in, research, and their perceptions of the researchers using a Likert-type scale (1= strongly disagree to 10 strongly agree). The investigators found in *survey 1* (n=120) that nearly 70% of participants were aware of research studies being conducted in the community. One-half of those surveyed and 69% of interviewees (n=15) reported participating in research conducted within Lincoln County with a lesser number participating in research that took place elsewhere. The majority surveyed (79%) believed research benefitted the community. Residents were likely to participate in research (marking “10” strongly agree) if the research was “worthwhile” (52%), “helped the community” (49%), “benefitted their family” (48%), or “improved their healthcare” (40%). Information privacy (44%), the potential impact participation in research had on health insurance (44%), and the topic (38%), were considerations for individual engagement in research. Respondents (33%) indicated that being asked by their health care provider to consider participating in research was a positive influence.

Using a scale of 1-10, researchers were perceived positively with highest mean scores for “friendly” (x=7.5; sd=2.05), “easily understood” (x=6.72; sd=2.34), and “make significant contribution to the community” (x=6.53; sd=2.71). The lowest means were for “announces study” (x=6.26; sd=2.43) and “report results” (x=6.31; sd=2.48). The awareness of, and participation in research, was reassessed one year later in a convenience sample of residents completing *survey 2* (n=127). Nearly 82% reported that they “usually read articles addressing health research” and 47% had participated in research. Perceptions of researchers improved for “announces study” (x=6.62; sd=2.60), and “make significant contribution to the community” (x=7.00; sd=2.62), while agreement with “reporting results” decreased (x=5.70; sd=2.59).

All three *researchers interviewed* supported the findings from residents by stating that involvement in research was more likely if the research was perceived as having the potential to benefit the participants’ health. Participation was also more likely with research conducted within the community, rather than at a distant site, e.g. research lab. Again,

having a community-based research partner and visibility within the community was seen as important factors in the success of engaging rural residents in research. (See Figure 5: Convergence of Evidence: Community Engagement).

Discussion

In this paper, we reported on the (a) research milieu, (b) knowledge, acceptance, and research participation, and (c) communication preferences of rural persons experiencing the ongoing effects and aftermath of a slow-motion environmental disaster. The engagement of Libby community residents in research supported the independence and care-for-our-own traits ascribed to rural persons (Lee, 1998; Long & Weinert, 1989). A preference for communication through local means and persons known to them also supports the traits commonly associated with rural dwellers. Partnerships with community “insiders” and reciprocal values of respect, trust, integrity, and authenticity have been identified as crucial characteristics of both the community partner (liaison/gatekeeper) and the academic partner (researchers) (Christopher, et al., 2011) when conducting research in rural communities. Awareness of community member distrust, skepticism, stigma and other impacts of research in a rural community contribute to a research team’s sensitivity and approach in rural places. Trust is easily squandered through researcher impatience and disregard for the history of research and communication styles and preferences. Explicit communication regarding the connection of the research study to potential improvements in health of families, individuals, and the community may facilitate recruitment, retention, and engagement in a study.

Researchers should commit to first establish and strengthen the relationship with the community research liaison/gatekeeper and, second, determine the value of early, often, and consistent communication with diverse community members in order to strengthen policies and improve practices based on the research findings and best available evidence for quality of life improvement. When one community member was asked what advice he would have for researchers he said: “Be honest; educate us; communicate with us; but make it simple.” As more research is planned, care must be taken in this heavily-researched rural community to coordinate efforts to reduce research burden on residents while following the resident’s advice and communicating concisely and effectively (avoiding jargon and misinformation) using local communication resources regarding research plans and results.

