

ABSTRACT

Title of thesis: HEALTH-RELATED COMMUNICATION
BEHAVIORS OF ENVIRONMENTAL ACTION
GATEKEEPERS: A QUALITATIVE STUDY

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The purpose of this study was to qualitatively explore behaviors of community members regarding environmental health information. Fourteen semi-structured interviews were conducted with environmental action gatekeepers from Prince George's County, Maryland and Wards 7 and 8 of the District of Columbia to identify health-related communication behaviors and how they make meaning of those behaviors. Participants engaged in a range of behaviors to acquire, manage, and transmit information related to local environmental health issues. Although different behavior patterns did not emerge among activists versus advocates, a number of factors including perceived community constraints and informational subjective norms were identified as potential influences on communication behaviors. These findings support existing theoretical models, and suggest future research on how communicative behaviors among environmental health and environmental justice advocates may differ from those working on traditional ecological environmental

issues. Findings suggest future opportunities to improve environmental health information sufficiency in the region.

HEALTH-RELATED COMMUNICATION BEHAVIORS OF ENVIRONMENTAL
ACTION GATEKEEPERS: A QUALITATIVE STUDY

by

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Chapter 1: Introduction

Statement of the Research Problem

Exposure to toxic substances is a leading cause of morbidity and mortality, with toxic agents causing more deaths in the U.S. than firearms and drug use combined (Mokdad, Marks, Stroup, & Gerberding, 2004). Beyond that cause, nearly a fifth of all deaths are attributable to behaviors and exposures that are influenced by the built environment, including poor diet, physical activity, and motor vehicle accidents (Botchwey, Falkenstein, Levin, Fisher, & Trowbridge, 2014). The Department of Health and Human Services (HHS) has set objectives for improving rates of safe drinking water access, increasing the proportions of homes and schools that are free from environmental hazards, and reducing rates of death and disease from toxic substances by the year 2020 (2013). Toxic substance exposure has been linked both to acute, short-term health outcomes such as poisoning, as well as long-term, chronic outcomes, including asthma, cancer, and cardiovascular disease. Specific chemicals and toxicants associated with these conditions include radon (lung cancer), pesticides such as endosulfan (neurological disorders), and dioxins (reproductive disorders) (Agency for Toxic Substances & Disease Registry (ATSDR), 2011).

Toxic substance exposure has been studied in both occupational and residential (community) settings (Anderson, Favarato, & Atkinson, 2011; Semple, 2005; Snijder, Velde, Roeleveld, & Burdorf, 2012). Common point sources of pollution that lead to hazardous substances being present in communities include landfills and hazardous waste sites (Vrijheid, 2000). A “National Priority List” includes hundreds of sites that are identified for cleanup, and Superfund sites are also potential sources of exposure to

community residents (U.S. Environmental Protection Agency (EPA), 2013a). Substandard housing, air pollution due to heavy motor vehicle use in residential neighborhoods, and a lack of access to safe recreational spaces have also been identified as community-level environmental factors that contribute to human health risks for conditions ranging from asthma to childhood obesity (Srinivasan, O’Fallon, & Dearry, 2003). In recent years, global climate change has emerged as a threat to public health by potentially limiting physical activity, impairing indoor air quality, and increasing the frequency of disastrous weather events that lead to injury and death, along with many other unknown impacts to communities (Diaz, 2006; Institute of Medicine, 2011; Stamatakis, Nnoaham, Foster, & Scarborough, 2013).

Beginning in 1986, the community right-to-know provisions of Title III of the Superfund Amendments and Reauthorization Act established the mandate that the public be informed of toxic chemical releases into the environment (*Emergency Planning and Community Right-to-Know Act*, 1986). Information has typically been shared through publication of notices in local newspapers, the *Federal Register*, and public meetings in affected communities (Hoover, 2013; McCallum, Hammond, & Covello, 1991). However, finding, understanding, and using health information – health literacy – requires both access and skills that are not evenly distributed among populations. Only 1 in 10 US adults have sufficient health literacy (Kutner, Greenberg, Jin, & Paulsen, 2006). And, while the digital divide is closing, it continues to be a concern as racial and ethnic minorities and people with lower household income are less likely to use the Internet to look for health information (Fox & Duggan, 2013). The purpose of this study, therefore,

is to qualitatively explore the communication behaviors of community members engaged in local environmental health issues.

Some community members who engage in communication about local environmental health issues may face not only barriers in accessing and using health information, but also higher risks for toxic substance exposure (Bullard, Mohai, Saha, & Wright, 2007; Institute of Medicine, 1999). Exposure to hazardous substances in the environment has been linked to health disparities, with racial and ethnic minorities being disproportionately exposed to potential sources of hazardous substances such as toxic waste sites (Bullard et al., 2007). The environmental justice movement has used strategies such as community organizing to inform and mobilize these communities. For example, low-income and minority communities may mobilize to work for remediation and cleanup of toxic waste sites, for legislation restricting polluters, for worker health and safety, and many other environmental health-related issues (Gibbs, 1984; Institute of Medicine, 1999; Taylor, 2000). Such mobilized individuals often participate at the grassroots level as community organizers or social justice activists, as well as in other social roles such as religious leaders, lawyers and policy makers, and academic researchers (Taylor, 2000, p. 564).

Some members of affected communities may serve as “gatekeepers” or critical points of information flow. For example, agencies may send information “downstream” to residents who participate in Community Advisory Boards (CABs) for site cleanup planning, and residents who advocate reach “upstream” to health and policy agencies with information about their local health concerns (Horning, 2004; Laurian, 2007).

Geographic Locale and Sample

Wards 7 and 8 of the District of Columbia and the adjacent region of Maryland's Prince George's County (referred to as PG78 in this study) form a geographical area characterized by high proportions of racial and ethnic minorities, poverty, and health disparities (Maryland Department of Health and Mental Hygiene, n.d.; University of Maryland School of Public Health, 2012; Washington DC Local Initiatives Support Corporation, n.d.). Prince George's County (land area of 482.69 square miles) has a total population of 904,430 (U.S. Census Bureau, 2014) and at least 65 possible environmental action gatekeepers (fewer than 0.01%) based on a review of the Prince George's County Environmental Action Council active email list. Wards 7 and 8 of the District of Columbia (land area of 14.11 square miles) collectively have an estimated population of 128,165 (Washington East Foundation, n.d.); an estimate of the number of environmental action gatekeepers in these Wards is unknown.

There are also 14 Superfund sites in PG78 (U.S. Environmental Protection Agency (EPA), 2013b). In 2012, facilities submitting Toxic Release Inventory data released 659,942 pounds of reportable toxic chemicals in the PG78 region (U.S. Environmental Protection Agency (EPA), n.d.). A number of local organizations specifically target residents of PG78 with programs and services such as emergency hospital and healthcare services, public safety and crime prevention, youth mentoring, job training for low-income and women-headed families, and food assistance (East of the River Clergy Police Community Partnership, n.d.; Reaching the World Community Development Inc., n.d.; Susan G. Komen For The Cure, 2013; United Medical Center, n.d.; Washington Area Women's Foundation, 2009).

Residents of PG78 have been involved in community building action to address local environmental health issues. For example, the Anacostia Watershed Society, Groundwork Anacostia River DC and the DC Environmental Network have implemented programs that promote environmental health, such as collecting litter from the Anacostia River, educating residents on urban gardening, campaigning to reduce diesel emissions, and holding public forums on recreational river use (Anacostia Watershed Society, n.d.; DC Environmental Network, n.d.; Groundwork Anacostia River DC, n.d.). In addition to these more established entities, there are numerous civic associations and informal neighborhood groups that may address environmental health issues (for example, the Hyattsville Organization for a Positive Environment or the Prince George's County Environmental Action Council) (H.O.P.E., 2014; Prince George's County Department of the Environment, 2014). Individuals who participate in these community-building activities related to local environmental health issues may serve a role as gatekeepers for environmental health information.

However, the communication behaviors of gatekeepers who are involved in community organizing around environmental health issues in PG78 have not previously been identified. In order to better exchange information with community residents to guide local decision-making that ultimately affects health outcomes in these communities, it is important to understand the environmental health communication behaviors of gatekeepers in PG78. This study addressed this by exploring these behaviors using information gathered from local gatekeepers in semi-structured interviews.

Definition of Terms

Activist: An individual who engages in “attempts to change the status quo, including social norms, embedded practices, policies, and power relationships”; in health contexts, activists “challenge existing orders and power relationships that are perceived to influence negatively some aspects of health or impede health promotion” (Zoller, 2005, pp. 360–361). For this study, the researcher did not develop an *a priori* operationalization of the term, but instead asked participants whether they self-identified as activists and to explain the meaning of that term in the context of their communication behaviors.

Advocate: An individual who works within existing systems, usually with a focus on education and with a reliance on expert knowledge; in health contexts, advocates typically avoid challenging the biomedical model and use of tactics other than direct, disruptive action (Brown et al., 2004, p. 53). Similarly to *activist*, this term was not operationalized by the researcher prior to conducting the study and instead was explored during participant interviews.

Communication behaviors: Communicative actions and behaviors related to information taking, selecting, and giving, including purposive information seeking from selected information carriers, the unintentional or passive acquisition of information, and purposive behaviors that do not involve seeking such as actively avoiding information (Case, 2002, pp. 5, 75–76; Kim & Grunig, 2011, p. 124).

Health-related communication behaviors: Communicative actions and behaviors in relation to taking, selecting, and giving information about physical, mental, and social well-being, specific diseases and conditions, healthcare and health insurance, social determinants of health, and other health-related topics

including environmental health. This study focused on communicative actions related to specific environmental health topics identified by study participants such as air and water quality and the built environment.

Community capacity: The cultivation and use of transferable knowledge, skills, systems, and resources that affect community- and individual-level changes consistent with public health-related goals and objectives. For the current study, the researcher focused on information-related skills and resources including access and use of channels for vertical and horizontal communication across sectors of the community, as well as outside of the community; opportunities for information exchange between informal, loosely linked organizations and networks with formal linkages; and access to historical information such as how community groups have been involved in past social, political, and economic change (Goodman et al., 1998).

Community organizing: The process by which community groups identify common problems or goals, mobilize resources, and develop and implement strategies to reach those common goals. Community organizing includes models of practice that encompass capacity building and empowerment-oriented social action (Minkler, Wallerstein, & Wilson, 2008). These key concepts were included in the development of a conceptual framework of communication behaviors for this study.

Empowerment: A social action process by which individuals, communities, and organizations gain mastery over their lives in the context of changing their social and political environment to improve equity and quality of life. Empowerment can encompass individual-level perceived control and political efficacy, organizational-level processes of action to influence change, and community-level outcomes such as civic engagement

(Minkler & Wallerstein, 2012, p. 45). For the current study, the researcher operationalized personal empowerment and community empowerment separately in the conceptual framework.

Environmental actions: Behaviors intentionally undertaken to benefit the environment or in response to environmental concerns. Environmental actions can include reactive lifestyle changes (i.e., limiting outdoor activities); personal changes (i.e., recycling); individual civic actions (i.e., donating to an environmental group); and cooperative civic actions (i.e., attending a public meeting on a local environmental issue) (Wakefield, Elliott, Eyles, & Cole, 2006). As health behavior change was not the primary purpose of the study, the conceptual framework focused only on individual and cooperative civic actions taken by study participants.

Environmental health: Preventing or controlling disease, injury, and disability related to the interactions between people and their environment. Environmental factors that impact human health include natural disasters; physical safety hazards; exposure to toxic substances and hazardous wastes in the air, water, soil, and food; and the built environment (U.S. Department of Health and Human Services (HHS), 2013). The researcher explored the concept and definition of environmental health with each study participant, as this term may have different connotations for individuals outside of public health.

Environmental justice (EJ): The principle that all people and communities are entitled to equal protection of environmental and public health laws and regulations. The EJ movement is characterized by grassroots community organizing among populations of poor people and racial and ethnic minorities, who live in communities that are

disproportionately burdened by a range of toxic substances and other environmental health hazards (Brulle & Pellow, 2006). An “EJ consciousness” was operationalized in this study’s conceptual framework in terms of participants’ acknowledgement of disproportionate burdens of environmental hazards among certain communities.

Gatekeeper: A type of information user whose social role enables them to control the flow of information over a channel by shaping, emphasizing, or withholding it. Gatekeeping characterizes both vertical and horizontal communication behaviors of community leaders who influence the knowledge and attitudes of their neighbors as well as link their community to information from outside organizations and resources (Case, 2002, pp. 267–269).

Environmental action gatekeeper: This study explored behaviors of individuals whose social roles enable them to control the flow of information pertaining to environmental actions. For example, an environmental action gatekeeper may create an email petition regarding a waste incineration plant and forward it to her friends and family members, or may tell his neighbors that he heard that is not safe to fish in a local river.

Summary of Thesis

This thesis includes a literature review of main theoretical principles and former research in the areas of risk information seeking, environmental health communication behaviors, and community building in environmental health. Following the literature review are details of the study design, presentation of findings, and discussion of key implications and limitations.

Significance of the Project

Although many U.S. residents are at risk of exposure to environmental health hazards, little is known about the communication behaviors of individuals in environmental justice communities. Specifically, there has been little research on the health-related communication behavior of individuals who are involved in environmental action either in formal or informal community roles. Qualitative, community-based research can be used to begin to describe some of these communication behaviors such as purposive information seeking from various channels, incidental information acquisition, information sharing, information avoidance, and so on (Minkler, Vásquez, Tajik, & Petersen, 2008; O’Fallon & Dearry, 2002; Polivka, Chaudry, Crawford, Wilson, & Galos, 2013a). While these behaviors may not be common to all environmental action gatekeepers, they can inform the generation of new hypotheses about the factors that may influence communicative actions among this population.

Although there have been a number of communication behavior studies completed in environmental justice communities, these findings are typically generalizable to “typical” residents, as discussed further in Chapter 2. However, some studies suggest that the information and communication behaviors of activists and community organizers may differ significantly from that of the general residents (i.e., Brashers, Haas, Neidig, & Rintamaki, 2002). For this reason, it is necessary to identify the health-related communication behaviors of environmental action gatekeepers in the geographical region of interest, PG78. Also, a theory-based conceptual framework can be used to explain how environmental action gatekeepers in PG78 make meaning of these health-related communication behaviors.

This study adds to the literature on health communication by showing how gatekeepers – individuals with distinct social roles – seek and interpret health information in communities facing environmental health threats. It is important to understand the environmental health communication behaviors in the context of individuals’ different social roles in a community facing environmental health threats (Minkler, Vásquez, et al., 2008; Taylor, 2000). This can guide both community and government actions to ultimately improve health outcomes in these communities, such as developing tools for grassroots organizers to more easily create newsletters, phone trees, and tip lines, or supporting local news coverage of environmental issues by providing ongoing environmental health education and training for local journalists. Government agencies can also work to provide information in more usable and readable formats, to improve individuals’ perceived information gathering capacity, and choose channels that are likely to be part of individuals’ routine behavior instead of focusing on non-routine dissemination strategies such as town hall meetings.

It is important to understand the ways in which gatekeepers’ communication behaviors can influence the flow of information between environmental health scientists and community residents. Laurian has questioned how well officials have been able to include voices of residents in the information-gathering process in communities facing toxic waste cleanup (2004), and multiple toxic sites with CABs have had documented challenges to two-way communication between agencies and community stakeholders (Hoover, 2013; Laurian, 2007). If “gatekeepers” practice communication behaviors that are not in sync with the assumptions made by agencies about how to best exchange information with residents of affected communities, critical information may be lost

(Sager & Zakaras, 2014). First, public information about hazards and risk may not appear in the gatekeeper's information-seeking pathway, and it may not reach the gatekeeper and thus may have less chance of being eventually disseminated to affected residents. Second, the information characteristics (such as being written in very technical language) may create barriers to the gatekeeper's information use behaviors (such as sharing the information with their community networks). Third, the gatekeeper may be collecting information from community residents related to exposures and health outcomes; however, if the agencies are not aware of these communicative actions, they lose this valuable information. Finally, a disconnect between local health and environmental agencies and local community organizations may lead to ineffective and inefficient issue selection among competing community priorities. Exploring the effectiveness of communication by and with gatekeepers can identify potential barriers and facilitators in health-related information exchange.

In the PG78 area, a deeper understanding of local information and communication systems that gatekeepers are involved in (both by using existing systems and by creating their own) can inform future interventions on the part of state and local government agencies to better meet the information needs of this population. The findings of this qualitative investigation can also be shared with PG78 environmental action gatekeepers who participate in key informant interviews as a way to disseminate "best practices" among individuals doing day-to-day work to improve health conditions in the region.

Chapter 2: Background and Literature Review

This chapter provides a summary of existing literature on environmental health information sources, the communication behaviors of environmental health activists and advocates, and community building in environmental health, and then discusses major theoretical models employed to frame the study analysis and explain its findings. A descriptive conceptual framework was developed to identify key concepts related to environmental health communication behaviors explored in the present study. This chapter concludes with a presentation of that conceptual framework and the study's research questions.

Sources of Environmental Health Information

Pre-Internet, the most common sources used by those who encountered local environmental health information were local newspapers and local television news; interpersonal sources were the least commonly used. A recent study involved a series of focus groups with residents from three Massachusetts communities participating in a National Cancer Institute initiative to eliminate cancer disparities through community networks (Taylor-Clark, Koh, & Viswanath, 2007). Among these participants, the Internet was frequently mentioned as a source for general health information, along with healthcare providers, mass and local media, family and friends, and community organizations. However, it appeared that residents were not typically seeking information specific to their environmental health concerns (such as pesticide use, air quality, and poor housing conditions). A survey of North Carolinians found similar patterns, with a majority of respondents reporting that they seek general health information from any source at least once per week, but environmental information a few times a month or less

(Watson, Riffe, Smithson-Stanley, & Ogilvie, 2013). Across these studies, healthcare providers were generally *not* identified as sources of information about local environmental health hazards.

Government sources. Studies have presented somewhat conflicting evidence regarding how this population regards governmental authorities as sources of environmental health information. Taylor-Clark et al. (2007) found that many of the Massachusetts residents reported distrust of authorities as sources, but McCallum et al. (1991) had previously found that respondents in 6 communities across the U.S. perceived government sources as being very knowledgeable (however, there was very low rates of actual information use from local, state, or federal government sources). This inconsistency may be due to shifting perceptions over time, or a need to tease out different attitudes towards authorities that represent different sectors such as energy, environmental protection, and public health in varying governmental settings. For example, McCallum et al. (1991) did not distinguish among subcategories such as elected officials versus town-hall meetings when reporting findings for attitudes towards governmental sources.

Media. Most of the research found focused on mass media use (television and newspaper), both national and local, regarding environmental health issues. One pre-Internet study found that environmental activists did not differ from non-activists in terms of mass media use; however, this study did not distinguish between local and national newspaper, television, magazines, or radio programs as sources of environmental health information (Zimmerman, Larson, & Scherer, 1982). As noted above, hazardous substance exposure in a particular community is often linked to specific geographic sites

such as landfills or other localized sources of toxic substances. Locally, Riffe (2006) found that 85% of Ohio River valley residents who consumed information about the environment did so by watching local television stories and 71% did so by reading local newspaper stories. Watson et al. (2013) found that rates of environmental health information seeking among North Carolinians were significantly correlated with local television and newspaper exposure, but not with national television exposure. In Florida, local activists began putting press releases in local papers to take advantage of this channel, which implies a perceived utility in reaching other residents (Horning, 2005).

Communication Behaviors of Environmental Health Activists

Although some of these studies measured correlations between environmental knowledge or self-efficacy and information or communication behaviors, most did not distinguish between general community residents and those who might be involved in community advocacy or activism around environmental health issues (i.e., environmental action gatekeepers). Taylor (2000) provided a thorough history of the environmental justice movement in the United States in which she drew distinctions between individuals engaged in action around environmental health issues. For example, she noted that activists are more likely than other “mainstream” environmental advocates or concerned citizens to engage in behaviors such as attending and organizing protests and rallies (Taylor, 2000, p. 510). She also identifies the mobilization of key information resources as critical in the growth of environmental justice activism, such as access to Toxic Release Inventory data and training on use of geographic information system (GIS) software and spatial data analysis techniques (Taylor, 2000, p. 565). However, resource

mobilization processes in activist movements has not been well studied in the context of information and communication behaviors.

One case study in Perry, Florida, documented the information needs and communication behaviors of community environmental activists from the 1980s to the present day (Horning, 2005). Although this in-depth qualitative research may not be generalizable to other communities, it suggests that the communication behaviors of local activists may follow very different patterns from that of the general public. For example, one activist who was concerned about dioxin exposure from a paper mill's effluent into a local river engaged in a number of information seeking behaviors as part of her efforts to limit pollution by the company. These included checking for warning signs that should have been posted at the contaminated river; contacting people who lived near the industrial site; attending open meetings held by government agencies; reviewing company documents of the alleged polluter; and seeking information from government agencies (EPA and DEP) and environmental organizations (Greenpeace).

In addition to these information *seeking* behaviors, the community activists also engaged in information *use* behaviors that were not found in other studies with general community residents. Specifically, the activists were also *creating* and *disseminating* environmental health information in their community, through actions such as putting an ad for a hotline in the local paper to solicit anonymous tips from the polluter's employees; holding informal meetings with other concerned residents; creating and sending press releases; and establishing a phone-tree system to alert others in the community about the status of the plant.

These less formal, community-based information sources were mentioned in the Massachusetts focus groups as trusted sources of environmental health information, although it was not clear from the study whether participants had actually used sources such as local advocacy groups, neighborhood newsletters, and meetings for “regular people” to get information about environmental hazards, or if the participants simply perceived these as available information resources that could meet potential information needs (Taylor-Clark et al., 2007). Similarly, environmental groups were perceived as very knowledgeable and credible sources in the McCallum et al. (1991) survey. In that study, environmental groups were frequently reported sources of environmental risk information; however, researchers noted that the actual use of those groups as information sources may have been overstated by respondents.

In contrast, a study of Finnish environmental activists found that they generally placed a low value on human sources of information compared to other sources (such as mass media or Internet), identifying local organizations and social contacts as “marginal” or “peripheral” sources of information (Savolainen, 2007). However, environmental *justice* activists who operate in a community organizing model (described below) may have a much more local focus than the population studied by Savolainen, who were typically seeking information about global issues such as climate change. Regarding health activism around issues unrelated to environmental health, a correlational study of individuals with HIV found that activist individuals had greater awareness of information sources (both higher numbers and more types of distinct sources) than nonactivists; they were also more likely to report using some human sources of information, such as local

AIDS service organizations, but less likely to use other sources such as health care workers, compared to nonactivists (Brashers et al., 2002).

Community Building in Environmental Health

Minkler et al. (2008) have defined community building in the field of health promotion as an “enabling process through which individuals or communities take control over their lives and environments” that also focuses on consensus-building processes in which power is shared with and among stakeholders in communities. Community building models have successfully been applied to guide interventions that promote health through community-wide initiatives that seek to involve and engage community members in the planning and implementation of the project, rather than treat them as passive recipients of outside assistance (O’Mara-Eves et al., 2015). In community building, a state of critical consciousness is reached through critical dialogue about conditions, their root causes, and potential community actions to address those conditions (Minkler & Wallerstein, 2012, pp. 44–46). Basic characteristics of the community, such as leadership, resources, and support networks are also important in community building for health promotion; these factors are referred to as community capacity (Minkler & Wallerstein, 2012, pp. 46–47). A related construct is social capital, or the social organizations and relationships between individuals in a community as well as with local governments and external resources (Minkler & Wallerstein, 2012, pp. 46–47).

Environmental health advocacy work involves a variety of communication behaviors that can be understood in the context of community building. First, information resources available to community members (such as access to local newspaper to place

an ad for a tipline) could be considered an asset or part of the community capacity to use information for local decision-making (Minkler, Wallerstein, et al., 2008). The simple presence or absence of a local newspaper or television news station, common sources of information about environmental issues (McCallum et al., 1991; Riffe, 2006; Watson et al., 2013), could impact the ability of a community to quickly identify local environmental threats. As activists gather, interpret, and share information with other residents and with local decision-makers, they are engaged in building social capital (Minkler, Wallerstein, et al., 2008). These latent support networks became formalized in Perry, Florida with the creation of a local advocacy organization, Helping Overcome our Polluted Environment (HOPE) (Horning, 2005). By building social capital and community capacity, it is thought that these links can form a bridge between people across different levels of power and who serve different roles in the community (Minkler, Vásquez, et al., 2008).

Also, grassroots activists working to address local environmental health issues are engaged in critical consciousness raising when they share information with others in the community and attempt to open dialogue about the complex relationships between industry, economic growth, and health outcomes, as seen in the work done by local residents in Perry, Florida (Horning, 2005) to hold informal meetings with family, friends, plant employees, and other concerned residents. Strategies such as taking political and legislative actions and developing leadership involve empowerment of groups that have traditionally been excluded from political processes (Blackwell et al., 2012).

Risk Information Seeking and Processing (RISP) Model

The Risk Information Seeking and Processing (RISP) model of information behavior (Griffin, Dunwoody, & Neuwirth, 1999) aims to predict information seeking and processing based on information sufficiency, or the assessment that current knowledge meets a threshold of confidence that an individual would like to have about a particular risk. The perception of informational subjective norms is theorized to influence the perception of information sufficiency, such that an individual's belief that others expect her to know more than she does about a particular topic could ultimately drive information seeking behavior. Also, the relationship between information (in)sufficiency and information behavior is moderated by beliefs about channels of risk information (such as credibility and usefulness) as well as by an individual's perceptions of their information gathering capacity or the skills needed to successfully reach the threshold of information sufficiency. The perception of a hazard is also expected to predict information (in)sufficiency and thus lead to information seeking, although this relationship is mediated by the individual's affective response (such as fear or anger) regarding that hazard. The individual's prior experience with other similar hazards, along with other demographic and background characteristics such as political beliefs and socioeconomic status, also serve as predictors of these appraisals and beliefs.

The RISP model is particularly relevant for explaining the information and communication behaviors of populations that may be impacted by toxic substances and other health hazards in their communities. This model has utility in including both perceived hazard characteristics and affective response. It is possible that even the presence of very severe or "dreaded" hazards (which would be expected to drive

information seeking about the health risks of those hazards) would not lead to actual information seeking if the local political climate contributes to fear or other affective states associated with information avoidance. Riffe (2006) found that more frequent consumption of environmental information (in using local television or newspapers) was significantly associated with perception of more serious local environmental problems or hazards as well as with higher perceived risk of developing environment-related health problems for oneself. However, that study did not establish a causal relationship between information use and perceived risk of environmental health problems; it is possible that individuals who generally consume more local media then become more aware of these issues, rather than individuals who see these issues as a threat being more likely to then seek out relevant news coverage. Watson et al. (2013) had similar findings, with environmental health information seeking being significantly correlated with perceived risks; interestingly, the objective health risks of the various North Carolina communities (as measured by health risk factors and health outcomes) were not correlated with information seeking among residents. This shows that the RISP model's use of perceived hazard characteristics, rather than actual hazard characteristics, may be most useful in explaining information and communication behaviors.

The RISP model also indicates that political philosophy is a factor in information and communication behaviors, specifically by influencing an individual's perceived hazard characteristics. Few studies have examined this relationship in the context of community hazards, and Watson et al. (2013) did not find a statistically significant relationship between political conservatism and perceived risks. However, the Horning (2005) case study does suggest that residents who are more politically progressive seek

more hazard reduction regulations, while residents who are more politically conservative would want to avoid regulations that could impact local business and employment. This case study showed that the local activists had incredibly strong affective responses to the perceived hazard characteristics, such as fear, anxiety, and anger.

The subjective norms of a community regarding information sufficiency are also explained in this model, so that if community norms indicate that residents are not expected to know much of the details about health effects from chemical pollutants (for example), it would be less likely for individuals to decide to seek out that information. The Horning (2005) case study reported that individuals who sought this information in opposition to these norms were sometimes the target of threats and had a sense of persecution; in a highly politicized or controversial context, it may be that informational subjective norms explain information avoidance.