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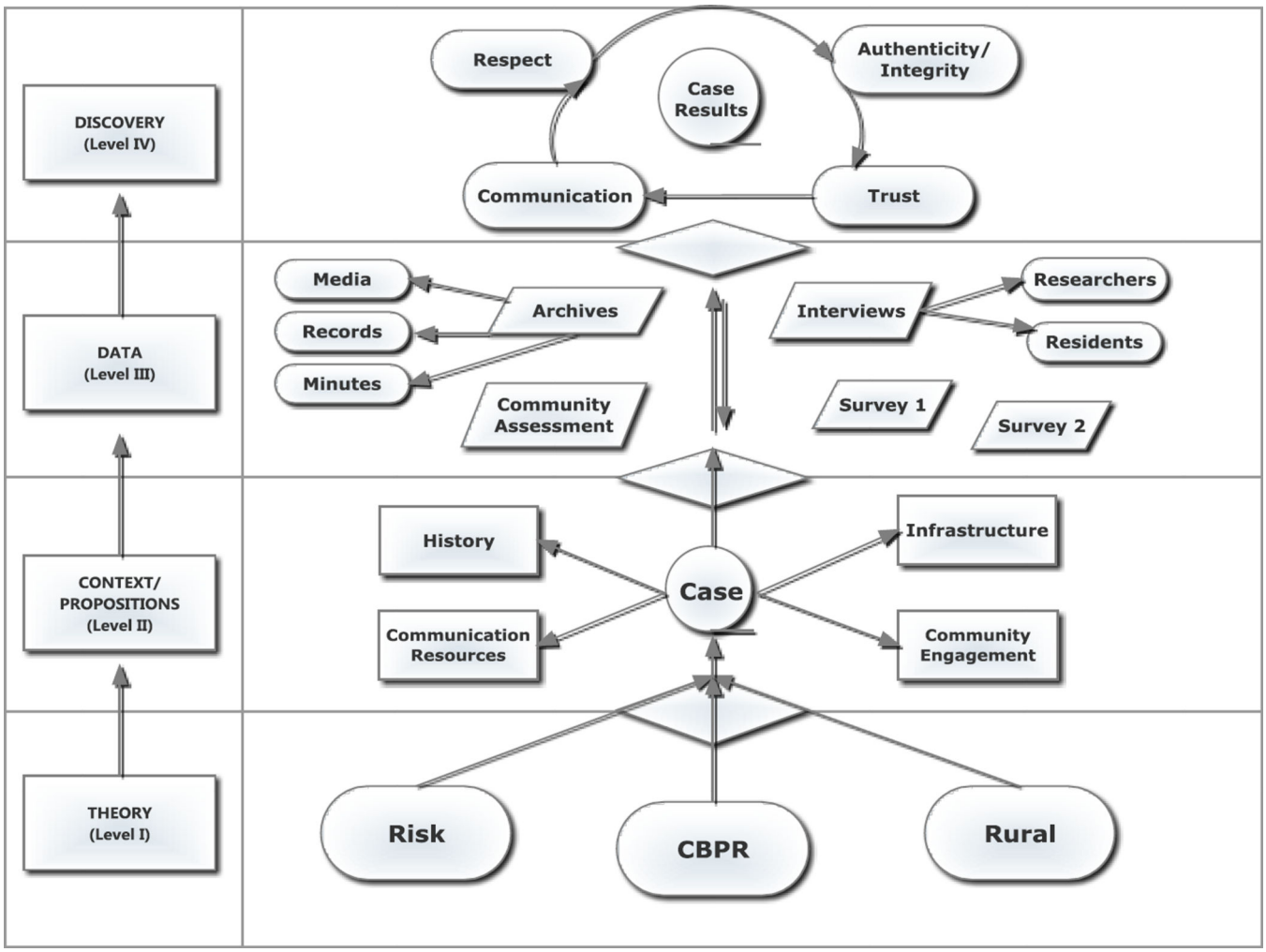