The RISP model provides a typology of information behaviors related to risk information, with information seeking being separated into routine and non-routine and processing being separated into heuristic and systematic types (Griffin et al., 1999). This typology can be used to analyze the information behavior reported in the literature; for example, routine seeking/heuristic processing may be seen in Ohio River valley residents who browse stories in their local newspaper and generally perceive the paper as being a reliable source of information (Riffe, 2006), while routine seeking/systematic processing may explain why there is a positive relationship between general environmental health information seeking, Internet use (a routine activity), evaluation of the Internet as a good source for information “about things you can personally do to deal with health risks

related to the environment” (systematic information processing) among North Carolinians (Watson et al., 2013).

The routine/non-routine information seeking and heuristic/systematic information processing typology from the RISP model could be used to further examine how communicative actions differ among community members. It is possible, for example, that individuals who are engaged in community building and grassroots advocacy work begin with routine information seeking and move from heuristic to systematic processing, and eventually shift to non-routine information seeking, while residents who resist participation in community building activities have not yet shifted to systematic information processing or are avoiding non-routine information seeking.

Although the literature does not show use of RISP to describe and explain communication behaviors of community members engaged in activism or advocacy around environmental health issues, it has been extensively applied in studying general consumer perceptions of and information behaviors related to environmental health threats (i.e., Rosenthal, 2011; Severtson, Baumann, & Brown, 2006). It has also been used to modify the Integrative Model for Environmental Health (IMEH) based on a qualitative community-based research project on littering in an urban environment; specifically, Polivka et al. (2013b) used RISP to operationalize additional epistemological constructs (such as information sufficiency and informational subjective norms) based on interviews and focus groups with community residents.

It may be useful to examine the ways in which psychological empowerment (related to self-efficacy and perceived information gathering capacity in the RISP model) is associated with community empowerment, which may affect informational subjective

norms. Informational subjective norms have implications for community building initiatives that may need to consider changing these norms so that local residents are expected to be “informed citizens”.

There may be somewhat of a “feedback loop” that the RISP model does not show, where failing to gather more information to address information insufficiency (such as when the paper mill did not disclose information that was requested by residents) causes an affective response of anger and frustration, leading to even greater feelings of information insufficiency. Community building efforts suggest that local controversial issues may elicit negative emotions that can lead to a failure to organize and to information avoidance, as seen in Kim *et al.*'s study, which identified formerly activist publics who were no longer engaged in communication behaviors related to an environmental issue and who described feelings of frustration and powerlessness to address that specific issue (2014). The psychological resilience of individuals who continue to seek information despite negative affect and in the context of political tensions may be a factor that explains different communication behavior among community members. It is also possible that psychological resilience is related to social capital, so that individuals with strong social networks that share their personal values and political philosophy are more likely to continue seeking information despite negative affect and challenges in reaching information sufficiency; this pattern was found in case studies of community-based participatory research partnerships attempting to address environmental justice issues, which successfully demonstrated strong social and organizational networks as well as a sense of “solidarity and shared values” (Minkler, Vásquez, et al., 2008, pp. 132–133).

Situational Theory of Problem Solving (STOPS)

The Situational Theory of Problem Solving (STOPS) can be used to understand and predict communication behavior during problematic life situations including health issues and political conflicts (Kim & Grunig, 2011). According to Kim and Grunig, the range of communication behaviors that may occur as an individual engages in problem solving include information acquisition (both active seeking and passive processing); information selection (both active forefending and passive permitting); and information transmission (both active forwarding and passive sharing). It is predicted that as perceptions of a problem increase, an individual becomes more committed to solving the problem and thus engage in more information seeking, information selection, and information transmission behaviors (2011).

This model has been supported using structural equation modeling with survey data taken from universities in the United States as well as from a non-US culture (South Korea) and has been used to explain communication behaviors on health-related issues ranging from organ donation to food safety (Kim & Grunig, 2011; Kim, Ni, Kim, & Kim, 2012). Few qualitative studies have directly applied this model; although Vardeman-Winter, Jiang and Tindall. incorporated the theoretical concept of intersectionality with STOPS to explore how women's identities influence their reception of messages about cancer screenings through focus groups and interviews (2013). However, Sommerfeldt (2012) has argued that "the situational theory is an inadequate tool for explaining how activists may segment and build relationships with publics, who may not engage in the information seeking and communication behaviors delineated in the situational perspective." For example, his exploratory study of activists' behaviors found that some

participants perceived media to be an “interfering” public when refusing to cover the concerns of an activist group due to conflicting ideologies (2012, p. 297).

In the context of environmental health, STOPS has some utility in explaining communication behavior of environmental action gatekeepers. First, as with RISP, it indicates that people are motivated to seek and process information by perceiving some problem (in this case, some characteristics of a hazard in the environment). STOPS also adds the construct of constraint recognition, or the perception that barriers prevent people from being able to solve a particular situational problem. This is related to the construct of perceived information gathering capacity from the RISP model, but pertains to a person’s perceived ability or efficacy to address the problem, not to seek and process information about that problem. In Horning (2005), an environmental action gatekeeper may have high perceived information gathering capacity and be motivated to gather more information to help solve the problem of pollution in her community despite high constraint recognition. The perceived level of involvement from STOPS is also related to the perceived hazard characteristics of RISP, in that the more an individual recognizes that they are at risk for exposure to a particular environmental hazard, the higher his perceived level of involvement in the problem, and the more active his information behaviors will be (i.e., moving from passive information sharing to active information forwarding). The communication behaviors of environmental action gatekeepers may differ from other active and aware community members based on their level of involvement and constraint recognition (Ni, Kim, & Lee, 2008).

Study's Conceptual Framework

Miles and Huberman suggest the use of conceptual frameworks to focus on key constructs and their relationships in qualitative studies, as well as to build on existing relevant evidence and theories (1994, pp. 18–22). The framework used to focus and organize this study is depicted in Figure 1 below. Key constructs of the framework are drawn from the relevant literature reviewed above. Health-related communication behaviors of environmental action gatekeepers in PG78 are presented as the outcome of “Environmental Action” in the conceptual framework. The framework also presents four main categories of constructs that include possible factors relating to the outcome of Environmental Action.

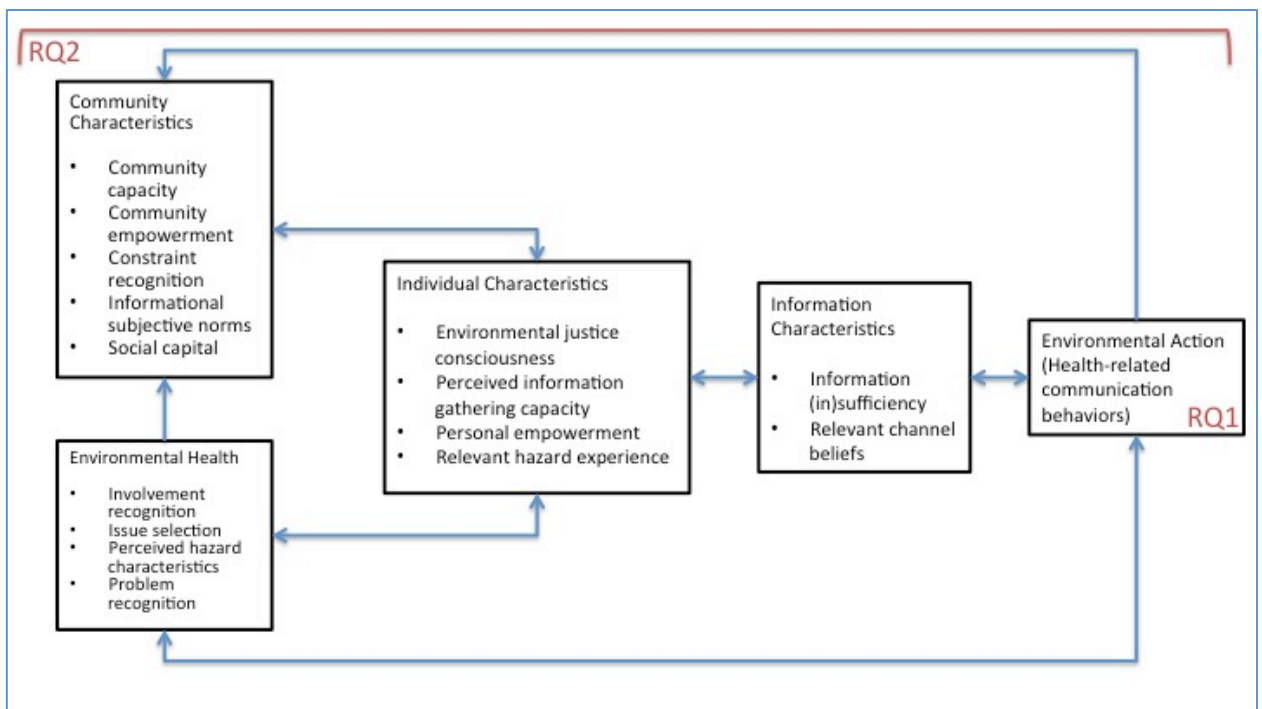


Figure 1: Conceptual framework.

As noted in the prior chapter, environmental health threats can include a range of potential hazards. The conceptual framework used to organize the present study begins

with how environmental health issues are perceived by individuals in an affected community (“Environmental Health”). This first major category includes perceptions that an environmental health problem exists in the community and that the problematic situation is connected to individuals in that community (*problem recognition* and *involvement recognition*, respectively); these perceptions are related to the degree to which a particular environmental hazard is believed to present a serious personal risk (*perceived hazard characteristics*) (Griffin et al., 1999, p. S235; Kim & Grunig, 2011, pp. 128–130). Finally, this major category also includes the construct of *issue selection* or the process by which that environmental health problem is identified as an issue of concern to a community and differentiated from other possible issues such as unemployment or substance abuse that a community could instead organize around (Minkler & Wallerstein, 2012, pp. 47–48).

The second major category in the conceptual framework covers key characteristics of a community with an environmental health issue, including key constructs of community organizing practice: *community capacity*, or the ability to identify, mobilize, and address environmental health problems; *community empowerment*, or the process by which people gain mastery over their social and political environments to improve environmental health conditions; and *social capital*, which includes both horizontal relationships between community members and vertical linking relationships with external communities and decision-makers on environmental health issues (Minkler & Wallerstein, 2012, pp. 44–47). Community-level characteristics also include the perception of obstacles that limit people’s ability to address an environmental health problem (*constraint recognition*), including barriers to information exchange (Kim

& Grunig, 2011, p. 130). Related to the perception of constraints on accessing and sharing information at a community level is the construct of *informational subjective norms*, or how individuals perceive others' expectations about performing particular behaviors related to environmental health information (Griffin et al., 1999, p. S234). This study sought to explore how participants perceived these various aspects of communities in PG78 with respect to local environmental health issues.

Along with perceived characteristics of communities affected by environmental health issues, the conceptual framework also includes participants' own perceptions of their own individual characteristics with regards to local environmental health issues and information about those issues. The concept of critical consciousness, defined as "action based on critical reflection through dialogue" in the community organizing theoretical models discussed below (Minkler & Wallerstein, 2012, p. 45), is specifically adapted in this study's framework as an *environmental justice consciousness*, or critical awareness of the disproportionate distribution of environmental burdens and hazards among low-income and/or predominantly racial minority communities. A related individual-level construct from community organizing models is *personal empowerment*, or people's political efficacy and perceived control over their social contexts (Minkler & Wallerstein, 2012, p. 46). *Relevant hazard experience* is included in the framework as a way of explaining how individuals can make sense of particular hazards in their communities based on their prior experience with those or similar hazards, as well as how they have previously dealt with perceived risk from those hazards (Griffin et al., 1999, p. S234). This is a similar theoretical construct to *referent criterion*, used by Kim and Grunig

(2011, p. 131) to explain how individuals use previous knowledge to approach problem solving.

Finally, the individual's perception of his or her own *information gathering capacity*, or ability to successfully perform behaviors related to seeking and processing information about local environmental health issues in PG78, is included in this category of individual characteristics explored in the study (Griffin et al., 1999, p. S237). In this framework, limited *information gathering capacity*, or the perception that a person lacks the knowledge or skills to perform an information behavior, is situated as an individual-level characteristic, as opposed to *constraint recognition*, which is framed as a community-level characteristic describing perceptions that social or political barriers limit someone's ability to successfully obtain information about local environmental health issues.

Along with perceptions relating to environmental health, the local community, and the individuals acting as information gatekeepers in those communities, perceived characteristics of information about local environmental health issues are included as a fourth major category of constructs in this conceptual framework. Two theoretical constructs are included in this category. The first, *information sufficiency*, can be used to explain how confident an individual is in the information they have about a particular risk or hazard and how to cope with it (Griffin et al., 1999, p. S236). This can also be framed as a lack of knowledge (as when an individual's current knowledge about a hazard does not meet his or her threshold of confidence), referred to in this study as *information insufficiency*. The second characteristic of information included in the conceptual framework is the belief held by an individual about potential channels of information

regarding a local environmental health issue. These *relevant channel beliefs*, such as perceptions that peer-reviewed health information is trustworthy or that information on a regulatory agency's website is useful, may affect how individuals engage in communication behaviors related to environmental health issues (Griffin et al., 1999, p. S237). Together with perceptions of *information insufficiency*, these factors are theorized to influence the decisions by environmental action gatekeepers in PG78 to engage in the health-related communication behaviors explored in the study's first research question.

As outlined above, existing theoretical models were used to develop a conceptual framework to explore key constructs in this study regarding health-related communication behaviors along with environmental health beliefs and perceptions of community, individual, and informational characteristics. The specific behaviors that emerged from the study findings will be presented in Chapter 4. The four main categories in the conceptual framework discussed above formed the coding scheme used for analysis (see Chapter 3 for explanation of data analysis).

This research provides an opportunity to explore how these individuals interpret health-related communication behaviors based on their identities as environmental health "activists" and/or "advocates". Although many authors have previously investigated these information and communication behaviors and perceptions in the literature summarized here, this study seeks to build on previous work by using this conceptual framework to identify, describe, and explore the health-related communication behaviors of environmental action gatekeepers in PG78.

Research Questions

Based on the literature and theory as well as the problem statement, this study was guided by the following Research Questions:

Research Question 1 (RQ1): What are the health-related communication behaviors of environmental action gatekeepers in PG78?

Research Question 2 (RQ2): How do environmental action gatekeepers in PG78 make meaning of these health-related communication behaviors?

Chapter 3: Method

The study was carried out in Wards 7 and 8 of Washington, DC and the adjacent Prince George's County, Maryland (PG78). Semi-structured interviews were conducted with 14 environmental action gatekeepers who resided and/or worked in PG78 in order to collect qualitative data on the health-related communication behaviors of environmental action gatekeepers in PG78 (RQ1) and how environmental action gatekeepers in PG78 make meaning of these health-related communication behaviors (RQ2).

Study Sample

A purposive sample of 14 environmental action gatekeepers was drawn from two existing local coalitions: the Prince George's County Environmental Action Council (the author was one of 68 individuals on this coalition's active email list) and the Maryland-DC Environmental Justice Network (the author was on this coalition's listserv which had been active at the time of the study since February 2013). Six of the study participants responded directly to email invitations sent to these lists. The remaining eight participants were identified by asking enrolled participants to suggest additional individuals who could potentially qualify for participation in the study (also known as snowball sampling; see Miles & Huberman, 1994, p. 28). The researcher then sent email invitations to these snowball-sampled individuals as well. As purposive sampling can provide depth in understanding of the research questions, interviews were conducted only with individuals from this restricted geographic region and who met additional criteria outlined below (Corbin & Strauss, 2008, p. 149). Within these sampling parameters, sufficient data saturation was reached when new data gathered in interviews confirmed themes and perceptions about local environmental health issues that had already been mentioned by

other study participants; the process of developing and confirming themes is described further in the data analysis section below (Suter, 2012, p. 350).

To qualify as a study participant, individuals were required to meet the criteria for an environmental action gatekeeper. These inclusion criteria were based on the operationalization of environmental activist by Larson et al. (1982) and of environmental action by Wakefield et al. (2006). Study participants self-reported that they lived or worked in Prince George's County, Maryland or in Wards 7 or 8 of Washington, DC. They also self-reported that they had engaged in at least one of the following behaviors within the prior five years: talked or written to local (city or county) government officials about a local environmental health issue; talked or written to federal government officials about a local environmental health issue; talked or written to the media about a local environmental health issue; talked or written to private industry about a local environmental health issue; signed a petition about a local environmental health issue; attended a public meeting about a local environmental health issue; or attended a public protest about a local environmental health issue.

Finally, to confirm their information gatekeeping role, participants somewhat agreed or strongly agreed to the following statement related to communication behavior (adapted from Kim and Grunig, 2007): "It is one of my top priorities to share my knowledge and perspective about local environmental health issues." Taken together, these inclusion criteria ensured that the study sample included participants who were familiar with the PG78 region, were engaged in action around local environmental health issues, and perceived themselves as having an information-sharing role regarding issues,

and thus could provide responses in interviews related to the main research questions of this study.

The valence of their environmental actions (i.e., for or against a local environmental issue) was not collected or used to qualify individuals for the study. Also, demographic information such as age, gender, socioeconomic status, and race was not collected during study enrollment, as the study design did not aim to select a representative sample from the region. No exclusion criteria were used to restrict individuals who met the above criteria from enrolling in the study.

Instrumentation

A brief study eligibility questionnaire was developed using the inclusion criteria described above, and included questions regarding living or working in PG78, self-reporting engaging in environmental action behaviors in the past 5 years, and agreeing with a statement regarding information sharing behaviors. As the two local coalitions from which the study sample was drawn both communicated using email listservs, the questionnaire was presented as a Web-based survey as opposed to telephone or mailed survey questions. The questionnaire was used to screen and enroll study participants (discussed further in *Procedure* section below).

A semi-structured interview guide was developed with open-ended questions and follow-up probes. The specific questions were based on theoretical constructs from RISP and STOPS models that were organized in the conceptual framework presented in Chapter 2 (Griffin et al., 1999; Kim & Grunig, 2011). For example, questions regarding how the participants first heard about local environmental health issues, how they got information about local environmental health issues, and how they shared information

with other people about those issues addressed RQ1 (identifying the health-related communication behaviors of environmental action gatekeepers in PG78). Questions and probes regarding how participants selected information to share with others, whether they identified as activists and/or advocates, and perceived barriers to information access and use addressed RQ2 (exploring how gatekeepers make meaning of these communication behaviors).

Pilot tests of interview instruments in qualitative studies are recommended to assist in determining weaknesses in study design and in refining questions prior to beginning formal data collection (Turner, 2010). After drafting the interview protocol, the researcher conducted a pilot test with an environmental action gatekeeper located outside of the PG78 region (Baltimore City, Maryland). After the pilot test, the question wording was refined based on the individual's feedback. Also, the researcher added a note regarding the question about participants' definition of environmental health to clarify that there are many definitions and she would be asking because she did not want to assume what the participant thought about the term. A definition of environmental health was also added to the interview protocol for reference, if participants requested the researcher's definition after providing their own response to that question. Additional questions were added to gather basic demographic information, as well as to allow study participants to provide comments on the design and wording of the interview questions (provided in Appendix A) and support credibility of findings (Miles & Huberman, 1994, p. 278). A summary of the purpose of each question in the final guide and which of the specific theoretical construct(s) were explored in each question is presented in Appendix B.

Procedure

An application to conduct research with human subjects was submitted to the University of Maryland Institutional Review Board (IRB) and received approval on July 16, 2014. The University of Maryland College Park IRB Initial Application Parts 1 and 2 are provided in Appendix C. Other relevant documents, including the study recruitment materials and informed consent form, are also available in the Appendices. Participant recruitment began after IRB approval was received.

An email invitation was sent to the Prince George's County Environmental Action Council and the Maryland-DC Environmental Justice Network mailing lists (see Appendix D for study recruitment email) to solicit potential participants. The email contained a link to the brief study eligibility questionnaire (see Appendix E) presented as a Web-based survey using Qualtrics software (*Qualtrics*, 2014). Respondents were made aware that they could stop participation at any time and that all information would be kept confidential. Inclusion criteria on the questionnaire are noted above in the discussion of the study sample. Respondents to the Web-based survey who met all inclusion criteria were provided with an electronic version of the informed consent form (see Appendix F). After providing their electronic signature on the consent form, they were prompted to provide a phone number and/or email address in order to schedule an in-person interview. All information collected in Qualtrics was password-protected and only the researcher had access to this data.

Individuals who met the study criteria and completed the consent form were then contacted by email to arrange a semi-structure interview lasting from 1 to 2 hours. If after sending one email the individual did not respond, the researcher made an attempt to

contact the enrolled participant by phone. A contact log was kept in Microsoft Excel to record the dates of contact attempts and stored on a password-protected computer to maintain participant confidentiality. As only seven participants were initially recruited through use of existing email lists, these first participants were asked to recommend other individuals who might meet the study criteria and share their contact information.

Interviews were scheduled at dates and times that were convenient for participants. The researcher offered to conduct the interview by phone if the participant preferred that to meeting face-to-face. All 14 individuals who completed the consent form and enrolled in the study were interviewed. Seven study participants were enrolled in June and July of 2014, and seven additional participants were enrolled in November and December of that same year. Eight participants were interviewed by phone, and the remaining six were met by the researcher and interviewed in person at convenient locations such as their workplaces.

Before beginning each interview, the researcher verbally reviewed the consent form information including risks and benefits of participating in the research study, stated that the participant do not have to answer any question he or she did not want to, and reminded the participant that he or she did not have to answer any question and could stop the interview at any time. Participants were not remunerated for enrolling in the study or participating in interviews. The interviews were audio recorded using a digital recorder. Participants provided consent to be audio recorded on the electronic consent form. During the interview, the researcher followed the semi-structured script of open-ended questions and probes provided in Appendix E and took notes about the interview content, the participant, and the context.

Each interview recording was transferred to a password-protected computer to which only the researcher had password access. The audio files were given a unique alphanumeric code according to the date the participant enrolled in the study followed by a character noting the enrollment order (i.e., 20140625A, 20140625B, etc.). After each recording was transferred to the computer, the file was backed up to an external hard drive stored in a locked office and the recording was deleted from the digital recording device.

Data Analysis

During the eight interviews that were conducted by phone, the researcher typed general notes and key reminders of the conversation during the calls, and afterwards listened to the audio recording at slow speed while typing up the text transcripts. The researcher also transcribed one of the in-person interview recordings verbatim by playing the audio recording back at slow speed while typing the text transcript. The remaining five in-person interview audio recordings were sent to a professional transcriptionist service. The researcher listened to clips of the audio recordings while reviewing those text documents to confirm accuracy of the transcriptions. All transcripts were saved with the same file names as the audio recordings and stored on the password-protected computer. The text transcripts were imported into online qualitative data analysis software (Dedoose) in a password-protected account (SocioCultural Research Consultants, LLC, 2014). The Qualtrics web survey responses were also imported to cross-reference transcripts with the inclusion criteria responses provided by participants when enrolling in the study. Demographic information collected through the interviews was also associated with each transcript file in Dedoose.

Distinct theoretical approaches were used for the data analysis of the two research questions in the study, summarized in Table 1. The limitations of these approaches in drawing conclusions in this study are explored further in Chapter 5. After each transcript was imported into data analysis software, the researcher reviewed the transcript against notes made at the time of the interview to verify impressions. After familiarizing herself with the content, the researcher prepared a memo using a Participant Summary Form (see Appendix G to capture major topics and questions that arose from the interview, as recommended by Miles and Huberman (1994, pp. 51–53). The researcher then coded the transcripts for RQ1 and RQ2 as detailed below. As the study goals were to explore communicative behaviors of environmental action gatekeepers, but not the content of the information communicated, the researcher did not analyze the scientific accuracy or political valence of the environmental health information described by participants.

The approach to RQ1 was based on grounded theory analysis, using qualitative data elicited in the semi-structured interviews to explore emerging concepts and categories (Corbin & Strauss, 2008). Although grounded theory posits that data collection follows a theoretical sampling process based on the codes that emerge as analysis begins, the present study used a positivist approach to data collection involving selection of participants based on predetermined characteristics. According to the grounded theory process, rather than testing hypotheses, this exploratory approach starts by raising generative questions and identifying core theoretical concepts. Qualitative data are then used to identify tentative linkages between these concepts and then ultimately to develop propositions about the nature of these relationships (Glaser & Strauss, 1967; Trochim, 2005).

The grounded theory analysis process used in this study began with open coding of the transcribed interviews. Codes were created to label various phenomena, to develop categories of these concepts, and to identify the properties and dimensions of those categories (Corbin & Strauss, 2008). For example, the phenomena of “hearing” and “learning” were coded as two examples of communication behaviors. A category of “information acquisition” was developed to group these and other similar phenomena, which then were ordered along a dimension of passive to active communication behaviors.

A coding dictionary was iteratively developed based on the themes that emerged as interviews were conducted and analyzed (Trochim, 2005), and Dedoose software was used to associate codes with excerpts of transcribed interview data. The researcher wrote brief memos after each transcript was coded for RQ1 to summarize emerging topics and patterns of note. She also prepared memos after each iteration of the coding dictionary to note when categories were combined, expanded, or added, as recommended by Strauss and Corbin (1990, pp. 204–211). The second process of the grounded theory approach used to analyze findings for RQ1 was axial coding, in which the researcher related categories related to one another based on the properties and dimensions identified in open coding, placed categories into major groups, and developed proposed relationships between categories including actions and consequences (Corbin & Strauss, 2008). This process resulted in a conceptualization of communication behaviors among study participants, providing findings that address RQ1.

Cross-case, variable-oriented analysis strategies were used to explore and describe findings for RQ2 (Miles & Huberman, 1994, pp. 174–77). Miles and Huberman note that

cross-case analysis can increase generalizability of findings and assist in identifying patterns of processes and outcomes across many cases (individuals), by comparing and contrasting particular events or conditions (1994, pp. 172–173). By focusing on constructs used in the theory-based conceptual framework discussed in the previous chapter, this deductive approach identifies themes that “cut across cases”; the researcher balanced this evidence by reviewing these findings in the context of each participants’ case. Miles and Huberman advise researchers to use this strategy of “stacking comparable cases” to avoid superficial or fragmented aggregation of patterns in variable-only analysis (1994, pp. 175–176).

Specifically, the researcher created an initial codebook for RQ2 using each construct from the conceptual framework provided in Chapter 2. Then, the researcher used Dedoose software to select excerpts from each transcript and apply relevant codes to those data using the *a priori* codebook. As with the analysis for RQ1, the researcher wrote brief memos after each transcript was coded for RQ2 to capture key concepts, identify outliers or surprising cases, and challenge the original conceptual framework. This approach of using memos in deductive analysis as well as inductive is suggested by Miles and Huberman, who note that even when using a preliminary framework to guide data analysis, memoing can provide an “opportunity to confront just how adequate the original framework is, and where it needs to be revised” (1994, p. 74). Memos were also used to confirm data saturation, as perceptions that emerged in earlier memos began to be repeated, extended, and confirmed in later memos. After all transcripts were coded for RQ2, the researcher used the *Code Application x Media* matrix function in Dedoose to systematically review all selected excerpts for each of the most commonly coded

concepts and identify initial themes based on these comparable cases (SocioCultural Research Consultants, LLC, 2014). The researcher also reviewed participant summary forms and coding memos to triangulate findings, and focused on contrasting or “outlier” cases as tactics to confirm findings as recommended by Miles and Huberman (1994, pp. 263–264). Finally, major findings were developed by reviewing the key themes and revisiting the original conceptual framework.

After completion of data analysis, the researcher prepared this manuscript by summarizing findings for both RQ1 and RQ2 and interpreting them in the context of existing theory, research, and practice in health communication. The researcher also plans to share an overview of the study findings and detailed recommendations for practice with interested participants and local coalitions, including the Prince George’s County Environmental Action Council.