Figure 1.
Case Study Model

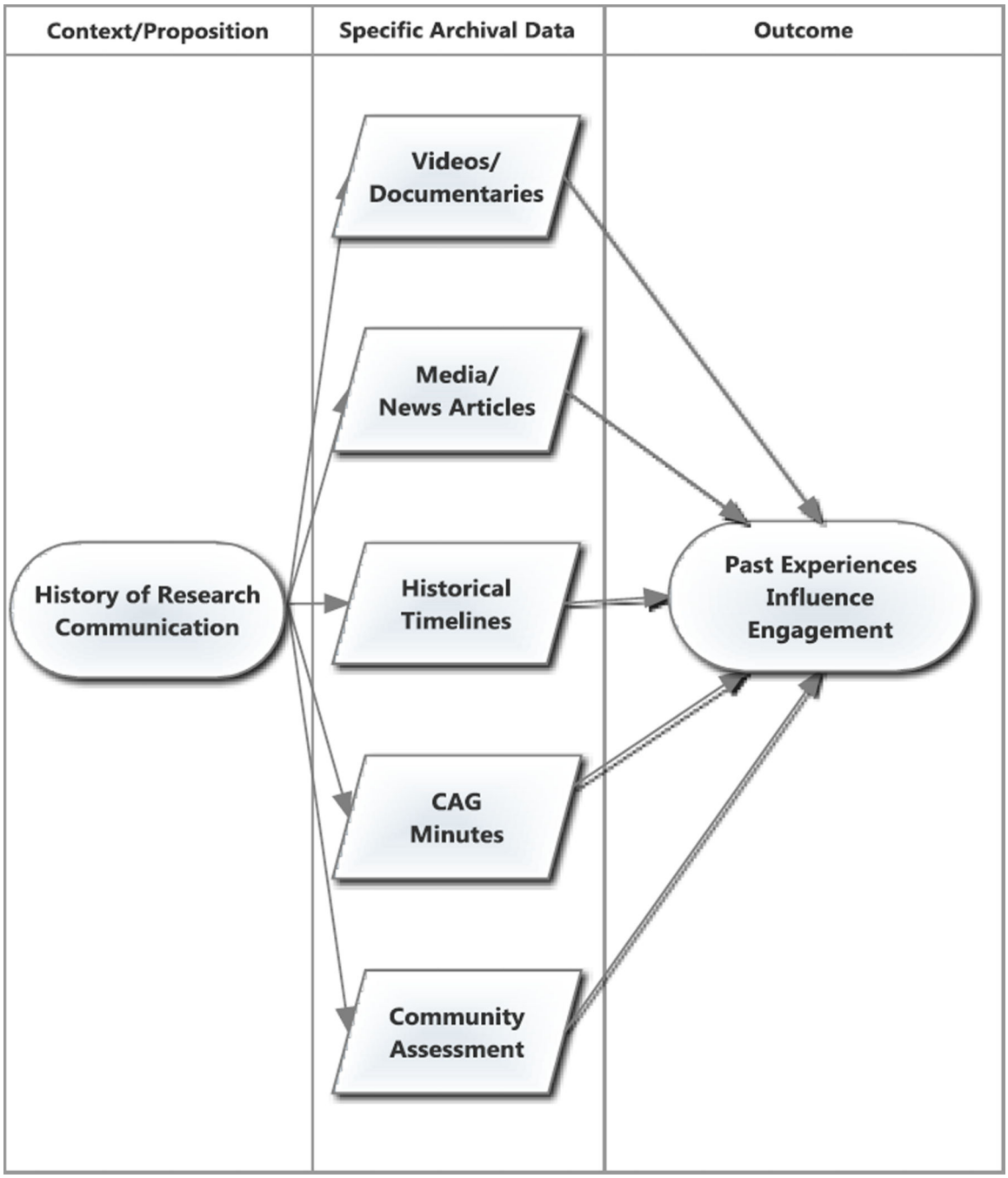

Figure 2.
Convergence of Evidence History.