Chapter 4: Results

Participant Characteristics

Fourteen participants consented, enrolled in the study, and completed interviews. These participants represented a range of demographics, localities, duration of time in the region and of length of time of involvement in local environmental health issues. They also self-identified along lines of advocacy and activism, with all having engaged in some type of action in the previous 5 years regarding a local environmental health issue. These characteristics are described in further detail below.

Participants had diverse demographic characteristics along lines of gender, education, age, and race/ethnicity. Slightly over half (eight) participants were female. Half had completed Bachelor's degrees, while the other half had completed Master's degrees (all had completed at least an undergraduate education). A wide range of age groups were represented among the participants; the youngest was 25 years old, and the oldest was 66. The average age of participants was 46 years. They also represented multiple races and ethnicities. Six participants identified as Black or African-American, and six identified as White or Caucasian. Two participants identified as two or more races or ethnicities. No participants identified as Hispanic or Latino. Compared to the general population of the Prince George's County and Washington, D.C. region, the study sample had higher levels of education and lower proportion of racial and ethnic minorities (U.S. Census Bureau, 2015a, 2015b).

Participants identified where they lived and worked in the initial screening questionnaire. The researcher also noted the localit(ies) discussed by participants during interviews. Four participants both lived and worked in Prince George's County,

Maryland; one who lived in Prince George's County worked there, as well as in Wards 7 and 8 of the District of Columbia; and another worked outside of PG78. All six Prince George's County residents discussed involvement in environmental health issues within that locality. Two participants lived in Ward 7 or 8; the first also worked within Wards 7 and 8 and discussed involvement in local environmental health within that locality; the second worked in Prince George's County and discussed involvement across PG78 regarding environmental health issues. Six participants lived outside of PG78. Of those, three worked and were involved with environmental health issues across PG78; two worked and were involved in environmental health issues in Prince George's County only; and one worked and was involved in environmental health issues in Ward 7 or 8 only.

Participants' length of time in the area varied, as did the length of time they had been involved in local environmental health issues. Participants' time residing in the DC metropolitan region ranged from 3 to 66 years, with an average of 28 years. Some participants had become involved in local environmental health issues relatively recently; slightly more than half of participants (eight) had been involved for five years or less, while only three participants had been involved for 10 or more years.

Participant Experience in Environmental Health Actions

All individuals qualified to participate in the study by indicating agreement with the statement, "It is one of my top priorities to share my knowledge and perspective about local environmental health issues," and by reporting participation in one or more of a list of environmental health actions within the past five years. The most commonly reported action was attending a public meeting about a local environmental health issue (100% of

participants had done this within the past five years). All but one participant also reported having talked with or written to local governmental officials about local environmental health issues in that time frame. Other common actions were signing petitions, talking to or writing to the media, private industry, or federal government officials about local environmental health issues. The least commonly reported action was attending a public protest about a local environmental health issue. The frequency of responses to this eligibility question are reported in Table 2.

During interviews, 13 participants identified themselves as advocates; of those, nine also identified as activists. One participant did not identify as either an advocate or an activist. The meaning of these identifications will be explored further in the study findings below.

Research Question 1

The first research question seeks to identify health-related communication behaviors of environmental action gatekeepers in PG78. Specifically, participants reported how they first found out about local environmental health issues and how they obtained and used information about new issues. They also discussed how they personally had been involved in those issues, including how they had shared information with others about those issues. Lastly, participants also indicated if and how those actions had changed over time. Following the inductive analysis outlined in Chapter 3, these behaviors were iteratively coded and grouped into three main categories: information acquisition, information management, and information transmission. A total of 13 specific behavior types emerged through this analysis.

Information acquisition. Participants' descriptions of five types of behaviors were grouped along the theme of information acquisition. All involved the participant receiving knowledge, facts, or awareness about a local environmental issue. These communication behaviors varied along the active-passive dimension, with *witnessing* and *hearing* being more passive ways participants obtained information, and *learning*, *asking*, and *searching* generally being more active information acquisition strategies.

Witnessing. Participants often discussed noticing an environmental hazard or issue simply by observing or witnessing it in their own neighborhoods or communities. For example, one resident of DC Ward 7/8 described that he “began to drive around [his] own neighborhood and could see the volume of bags the litter in streets and local waterways.” Others similarly described that they “encountered” and “noticed” hazards as they initially developed their awareness of local environmental health issues.

While some participants witnessed hazards more recently, many other participants recalled experiences from their youth or upbringing when discussing how they first became aware that environmental exposures could impact health. One resident of Prince George's County recalled a childhood friend who “never recovered” from an illness after swimming in a creek, and noted that as the first time he realized the connection between disease and environmental hazards. Most participants were similarly able to pinpoint an event in their past when they had personally witnessed a hazard or experienced a situation in which they became conscious of environmental health, without having purposefully sought out that information.

Hearing. Some participants got involved in local environmental health issues by hearing about opportunities or issues in the course of their routine activities. This was

typically information that they “happened” to find out about in a serendipitous manner, as opposed to information that was purposely sought. This was often similar to *witnessing*, in that it was an event when someone passively encountered knowledge or information about an issue, but differed slightly in that the individual did not usually have direct personal experience. For example, a resident of Prince George’s County found out about a Master Gardener program by literally “overhearing” people talking about it while she was enrolled in another class offered by the county, and has “been involved ever since.”

In addition to routine face-to-face communication, these *hearing* behaviors also included routine media use, as well as activities related to an individual’s day-to-day work. Many participants described hearing about local issues through consumption of mass and social media, such as seeing a posting for a public meeting in the *Gazette* (a local newspaper) or reading about an issue for the first time on Twitter.

A handful of participants who were employed in environmental health-related fields gave examples of how they learned about environmental health as a general concept or a specific environmental health issue by hearing about through their routine communication behaviors in a work setting, such as attending meetings or conferences. For example, a resident of DC Ward 7/8 who also works in Prince George’s County mentioned that he “had attended a manager’s training and [he] got a very brief report from the mayor on the bag fee.” These individuals had acquired information not through actively seeking it or experiencing it first-hand, but by *hearing* about it directly from others in personal, recreational, or work contexts, or through media channels.

Learning. Some participants had sought out formal training or education related to environmental health. This theme of *learning* behavior was distinguished from other

types of information acquisition by being actively sought by the individual, and by being provided through established pedagogical structures. For example, participants described attending a training in stormwater management, becoming certified as a Master Gardener, and enrolling in a graduate program for environmental education.

Although the formality and length of the educational experiences recounted by participants varied, these were typically delivered through established institutions or agencies with staff and curricula. While participants did “learn” about environmental health issues by engaging in other communication behaviors, this *learning* theme was more narrowly focused on the pattern of participants seeking to explore a topic using in a structured, in-depth approach, usually related to earning a credential such as a certification or academic degree.

Asking. Participants often described requesting information directly from others — a more active and purposeful behavior than *hearing*, but similar in that the information obtained was usually through one-on-one communication. *Asking* behaviors typically differed from *learning* ones in that the individual had a specific question or information need and approached another individual or small group with that request, as opposed to enrolling in a course where an instructor(s) provided information to the individual based on a pre-established curriculum or topic. Examples of *asking* for information by participants included asking about risks associated with a particular health outcome from a personal physician or asking about effects of a potentially hazardous substance from a state non-profit organization. Below, one participant describes her typical process for requesting a governmental agency’s land use report.

“The planner for Park and Planning, the planner that’s actually working on that approval part, I usually read the staff reports and I go to the Park and Planning environmental division to ask. ‘There’s [Participant’s name] again!’ They kind of know not to ignore me. [laughs] Yes. And then I ask for those reports, because in general, they don’t, they’re public but they don’t disseminate that information.” — Resident of Prince George’s County

While the above individuals described approaching others within their local professional or personal networks with questions, or going directly to their local government agency to request information, a few other participants mentioned that they have sought information beyond their immediate networks or the local region. A few participants indicated they had acquired information by asking sources outside of PG78, such as by posting a request on national listserves for waterkeepers or environmental leadership programs, or by directly contacting a family member who works in another state as a public health educator. The theme of direct, purposive *asking* cut across participants, channels and sources as a common method of acquiring specific information related to local environmental health issues.

Searching. Another active, intentional way of acquiring health-related information described by participants was searching — using an information tool or resource to obtain information. Unlike *asking*, searching generally did not involve any personal communication, and was often related to obtaining some type of document, data, or published material. These participants described using general information searching strategies to locate environmental health-related materials such as journal articles or

pending legislation. Many individuals mentioned use of specific sources when searching, including institutions of higher education and federal or state government agencies (such as University of Maryland or Perdue University “EDU sites”;; “the house.gov website”, and the Maryland state “303(d) impaired list”).

Information acquisition strategies that were grouped around this theme of *searching* were generally purposive, non-routine, and tended to be multi-step and complex, rather than *hearing* behaviors which were characterized as serendipitous, routine, and isolated. However, both *searching* and *hearing* usually involved a source familiar to the individual.

These sub-themes of *witnessing*, *hearing*, *learning*, *asking*, and *searching* formed the broader theme of information acquisition. Whether participants were describing intentional acquisition of information (such as searching for water quality reports from the Maryland Department of the Environment) or passive, accidental ways they became aware of an issue (as with the participant who literally overheard others talking about the Master Gardener program), they all shared a range of ways they got information about topics related to local environmental health in PG78. Next, the themes of information management and transmission demonstrate how they used and disseminated the knowledge, data, and resources once obtained.

Information management. Study participants discussed various strategies they employed to manage information. The behaviors of *processing*, *producing*, and *evaluating* were identified as three sub-themes which formed the theme of information management. These behaviors were often integrated across the information management theme, often in a cyclical and iterative fashion, and bridged information they had

acquired (through witnessing, learning, searching, and so on) with information they planned to transmit (discussed below).

Processing. Participants typically reviewed information they obtained — for example, using it to make decisions, or storing it for future reference. These information *processing* behaviors often involved use of information technology. The following participant detailed a creative approach he took to manage a specific community asset mapping activity, by creating his own “catalogue” using spreadsheet software. This shows how he captured information he *witnessed* and *asked* for, with the intention to later use it as a planning resource for his community organizing activities.

“I created a tracking system with an Excel spreadsheet to track the resources. I put everything in the spreadsheet... I started out in my first neighborhood with [organization], it was Deanwood in the District. I caught a Metro bus, so I could really walk around and familiarize myself. So I noticed a lot of ice cream trucks, so we’ll add that to the litter prevention campaign, tackle the issue of litter. So I started working with local entrepreneurs with ice cream trucks, asking would they be willing to ensure litter is collected around the areas they served people at. So that began my list. I was cataloguing everyone from ice cream trucks to elected officials. [I would record] their contact info and a little note like what I talked to them about and write the level of importance, like more or less the reach I can get from them... It helped me split my time between different assignments, and decide where would I put most of my work.” —
Resident of Ward 7/8, Works in Prince George’s County

Another participant who lives and works in Prince George's County discussed his use of "Legal Files" software to process information ranging from documents such as property records he's obtained, to notes about a community member who contacted him directly. In this instance, the participant had developed a system for managing information regardless of how it was acquired. However, not all participants used tangible tools to process information, with many noting that they would "file it away" mentally.

Individuals in the study generally used consistent information *processing* methods regardless of whether the information was acquired through active behaviors such as asking or searching, or passive behaviors such as hearing or witnessing. Participants generally did not discuss information received through learning — such as educational materials distributed during a formal training — in the context of information processing.

Producing. A major theme discussed below is information *transmission*. Before participants shared information, however, they often went through the act of *producing* some type of materials, documents, or data. This subtheme of *producing* behaviors typically involved the creation or synthesis of information in new ways. Like *processing*, the *producing* behaviors described by participants often involved having to manage the information in some way, organizing and reorganizing it for future use. One resident of Prince George's County discussed how she synthesizes "the pros and cons" of a proposed development in her community in preparing a report for local government officials. Many participants were also heavily involved in producing communication materials such as newsletters and web-based content related to local environmental health issues.

Participants working at multiple local organizations described producing materials ranging from printed “how-tos” and “action guides” on weatherizing homes and planting trees, to PSAs and billboards promoting litter prevention.

In producing materials for the general public (as opposed to government officials, for example), some participants emphasized a process of “digesting” technical information, as well as strategic presentation of information to reach expected readers.

“So at [agency] the work that I did was in regards to community outreach – I would use shock and awe. I would use images and campaigns that really attract people and help them gravitate towards the issue, cause if they can’t see the immediate issue they blow it off. Like this incinerator could potentially cause asthma or lung cancer, so if you see images of that it brings people in. So I use that, the shock and awe graphics, and facts and statistics.” — Resident of Ward 7/8, Works in Prince George’s County

Many participants engaged in the management of information when producing materials; for example, summarizing information intended for a lay audience while including citations to more technical documents, or selecting attention-grabbing images and pairing them with relevant statistics. These acts associated with developing content about local environmental health issues distinguishes the *producing* of materials from their later dissemination, which will be discussed under the theme of information transmission.

Evaluating. The third information management sub-theme emerged from participants’ descriptions of how they reflected on the effectiveness of their eventual information transmission efforts, discussed in the next section. *Evaluating* behaviors

often involved actions such as counting or recording other behaviors. For example, one participant in Prince George's County showed the researcher how she recorded each workshop she ran on a stormwater management program, along with the number of applicants for a rebate under that initiative "to see if we've been successful."

As in that example, *evaluating* involved similar information practices seen with *processing* (such as the creation of a spreadsheet to manage data collected by the individual). While evaluating was typically more specific to managing information about that person's own activities, as opposed to collecting external information, the two sub-themes overlapped at times. While only about half of participants mentioned this type of behavior, making it the least frequently noted across the study sample, it formed a strong sub-theme distinct from other similar behaviors.

Participants often referenced counts or quantities associated with their information transmission behaviors, but noted that tracking this information has its limitations to be able to evaluate the success of their efforts (for example, because they could track the number of flyers passed out but not the number of individuals who read them). A few participants mentioned using formal methods such as surveys and focus groups to plan and evaluate their information transmission activities. This participant described how she reflected on findings from focus groups with area residents of different age groups regarding litter prevention messages.

"Another thing we have done is some research with litterers, and we tested impact statements to see what they most – what most resonates with them. We did it with a group of millennials to see what impact statements they responded to the most, these were all self-proclaimed litterers. And that's

where we did this before, when we created the campaign with a broader audience. We did it for all adult age groups and we found that the watershed talking points weren't effective in getting the issue, the issue of environmental health across. The impact statement wasn't effective with that age group, they were more interested in cost stuff, the talking points that related litter to negative effects on the economy.” — Works in PG78

These evaluative behaviors were commonly integrated into information *producing*, as suggested by the participants quoted above, and sometimes occurred concurrently with information transmission themes (particularly *promoting*, discussed below).

Within the general theme of information management, participants described a variety of strategies from which emerged these sub-themes of *processing*, *producing*, and *evaluating*. As illustrated above, *processing* and *producing* behaviors generally involved using some information acquired previously - specifically, organizing it in the former and synthesizing it in the latter. *Evaluating* behaviors were not reported by all participants, but the half who did so noted these strategies as ways to gather and reflect on information about their other efforts, discussed in the following section.

Information transmission. All participants discussed ways they shared or disseminated information about local environmental health issues after obtaining and using it. This theme of information transmission included a number of behaviors grouped into five sub-themes, organized along the active-passive dimension (generally parallel to that dimension for the five sub-themes of information acquisition). *Responding* was a

more passive type of information transmission, while others — particularly *promoting* and *testifying* — were generally characterized as more active strategies.

Responding. Some participants noted that they shared information upon receiving a specific inquiry from another individual. This *responding* sub-theme of information transmission parallels the *asking* sub-theme of information acquisition, in that both typically involved one-to-one communication in which one individual contacts another with a specific information need in mind. However, the *responding* behavior for participants differed in that they played the role of the one who answers. Many participants described how they provide (or attempt to provide) information after being contacted by other community members or in response to questions from decision-makers, as illustrated below.

“Whenever we want to propose something, for example, when we worked on the polystyrene ban in DC, there were a number of questions we got from legislators we didn’t think about at the time. So we start compiling data, what we do we want to do, we were gathering any information we could find of the effects of polystyrene.” — Works in PG78

Responding to an inquiry often involved seeking out information that the participant lacked, as with needing information on the health effects of a particular substance. In this way, *responding* often triggered other behaviors such as information searching and information exchange, described below.

Exchanging. The study participants all described some degree of *exchanging* information related to local environmental health issues. This was typically ongoing, such as by attending regular meetings of a community coalition. Participants generally shared

some information in these interactions — while they also may have acquired some information (*hearing*), these behaviors were generally done with a primary purpose of information transmission. One participant described her involvement with a number of community groups and their use of forwarding emails to exchange information about planning and land use decisions with each other and with community partners. The lines between the receiver and sender of information may be blurred in *exchanging*, but this sub-theme was distinguished from themes primarily involving information acquisition because of the participants' emphasis on dissemination. "Matchmaking" (in one participant's words) also illustrated how some individuals provided information specifically involving social capital (discussed in RQ2).

"I do some matchmaking for folks who are interested in the same stuff. I love getting folks in different parts of the watershed connected to people elsewhere who are working on similar problems. Oh, here's some guys working on zoning and land use stuff, maybe you should get in touch with them—that's part of the community building aspect of this work, I think."

— Resident of Prince George's County

As shown above, some participants described an active and strategic information exchange where they shared contact information for a local expert with another individual engaged in related issues. Other participants explained a process of exchanging information in a reactive manner as part of *responding* to an inquiry. Both these passive and active characteristics were commonly identified across this sub-theme of *exchanging*.

Educating. Unlike *exchanging* which was typically ongoing and informal, the sub-theme of *educating* emerged as a more intentional type of information transmission.

It often took a parallel form to the *learning* behaviors identified as modes of information acquisition, in which the participant took the role of the ‘teacher’ instead of the ‘student’, although it more often included behaviors outside of pedagogical structures. A number of participants described delivery of information related to local environmental health issues using trainings or workshops, such as trainings for police officers on enforcing littering laws or delivering curricula for youth about water quality. Some participants provided face-to-face lectures or trainings, while others explained how they engaged others in hands-on educational activities. The following participant recalled bringing teenagers directly to observe polluted waterways as part of a youth education program.

“I introduced them to the watershed, so I have carried them throughout the watershed and introduced them to how water flows through their community, stormwater, wastewater, drinking water, and how it impacts them... Somebody said, Mr. [Participant name], how come that we could see the bottom of the water—of the river or the stream up in Sandy Spring and we can’t see it here in Bladensburg, and the depth of the river in both locations is the exact same depth—first question. So, being a former educator I’m not answering that question, you need to do some research, and I’m going to give you some sources and you need to follow up on this.” — Resident of Prince George’s County

This pattern of bringing others to *witness* a hazard or experience an issue first-hand was common among participants, often among those who themselves recalled a similar experience in their past, such as the one participant individual who had noticed the impact of litter on her community as a child and came to lead educational tours of the

Anacostia River. Educational behaviors also included efforts intended to simply disseminate facts to communities about particular issues, using channels such as flyers (with elements of *producing*) or open meetings (which was related to *exchanging*).

Overall, *educating* involved direct provision of information about local environmental health issues to others, and included didactic techniques using materials the individual had previously developed, as well as experiential strategies such as providing opportunities for others to observe a hazard first-hand.

Promoting. Another strong pattern of information transmission that emerged in interviews was *promoting*, which participants described as using communication channels to inform others about local environmental health issues. For example, some participants talked about their use of print, online, mass and social media, and public meetings to “put the word out” about “what’s going on.” Compared to *educating*, this sub-theme of *promoting* was sometimes more focused on sharing information with a broad audience, rather than to an individual who has shown interest in the topic such as by enrolling in a training delivered by the participant. At times, this was blurred as in the above example of individuals who had signed up to receive a newsletter sent by the participant about watershed quality. Here, another participant discussed strategic outreach using multiple email lists, and mentions aspects of information *processing* regarding management of new email subscriptions.

“We send out the e-advisories, we call them—they’re basically emailed miniature newsletters and those go out monthly, they’re far less than frequent than the written newsletters just because of the expense and effort involved in a written newsletter. We have smaller list serves that we use

that go to special subsets of our overall outreach pool, and we're always collecting email addresses and addresses, there are sign-ins at various trade show booths when we go to them, there's a feature on our website where people get themselves added to our mailing list." — Resident of Prince George's County

In *promoting*, individuals often explained how they disseminated materials they had previously developed or *produced*. In addition to use of materials such as flyers, newsletters, and public service announcements mentioned above, two participants also discussed their use of yard signs to raise awareness about litter and water quality.

In general, *promoting* information about local environmental health issues was described by participants as active and strategic. It typically involved the use of traditional and social media channels, as well as other social marketing strategies such as flyers and yard signs, to indirectly reach a broad audience as opposed to *responding* or *educating* directly to individuals who had requested information from participants.

Testifying. The final sub-theme of information transmission that emerged from participant interviews was *testifying* about local environmental health issues. These behaviors included submitting petitions, speaking at public hearings and to elected officials, and sharing information with the press. For example, one participant who lives in Prince George's County described her actions of speaking at public hearings in the county as well as going to face-to-face meetings with delegates in the state capital to advocate for legislation protecting local watersheds.

In addition to speaking at hearings and submitting petitions, participants also mentioned that they reported environmental hazards by directly notifying local

government agencies. A few participants described taking action by calling a local police department or a health department to file formal complaints about their concerns, as in the following example.

“People were getting sick in the watershed from swimming, we kept calling the health department to see if they would post the beaches, they would never return our calls, so we called the media, and then they got mad. Oh, how dare you talk to the media—well, how dare you not call us back?” — Resident of Prince George’s County

As the above participant mentioned, *testifying* behaviors were closely related to contact with the press. Distinct from *promotional* behaviors such as posting information about a workshop in a local newspaper, individuals who contacted the media to report an environmental health concern were more focused on using the media to increase political will around an issue, than to reach audiences with educational information. Participants described working with the media as part of how to “publicly respond” regarding an issue.

Unlike *responding* to specific requests or *educating* individuals who have identified some need for information (such as by attending a training), participants who described *testifying* typically were actively initiating the information transmission. Also, while these behaviors at times may have aspects of improving community members’ knowledge about an issue, they were more often aimed at influencing decision-makers.

Integrating behaviors. Although the above discussion aims to delineate the differences and contrasts between these themes and sub-themes of communication behaviors, the actions described by study participants often included a blend or

integration of multiple types of behaviors. For example, the following individual explained how she integrated information *acquisition* (hearing, asking), *management* (producing), and *transmission* (exchanging, responding) in her work regarding Anacostia watershed issues.

“We’ll attend public meetings and sometimes we’ll split up between [colleague] and myself, so we try to be at every meeting we can centered around the Anacostia. Sometimes we take information with us, so when we host meetings or if we’re a co-host to a meeting, we always try to have materials on hand for people who want more information. We also give presentations, we try to be everywhere. It’s almost impossible! But we try to go to as many as possible and talk to people about their concerns and then use that information to inform what we’re doing... So if there are some concerns raised, we’ll take note of those and the specific question, we’ll take it to another agency during that meeting. Then we’ll take that response into account and next time we go to give an update on an issue, when we go back to another meeting, we make sure we have information on those concerns.” — Works in PG78

This cycle of information exchange was common across participants. Another participant noted that he would *ask* another individual for specific data on an environmental hazard and *search* for materials based on that individual’s recommendation. He would also *respond* and “transfer information” about contacts in the community with that individual, specifically suggesting that an

acquaintance “call this person, talk to them and tell them that I referred you and they’ll give you an ear.”

This integration of communication behaviors occurred through existing networks and contacts, as in the example above, as well as through information tools such as a website developed to track trash cleanup data, described by a participant working across PG78. By *producing* a database about volunteer activities related to these trash cleanups in the community, the participant and colleagues provided a channel for acquiring (receiving cleanup data), managing (processing data for analysis), and transmitting (sharing maps of data) information about this local environmental health issue.

In summary, environmental action gatekeepers in PG78 were found to engage in three main categories of health-related communication behaviors. These categories of information acquisition, information management, and information transmission also included 13 sub-themes of various patterns of communicative actions ranging from *witnessing* to *producing* to *testifying*. Participants also described integrating these behaviors as part of their community actions relating to local environmental health issues in PG78.

Research Question 2

The second research question explored how environmental action gatekeepers in PG78 make meaning of their health-related communication behaviors. Study participants discussed their attitudes and beliefs regarding: the importance of environmental health issues for themselves and their communities; the ease or difficulty of acquiring and transmitting information; and, the ways in which environmental health information access could be improved in PG78. Participants were also asked if they identified as an

activist and/or an advocate, and to discuss the meanings of those roles in the context of their local environmental health communication behaviors.

Using the conceptual framework provided in Chapter 3, participants' statements were coded and grouped along *a priori* themes and sub-themes. A complete chart of response frequencies to constructs in the conceptual framework is provided in Appendix H. Three major findings emerged through this deductive analysis, relating to (a) identities and informational norms; (b) motivation for communication behaviors; and (c) factors in communication behavior choice. These findings are discussed below.

Identities and informational norms. Nearly all participants shared an environmental justice consciousness and a sense of personal empowerment (13 out of 14), but self-identified activists (9 of 14) tended to hold different informational subjective norms than those who only identified as advocates (4 of 14). All nine participants who identified as activists also identified as advocates and one participant identified as neither activist nor advocate. Although all individuals who qualified for the study had engaged in some type of "active" behavior such as contacting local government officials about an environmental health issue in their community, it was important to understand the commonalities and differences in the personal characteristics and identities of gatekeepers in PG78. As discussed in Chapter 2, the communication behaviors of a gatekeeper can be understood in the context of how that individual identifies as an activist or advocate public. This finding is significant because advocates explained their identities partially as the absence of certain communication behaviors they saw as "activist".

Participants who identified as both activists and advocates described themselves as integrating communication behaviors that may cut across those roles. For example, one participant who lives and works in DC Wards 7/8 said that “they overlap so frequently, it’s hard to be one without the other. He also stated that activism “may not just be getting out on the street” but could also include communication behaviors such as writing a letter to the editor.

Participants generally were consistent in associating activists with public protest actions such as “showing up at a rally”, “picketing”, and “marching”, which were related to the *testifying* information transmission behavior sub-theme (involvement in public protests did not emerge as a pattern of communication behavior among study participants). However, four of the nine participants who identified as activists (as well as advocates) had not attended a public protest about a local environmental health issue within the past five years. These individuals believed that their communication behaviors such as *exchanging*, *promoting*, and *educating* were done as activists as well as advocates. One participant who lives and works in Prince George’s County specifically noted that she perceived teaching master gardeners about local environmental health issues as being more effective than “marching for one day” because of the ongoing, community-building qualities of that work.

While those who did identify as activists generally had similar communication behaviors as those who did not, the difference seemed to be that the activists perceived their other *information transmission* behaviors as being part of activist traditions, particularly that of *testifying*. One individual who works in Prince George’s County described when she and 20 other community members “went to the county council and

testified about the urban farm being denied” as “an old-fashioned citizen sit-in.” Another explicitly stated his perception that communicative behaviors were related to political dissent, and thus to activism.

“I think my job is to use dissent, the first amendment, to change the world, and sometimes that’s a socially progressive bent to dissent—I want to change the underlying economic system or challenge the leadership or alter the rule making scheme that applies to something, I think those are entirely activist change oriented tasks.” — *Identified as both Advocate and Activist*

Almost all (13 out of 14) participants discussed a critical consciousness about environmental justice issues, although four of those did not identify as activists for reasons outlined above. One participant explained how some neighborhoods in DC Wards 7 and 8 are disproportionately impacted by infrastructure problems such as broken sewer pipes, and another discussed the legacy of land use planning in Prince George’s County leading to higher concentrations of smog in underserved communities.