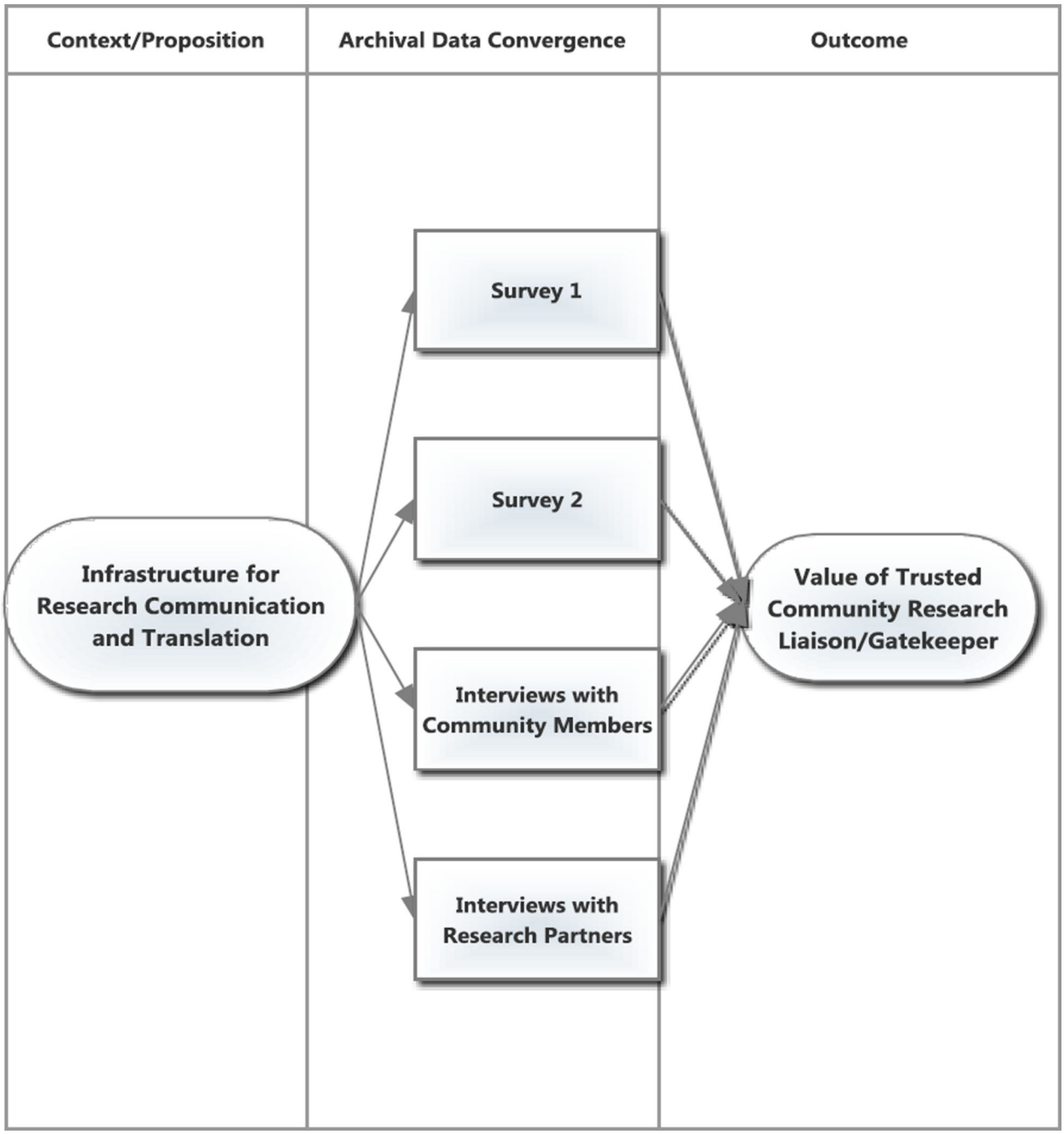

Figure 3.
Convergence of Evidence: Infrastructure.