Overall, an awareness of environmental justice issues in PG78 was shared across participants, whether they identified as activists or not. One outlier, a participant who did not describe environmental justice consciousness in the interview, instead showed an attitude of cynicism towards individuals living in communities affected by litter and trash. He also described his direct confrontations with others in the community he perceived as litterers, and noted his belief that education is not useful in addressing the issue. Although this individual did not have the personal characteristic of environmental justice consciousness common to other participants, he did share the common quality of

personal empowerment identified in all 14 study participants. His mention of his “notoriety” in the community for confronting others about litter on a local trail is similar to the participant who, describing her persistent *asking* behavior, said “I go to the park and planning environmental division and ask. ‘There’s [name] again!’ They kind of know not to ignore me.”

All participants, including those who did and did not identify as activists, demonstrated this trait of belief in the ability to exert control over their social environment. Participants generally explained their information transmission behaviors, such as preaching to a congregation or exchanging information with agency officials, from similar positions of empowerment within the community, regardless of their identification as activists. One study participant from DC Ward 7/8 who identified as neither an advocate or an activist still showed similar characteristics of personal empowerment, stating that he was a “leader [who] is out there with the people on a regular basis, [working] in the context of what people want, and not downplaying what they want either.” This individual explained that his actions of *hearing*, *responding*, and *exchanging* meant that he was leading from within the community, as opposed to others who are working “from a distance” around local issues. Interestingly, this position of working “with the people” was not unique to this participant, but he was the only outlier who defined his role as being other than an advocate or activist. Another participant from DC Ward 7/8 shared a very similar description of supporting community members’ interests, describing how he “would attend [civic association] meetings just to get a sense of what the community issues were” and work on their priority issues instead of coming with “an agenda.”

Statements such as these, where participants described a process of acquiring information about a community's needs to inform their other activities, were common among nearly all individuals in the study. Whether they believed that their actions fit into their definition of "activism" or not, all participants who shared an environmental justice consciousness also emphasized personal (as well as community) empowerment as part of making meaning of those communication behaviors. Regardless of participants' identity or informational norms, their motivation for engaging in health-related communication behaviors was related to a sense of personal involvement with a local environmental health issue, discussed in the second major finding below.

Motivation for communication behaviors. This study found that that 13 out of 14 participants perceived involvement in a local environmental health issue and information insufficiency regarding that issue as two related factors driving their decisions to engage in communication behaviors. Individuals can be motivated to seek and use information by a number of factors, as proposed in the conceptual framework for RQ2. Although many possible motivating factors were explored in this study, the strongest themes explaining participants' motivation to do communication behaviors were involvement recognition and information sufficiency. As involvement recognition was conceptually linked to relevant hazard experience for the individual, the following quotes include notes about the participants' duration of time in the region and involvement in local environmental health issues.

For example, one participant (involved for 4 years in local issues) explained that she advocates for better local food systems because her inability to access healthy food in a "food desert" made her and her colleagues "victims because when we want to go have

lunch, we don't have any healthy options.” Another participant (5 years involvement) noted that “trash that's on the ground ultimately ends up in local waterways, in local sewer systems, what we bathe in, recreate in, what we swim in,” explaining his motivation to raise awareness about litter due to his perceived personal involvement with that hazard.

Many participants did not discuss such direct personal exposure to hazards or pathogenic environments, but still used the concept of involvement to explain their motivation for their communication behaviors. The following quote (emphasis added) illustrates that participants' goals for information transmission were often to increase people's perceptions that environmental factors affect their health.

“So, if [stormwater] goes into the tributary, your local tributary, and you happen to walk by it and you look down into this creek, your parents will tell you, you stay away from that polluted body of water, but **you really don't have any idea** that that pollution came from your front yard or from your backyard or from what you did on the playground or walking down the street. So, it impacts them because **they are removed from the concept that I had something to do with this** and this is a negative thing, this is a polluted body of water and I need to stay away from it, because I can get sick or I could catch a disease or so forth and so on. So, I just think that **people need to know how they're connected.**” — *Native to PG78, 15 years involvement*

Although most participants had similar perceptions of involvement for themselves and others in their community, one participant did not directly reference perceived

involvement during her interview. She did have a strong background working in environmental health issues, and articulated strong problem recognition with comments such as, “One’s ZIP code should not determine one’s life expectancy.” In her interview, she noted that she had recently begun a new job related to environmental health as an explanation for why she was able to give just a few examples of her involvement in local issues, which possibly indicates that this apparent outlier does not detract from the overall strength of the finding that perceived involvement was a key motivating factor for participants’ communication behaviors.

While perceived involvement often drove participants to *transmit* information to others (such as educating youth about trash and litter, or providing community gardening classes in food deserts), perceived information insufficiency was a major motivator for participants to *acquire* and *manage* information related to local environmental health issues. One participant working in Prince George’s County (4 years involvement) explained that she had to use “oral history” by asking members of the community about past land use for a particular property, as the information wasn’t available from the municipality “because some things just aren’t written down since they’re so underserved.”

Participants often mentioned perceived information insufficiency related to land use and planning or development activities in the community, and described similar efforts to the above individual in seeking this information from residents or government agencies. Another common area of information insufficiency discussed by study participants related to health risks from exposures to specific environmental hazards. A participant working across PG78 noted that she had begun to search unsuccessfully for

information showing specific effects of trash on human health, and struggled to “relate the results of a study like [one on *E.coli* in Alaska] to what’s happening here in local communities.”

As shown in the above example, perceived information insufficiency can drive communication behavior (such as searching for and managing journal articles on toxins in litter), but it may not always result in successful information acquisition. A participant with 36 years of involvement explained how *witnessing* and *hearing* (“started knocking on doors,” “noticed a pallet of water on her porch”, led to perceived information insufficiency about household water quality among community members affected by coal waste disposal practices. He then described his unsuccessful behaviors of *asking* and *testifying* (“asked if we could test the water”, “called the health department”, “ended up leaving a message for the public health officer”) to obtain information about the issue from local authorities, who “threatened [him] with an injunction if [he] continued to communicate with citizens about drinking water issues”.

Interestingly, the above participant interpreted the response of local government officials to mean that the insufficient information provided to residents was intentional (“their job, they felt, was to restrict the amount of information that people got”). Furthermore, he understood his role as an advocate and activist was to engage in communication behaviors on behalf of those in his community who were affected by the problem or hazard. Together, this combination of involvement recognition and information insufficiency was a very common factor for participants who engaged in various communication behaviors around local environmental health issues.

Participants also related information *transmission* behaviors to perceived information insufficiency. One participant stated, “At the present time the information is spread by a quill pen, we need a paint sprayer gun to get the information out,” indicating that facts about an issue may be known but were not being disseminated widely or efficiently in his community. Statements such as these formed a strong sub-theme around suggestions for improving information sufficiency regarding environmental health issues in PG78. The most common suggestions are summarized in Appendix I with illustrative quotes and notes linking the suggestions to other theoretical constructs from the original framework. Participants’ most common suggestion for addressing information insufficiency was *producing* a web-based resource to help collect, manage, and provide information about local environmental health data, issues, resources, and organizations. The implications of this for future research and practice will be discussed further in Chapter 5.

Factors in communication behavior choice. While over a dozen communication behaviors emerged in participants’ descriptions of their community activities related to local environmental health issues, participants also referenced a number of factors that led them to select particular type of behaviors. All 14 participants generally decided to engage in particular communication behaviors because of their beliefs about the local community’s capacities and constraints, along with their perceived information-gathering capacity. Although some study participants mentioned other factors (including relevant channel beliefs, perceived hazard characteristics, and community empowerment) in explaining their choices, these were not as commonly referenced. The below discussion outlines the most common ways in which participants explained how beliefs about

themselves (as information gatherers) and their communities (as sites of both constraints and capacities) led them to particular behaviors relating to local environmental health information.

Perceived information-gathering capacity. Participants explained that their ability to “do their homework” allowed them to seek, find, and transmit information about local environmental health issues. Many individuals discussed the need to “know your facts” before being able to “present information intelligently” to particular audiences. In general, participants’ statements demonstrated strong beliefs in their ability to *search*, *process*, and *transmit* information, and alluded to the degree of effort needed in gathering information (“persistence is key”, “how far you want to go”). Other study participants provided specific examples of their approach to gathering and processing information by reviewing technical documents including permits from regulatory agencies and primary research in peer-reviewed journals.

One participant specifically acknowledged barriers to information access, stating, “We’re a small non-profit so we don’t have access to the amazing databases you have as a college or university,” while explaining her ability to use “little tricks” such as authors based on free article abstracts to gather the information she deemed useful to her work. However, information-gathering capacity was not restricted to technical or scientific information needs. Many participants also discussed their ability to gather information directly from community members through *hearing* and *exchanging* behaviors. A study participant working in Prince George’s County stated that “to be successful, you need to actively work to get opinions from people,” and another described her process of “working with communities, working one-on-one. You have to get up close and personal

with the population you're serving to understand what the issues are." Safer streets, reducing asthma rates, and increasing affordable housing were a few issues mentioned as important to community members, based on study participants' information gathering.

This pattern of gathering information from community members and learning what issues are important to them was also commonly discussed in the context of advocacy and activism, as noted above by participants who described their ability to *hear* what people need and then take action to bring about changes through political or community-level interventions. Being familiar with communities and "knowing who to go to" about certain issues was a very common way in which participants described their information-gathering capacities. Many participants had similar explanations of how they acquire information by leveraging the capacity of their community networks, stating that "a lot of time I work with the environmental people, so I would usually send my questions to them and then if they can't answer then they know who that I can go to." People also talked about their skill of interpersonal connection as a way to support information-gathering, such as one resident of DC Ward 7/8 who said, "the more people I meet, the more networks I become a part of and become involved in, the more I cultivate new ways I search for information and new people I can go to for information." Another resident of Prince George's County commented, "the longer I work in the community, the more folks I know, the more resources I have at my fingertips. I can't stress how important it is to know the right people."

Recognizing constraints. These participants and many others mentioned their ability to *respond* to people's questions by *asking* other people for that information, and perceived that increased integration into local communities led to their increased ability

to acquire and transmit relevant local information. However, they often explained their desire to refer people to others in the community for answers as an awareness of their limitations for gathering technical and scientific information. One participant frankly stated his limited understanding of the underlying science in the environmental health field, his discomfort with transmitting inaccurate “high stakes” health information because “somebody can get hurt or get sick or get injured if they have the wrong stuff”, and his preference for “getting information directly from individuals, from scieners [sic], from researchers, from people who actually have better science.”

While the above example illustrates how study participants used contacts in the scientific community to *acquire* information, another individual similarly noted that she doesn’t “have a PhD in biostatistics” to explain her limited ability to *process* information from multiple sources. She went on to explain that she wanted to “just go online and tell you where health disparities are in Maryland and overlay that with TRI [toxic release inventory] data” but can’t because “it’s hard to be able to combine traditional public health outcomes collected on one database with environmental outcomes that are stored somewhere else.”

Another participant from Prince George’s County explained her limited information-gathering capacity in terms of resources to access “experts”, and contrasted her ability to *testify* as a community resident with the reports that are presented by developers in land use hearings. She stated that “you can go as a person or resident but we’re really at a disadvantage when it comes to that because we don’t have the experts to counter what [the permit applicant] pays thousands of dollars to hand down.”

Finally, one participant explicitly stated that he “doesn’t have the time to do research”, and is “limited in [his] capacity to absorb more information”. This was the only case of a participant who referenced information avoidance during the interview, although he tempered this statement with noting that he had a master’s degree and that he was “used to doing research and finding things”, still demonstrating strong perceived information-gathering capacity.

As shown above, accessing community networks of local “experts” was a strong theme for how participants chose to engage in gathering and processing information about local issues. Their perception of their own ability to acquire information in this way was balanced by perception of constraints in the community, specifically in the ability for “outsiders” to gain access and trust. One participant who had lived in the PG78 region for 9 years, but was not originally from the area, stated that “DC in particular can be very parochial. So if you’re not from the city, let alone the neighborhood, you’re seen as an outsider” and described that when he first became engaged in local environmental health concerns he was met with “a concern about carpetbagging issues, and people saying why are you interested in my part of town, thinking there’s a vested interest not in favor of my own.” He went on to explain that a mentor “literally got me on walking tours to learn about the community and the history, and [he] got more acceptable as a result” of those on-the-ground actions to help him grow more familiar to and trusted by community members.

This challenge for outsiders was a constraint mentioned by a number of participants. An individual with 1.5 years of experience with environmental health issues within PG78, but who has lived outside that region for 9 years, stated that “Half the

problem with people getting involved, they don't know who to join—the other half, often these groups who are advocacy groups, they're so self-contained that they're very cliquish.” Another individual with 5 years of experience with local environmental health issue said that she finds out about community meetings to attend “through word of mouth mostly” but that “if I don't know what's happening I can't go.” These participants perceived a “cliquish” or suspicious nature for both advocacy non-profit organizations and civic associations in PG78.

Participants also commented on this constraint to information exchange in the context of the “environmental community” that they perceived to be somewhat isolated. One participant (a native to DC Ward 7/8 with 5 years of experience with local environmental health issues) stated, “this is coming from another environmentalist, environmentalists only tend to work with environmentalists.” Another who had already noted her difficulty in finding out about community-level meetings, explained additional difficulties in her efforts to *transmit* health-related information to those who she perceived as being part of the environmental “movement” because “people that work so hard and believe so much in one thing and know it to be true, it can be difficult to get them to incorporate the health message”.

While all participants identified some community capacity (such as access to local experts) or constraints (such as reluctance to share information with “outsiders”) factors in explaining their communication behaviors, these specific patterns were not shared across all participants. However, the subthemes illustrated above — of gathering information from others in the community, and perceiving restricted access to those communities — were strongest across participants.

Chapter 5: Discussion

Summary of Central Findings

This study sought to explore the communication behaviors of individuals engaged in “gatekeeper” community roles regarding environmental health issues in Prince George’s County, Maryland and Wards 7 and 8 of the District of Columbia (PG78). A qualitative approach was used to collect and analyze in-depth interview data from 14 participants who met inclusion criteria for information gatekeeping related to local environmental health issues. The study blended inductive analysis with a more deductive approach, developing a grounded taxonomy of communication behaviors along with a theory-driven conceptual framework explaining how gatekeepers made meaning of those behaviors.