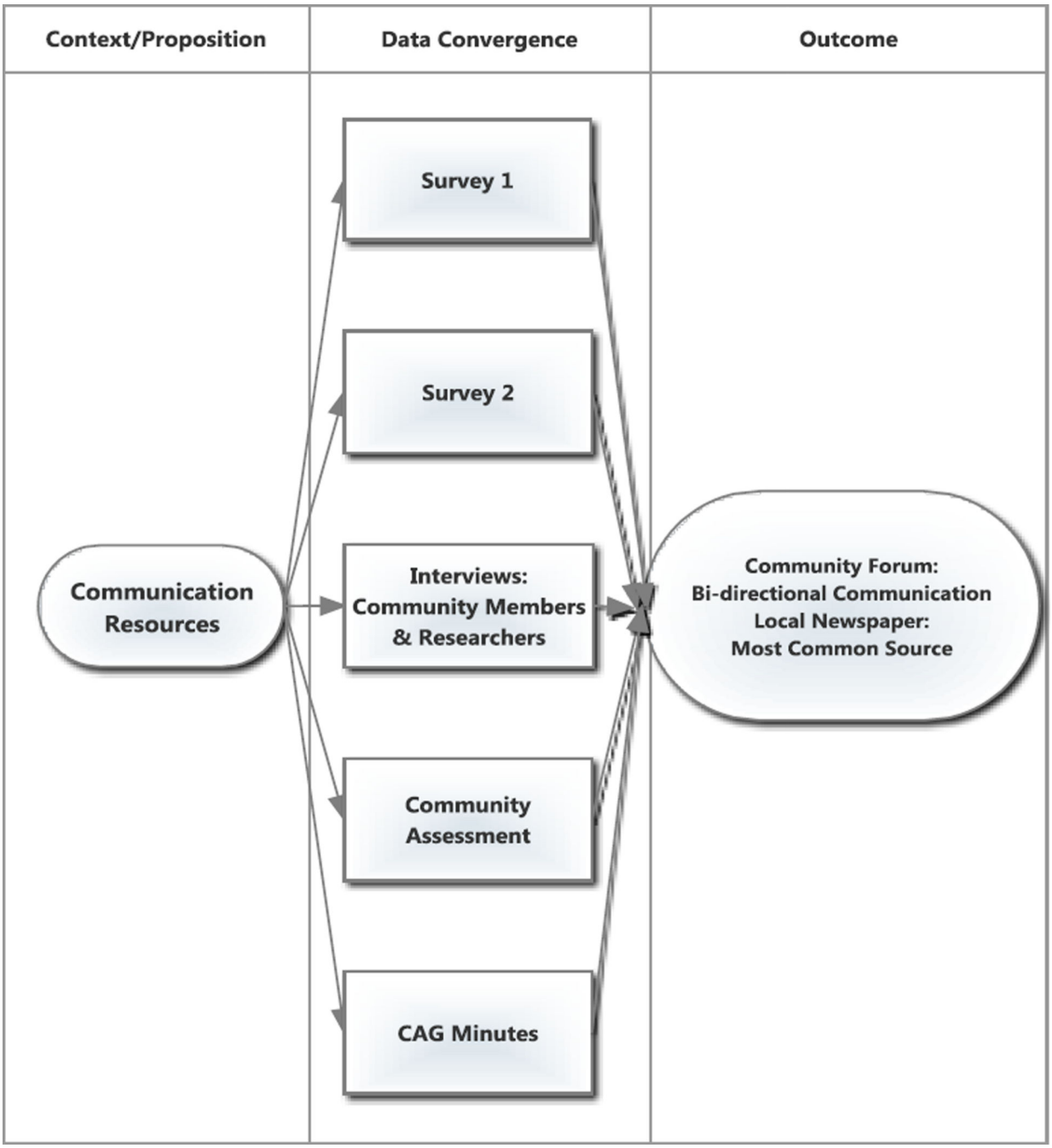

Figure 4.
Convergence of Evidence: Communication Resources.

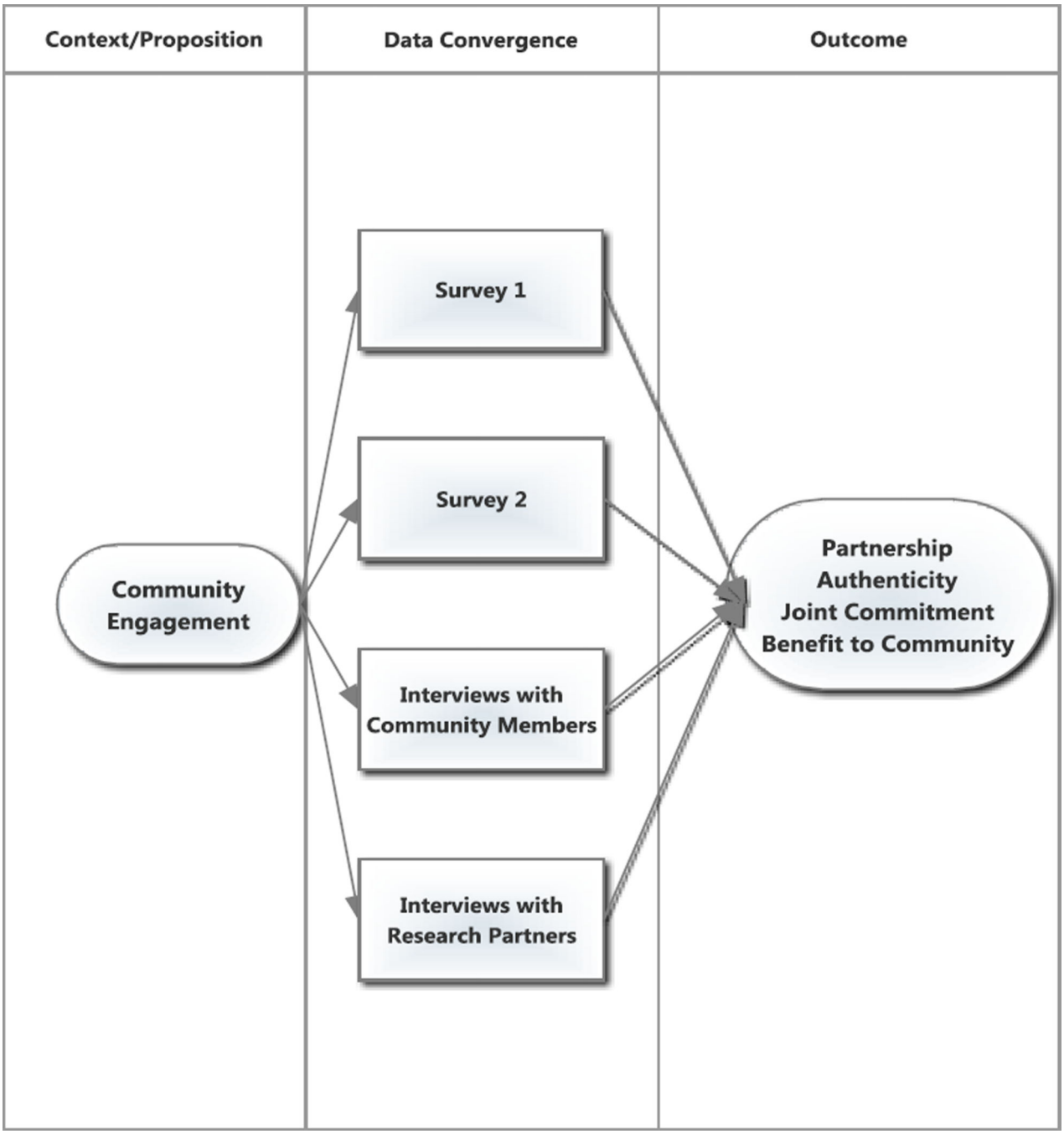

Figure 5.
Convergence of Evidence: Community Engagement

Table 1

EPA Seven Cardinal Rules of Risk Communication

EPA Seven Cardinal Rules of Risk Communication
1. Rule 1: Accept and involve the public as a legitimate partner.
2. Rule 2: Listen to the audience.
3. Rule 3: Be honest, frank, and open.
4. Rule 4: Coordinate and collaborate with other credible sources.
5. Rule 5: Meet the needs of the media.
6. Rule 6: Speak clearly and with compassion.
7. Rule 7: Plan carefully and evaluate performance.

Table 2

Risk Communication Obstacles/Stages

Four Obstacles to Effective Risk Communication	Stages of Risk Communication
1. Risk assessment in a community is often complex, uncertain, and incomplete resulting in conflicting interpretations of actual or potential events.	Stage 1: Pre-risk communication stage involves paternal protection efforts but with little to no policymaking input or invitation to engage in the research or decision-making.
2. Distrust evolves when scientific experts and event managers fail to coordinate and deliver a consistent and reliable message.	Stage 2: Recognition of the need for improved explanation of risk and increased information giving.
3. Selective reporting by the media or inexperienced spokespersons can intensify outrage and distort information accuracy.	Stage 3: Dialogue (reciprocal listening) between technical experts and the community. This stage led to “the then revolutionary idea that the essence of risk communication is not just explaining risk numbers—it is also reducing (or increasing) outrage” (p. 170) necessary for community members to engage in action,
4. A communicated message is received through a complex process of “psychological and social factors that influence how people process information about risk (p. 166).	Stage 4: Belief and discovery that to accomplish stage three—“engaging the community in meaningful, respectful and frank dialogue . . . (requires) fundamental shifts in basic values and organizational culture.

Covello & Sandman, 2001, pp. 166, 172.

Table 3

CBPR Principles

Community-Based Participatory Research Principles
1. CBPR recognizes community as a unit of identity.
2. CBPR builds on strengths and resources within the community.
3. CBPR facilitates collaborative, equitable partnership in all research phases and involves an empowering and power-sharing process that attends to social inequalities.
4. CBPR promotes co-learning and capacity building among all partners.
5. CBPR integrates and achieves a balance between research and action for the mutual benefit of all partners.
6. CBPR emphasizes public health problems of local relevance and also ecological perspectives that recognize and attend to the multiple determinants of health and disease.
7. CBPR involves systems development through a cyclical and iterative process.
8. CBPR disseminates findings and knowledge gained to all partners and involves all partners in the dissemination process.
9. CBPR requires a long-term process and commitment to sustainability.

Table 4

Embedded Sources of Data and Type of Evidence

Aim	Source of Data	Focus	Type of Evidence
A1-2	Community Assessment	Community/System	Qualitative, Quantitative, Archival Records
A1 B	History of Research in Libby & Publications	Community	Archival Records
A3-4	Structured Survey 1	Community/Group	Quantitative
A3-4	Structured Survey 2	Community/Group	Quantitative
A1-4	Interviews--Community Members	Community/Individuals	Qualitative
A1-4	Interviews--Researchers	Individuals	Qualitative
A1-4	EPA CAG Minutes Review	Community/Groups	Archival Records, Qualitative
B	Team Presentations to Community & Media	Community/System	Observation Archival Records
B	Listening Events	Community/System	Observation Archival Records

Table 5

Data Sources and Data Management

Data Sources and Data Management	
Data Source	**Description**
Community Assessment	Community assessment is a tool used to gather information on complex interactions, divergent viewpoints, and a broad range of data sources from different sectors within the community. Two undergraduate nursing students, with training and supervision from a member of the research team interviewed community members referred to the research team by the CAP and investigated primary modes of communication available in Libby.
Archival Records	Newspaper articles and published reports documenting the history of the Libby environmental disaster were collected, examined, and entered into the case study database. Historical data offered insight into the social, emotional, economic impacts of the disaster over time and contributed an understanding of community dynamics and challenges.
Community Events	Community-wide asbestos-related research events were presented and attended during the grant period. Notes, minutes, and participant observation documented real-time individual and community response to research results.
CAG Minutes	A Superfund Community Advisory Group (CAG) served as the focal point for the exchange of information among the local community, the EPA, and state/federal agencies involved in cleanup of the Superfund site. CAG meetings provided a public forum for community members to present their needs and express concerns related to the Superfund process. Meetings also provided the EPA a valuable opportunity to consider community preferences for site cleanup and remediation [61]. Under supervision from a research team member, a graduate nursing student analyzed minutes from 53 CAG meetings held during 2001, 2003, 2006, and 2008 for common themes related to communication exchange about research.
Interviews: Community (*N* = 18; 11 men; 7 women; age range 30-91 years) Researchers (*N* = 3; 2 men; 1 woman)	Community members from numerous sectors (business, education, social services, healthcare, and government) and investigators from two universities who had conducted research in Libby were identified by CAP members as potential interview candidates. Interviews were conducted by research team members using an interview guide with open-ended questions developed by the research team and approved by the CAP. Interviews were audiotaped and later transcribed by a member of the research team for analysis. Inductive and deductive coding was used to identify concepts and themes. In the deductive phase, transcripts segments were coded and sorted into categories according to the aims of the study, that is, research milieu, communication, and research engagement. In the inductive phase, the interview segments were examined for themes, patterns, or recurring regularities that emerged from the data.
Survey 1 (*N* = 120) (37 men; 70 women; 14 missing; age range 21-88 years;×= 58 years)	A convenience sample of community residents were surveyed to determine 1) awareness, knowledge, acceptance, and resistance to biomedical and behavioral research, and 2) preferred method of communication about research. A poster describing the study and inviting participation was erected at the only supermarket in Libby. Adults entering or exiting the store over a three-day period of time were approached by a Libby High School science student working under direct supervision of a research team member and informed of the opportunity to participate. Following verbal consent participants completed an electronic survey using a computer kiosk with touch-screen capabilities. After completing the online survey and touching the “submit” button, the completed survey was sent to the kiosk’s hard drive. At the end of each data collection period, the saved surveys were transmitted to a protected database at the research office through a secure Internet connection and downloaded for analysis. A paper version of the same survey was provided to participants who were not comfortable using the computer. Hard-copies of the survey were collected from each participant and returned to the research office at the end of the data collection period for analysis.
Survey 2 (*N* = 127) (51 men; 75 women; 1 missing; age not reported)	A second survey was conducted one year following the first to confirm findings from the first survey related to research communication and to determine the effectiveness of communicating a research message. Paper surveys were administered to a convenience sample of residents at six (6) public community meetings. Data from the surveys were analyzed by a research team member. Both surveys were developed by research team members with assistance from the high school science students, their teacher, and the CAP members.