The first major finding of the study was that environmental action gatekeepers in PG78 engaged in three categories of communication behaviors — information acquisition, information management, and information transmission. Thirteen sub-themes of communication behavior patterns emerged in that analysis. Information acquisition and transmission behaviors were organized along an active-passive dimension, while information management behaviors had cyclical and iterative qualities. Figure 2 presents these groupings and themes, and is supported by the examples and participant quotes described in Chapter 4.

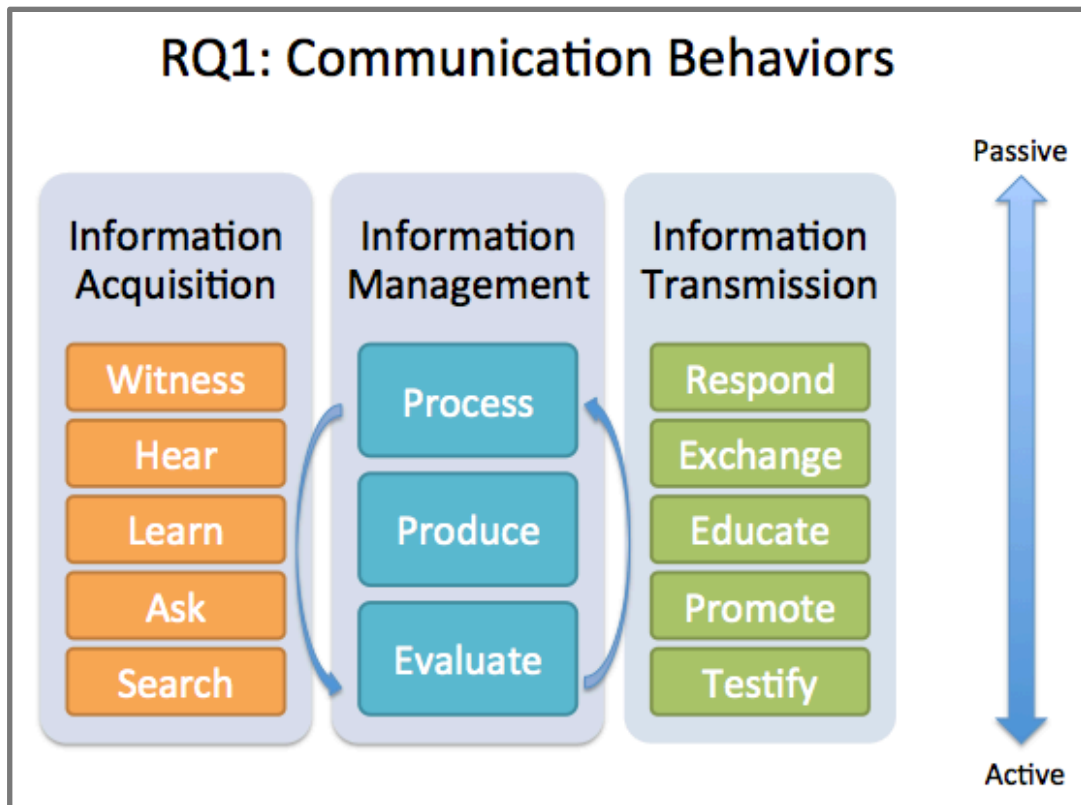


Figure 2: Concept map of health-related communication behaviors.

While the themes that emerged in the “constant comparison” data analysis for the first research question are similar to existing theoretical constructs from public relations literature (Kim, Grunig, & Ni, 2010; Kim & Grunig, 2011; Ni & Kim, 2009), they also differ in a few key ways. Specifically, this study found that participants’ health-related communication behaviors, particularly *testifying*, were explained through their self-identities as empowered advocates and/or activists; those who identified as activists generally engaged in similar behaviors as those who did not, but framed those behaviors in the social justice traditions of protest and dissent. Participants often perceived information insufficiency in their communities, and engaged in transmission behaviors such as *educating* to help raise awareness about local issues including water quality, food deserts, and littering, as well as gathering information for themselves through actions

such as *asking* others for oral history about prior land use. Many participants discussed their efforts to *produce* resources and materials about local environmental health issues, and emphasized a need for a centralized “hub” of information specific to PG78. Another major finding was the theme that participants found their integration into local networks to be a key factor in their ability to successfully gather and transmit information; some participants also asserted that there were challenges for those who were not “native” to the region in earning trust and gaining access to community information networks.

Theoretical Implications

The findings of this study support existing models of communication behavior while raising additional questions for further exploration. The grounded theory approach to analysis for the first research question (“What are the health-related communication behaviors of environmental action gatekeepers in PG78?") resulted in certain codes and themes that were very similar to those established in existing literature, such as in the Situational Theory of Problem Solving (STOPS) (Kim & Grunig, 2011). For example, the sub-themes of active “*searching*” and passive “*hearing*” as modes of information acquisition identified in this study parallel the constructs of information seeking and information attending in STOPS. However, additional, distinct patterns of information acquisition emerged in this study — namely, *asking* and *learning* as other types of active acquisition and *witnessing* as passive acquisition. Furthermore, while the sub-themes of *educating, promoting, and testifying* were consistent with the STOPS construct of information forwarding, participants described nuanced differences between these behaviors. These may suggest potential expansion of STOPS, perhaps in identifying ways

in which information acquisition and transmission behaviors can vary depending on community-level conditions such as available resources.

The theme of information management that emerged in this study (including behavior patterns of *processing*, *producing*, and *evaluating*) also differs from the constructs of STOPS, which are more focused on communicative actions. Some behaviors described by participants, like collecting primary data about trash levels in a waterway or assessing effectiveness of their outreach efforts, do not clearly parallel any behaviors in that theoretical model. These behaviors suggest that certain active publics may engage in particular actions that are directly related to constructing and managing information itself, separate and apart from communicative actions intended to receive or provide information from or to a particular source or audience.

These findings were also consistent with many predictions of the Risk Information Seeking and Processing Model (Griffin et al., 1999), although the outcomes of that model are limited to how individuals seek out and cognitively process risk information. This study found strong themes suggesting that individual characteristics (such as relevant hazard experience), perceived hazard characteristics, informational subjective norms and information (in)sufficiency all play a part in participants' motivations for and decisions to engage in particular communication behaviors. However, these findings also showed the importance of perceived community characteristics, such as capacity for and constraints on information sharing, in explaining communication behaviors. Also, although a sub-theme of information *processing* emerged in this study, it was distinct from the cognitive processing construct proposed by Griffin in the RISP model (1999) in that it involved tangible actions such as constructing

an Excel spreadsheet for an individual to record his contacts with neighborhood businesses.

This study's findings that self-identified activists and advocates had similar information seeking behaviors, but distinct informational subjective norms, also builds on the RISP model's linkage between individual characteristics and the use of routine or nonroutine information channels. Those who self-identified as activists because they interpreted certain behaviors (such as community education) as activism may not have been considered activists by others who engage in behaviors around similar local issues but do not ascribe the same level of political dissent to those actions. This suggests further exploration of how the individual characteristic of *political philosophy* (part of the original RISP model) could be incorporated into this study's conceptual framework, as well as how individuals' self-identification as advocates or activists may differ from how others perceive them based on normative beliefs regarding the political nature of community-building actions.

Also, the RISP model provides nine variables to explain how individuals may judge or perceive the risk of a particular hazard (Griffin et al., 1999, p. S235), ranging from the judgment of potential for "catastrophic outcome" to perceived threats to personal values to perceived risk on future generations. As study participants varied in their identification with environmental justice (person-centered) and environmentalist (ecology-centered) movements, it is possible that these variables could further explain how individuals' understanding of human health impacts from environmental hazards motivate them to engage in communicative behaviors. For example, an "environmentalist" individual may perceive a hazard as a risk because it is likely to have

catastrophic outcomes for biodiversity within a watershed, while another individual may instead be motivated because the hazard disproportionately threatens a certain group, challenging her environmental justice values and principles. In this way, the different motivations for environmental justice activists and environmental activists to engage in communicative behaviors could be further explored through these variables of perceived hazard characteristics.

Scholarly Implications

This study adds to the literature on how individuals in communities affected by environmental hazards seek or encounter environmental health information by focusing on the communication behaviors of atypical, active publics in those communities. Community-wide surveys on awareness of environmental hazards have not typically distinguished between those who are in “gatekeeper” roles compared to others active in information acquisition. These studies also have typically placed community members in the role of passive audiences of health messages and have not widely investigated how community activists and advocates are often involved their own independent production and dissemination of information about local environmental health issues. In particular, the findings from this study are notable for their consistency with case studies of other environmental activists who engage in different communication behaviors than those typically seen in the general public (such as reviewing permit applications from alleged polluters) (Horning, 2005).

Furthermore, other qualitative studies of information use by environmental activists (such as Savolainen (2007) have not specifically examined environmental health or environmental justice active publics, and so findings such as low use of human sources

of information compared to mass media may be due to studying individuals who are engaged in more traditional ecological environmental activism issues such as climate changes. By focusing only on individuals who are engaged in local issues (at the neighborhood, community, city, or county level), this study found different perceptions of information channels that suggest human sources of local environmental health information may in fact be quite critical, whereas mass media sources may be of little relevance.

Existing practice-based research in community organizing for health has identified growing use of information technologies by community-based coalitions and organizations, but researchers such as Satariano and Wong have noted a “democratic divide” in the use of Internet for civic engagement (2012, p. 282). This study shows the importance of studying the “1 percent” of web users who not only consume information online (Satariano & Wong, 2012), but also are involved in developing online content such as blogs, social media messages, and community newsletters, as illustrated in the theme of information producing identified among participants. The themes of information insufficiency and calls among participants for a centralized online community resource also points to some of the barriers that may be involved in actually coordinating the production of user-friendly information about local environmental health issues in PG78.

Practical Implications

At least since the Institute of Medicine’s original report on environmental justice and health (1999), there have been calls for better coordination of affected community members in decision-making processes regarding environmental health concerns. This study demonstrates that many community members in PG78 do participate in these

processes, particularly through testifying behaviors, although these individuals also identified a number of challenges to coordinating their efforts with local public health agencies. Based on this study's findings, it appears that gatekeepers perceive constraints on participating with local government agencies in the studied region, particularly in Prince George's County. According to participants, public meetings are not well publicized, and lay citizens may not feel comfortable speaking out (for example, due to a lack of technical expertise when speaking against land use planning and development proposals). Based on this finding, it appears that the best practices recommended in 1996 by the National Environmental Justice Advisory Council to encourage public participation in decision-making processes (such as considering privacy issues, technical background, and stakeholder preferences for communication modes; see Institute of Medicine (1999)) are not consistently followed by agencies in PG78.

More recent reports of community partnerships that seek to address environmental justice issues suggest a number of facilitating factors for success including opportunities for diverse levels and types of participation (Minkler, Vásquez, et al., 2008). For example, individuals involved with the West Harlem Environmental Action partnership engaged in communication behaviors ranging from learning (participating in extensive youth intern training) to testifying (sending postcards to the governor), as reported by Minkler et al. (2008). This study provides an important example of how information resources (such as listserves) can contribute to a community's capacity to address environmental health concerns, in addition to more widely studied types of resources such as financial support and human resources (Minkler, Vásquez, et al., 2008; Taylor, 2000). It also suggests that a lack of easily accessible, easily usable information resources

about local environmental health issues may be a barrier to mobilizing communities around those issues, even when there are strong community partnerships in place.

Limitations

There are a number of limitations to the study findings based on Miles and Huberman's (1994) recommendations for evaluating the quality of conclusions drawn from qualitative data. First, the researcher has not personally engaged in any activism or advocacy regarding local environmental health issues; while on the one hand, this lack of personal familiarity with the topic at hand may have provided a less biased perspective, it also may have led the researcher to be unaware of alternative explanations or rival interpretations of the data that a more experiential observer might have drawn. For example, the researcher was not previously aware of the local government bodies of Advisory Neighborhood Committees (ANCs) in the District of Columbia mentioned by a handful of participants, so may not have known to explore why other participants from the District did not mention that as a channel of information exchange. Also, the researcher had previously worked as a health communication consultant for the Agency for Toxic Substances and Disease Registry (ATSDR), an agency that has been criticized by members of the environmental justice movement for jeopardizing the health of disadvantaged communities through faulty science and a historical lack of community engagement (Russel, Lewis, & Keating, 1992). While the researcher sought to identify areas to improve community information sharing and engagement, it is possible that she brought a bias to the study due to this former work.

Certain aspects of the study design and sampling methods may have weakened the study findings. First, individuals had to self-report engaging in certain behaviors in order

to meet the inclusion criteria for the study. However, data collected using self-report may be inaccurate due to factors such as recall bias, social desirability bias, or a lack of cross-cultural adaptation (Beaton, Bombardier, Guillemin, & Ferraz, 2000; Trochim, 2005). Pilot testing the screening questions (instead of only the interview instrument) could have helped minimize this potential source of sampling bias.

The study's findings are also limited to the sample of participants who were enrolled in the study. As noted in Chapter 4, the study sample was more highly educated and less racially diverse than that of the community from which it was drawn. One major potential issue is the lack of any participants who self-identified as Hispanic or Latino, despite the region of interest having a population that is between 10% and 16% of that ethnicity (U.S. Census Bureau, 2015a, 2015b). Also, while the demographic makeup of the environmental action gatekeeper population in PG78 is unknown, it is possible that purposive sampling using electronic methods (i.e., online listservs) led to overrepresentation of activists and advocates with Internet access and from a higher sociodemographic class than the overall population of interest. Although the nature of the qualitative approach to data collection does not seek to produce *generalizable* results, the researcher does note that theoretical sampling was not followed in this study for reasons of access and convenience. Thus, it is possible that the findings are not drawn from a theoretically diverse enough sample to generate *transferable* results.

Furthermore, the research questions of the study were limited to the communicative behaviors of environmental action gatekeepers, not the content of the information being communicated. Thus, the researcher did not analyze the strength of scientific evidence for participants' statements and beliefs (such as whether trash bags in

local waterways actually impact human health). Also, the researcher positioned herself neutrally regarding participants' political philosophies and valence of environmental action (such as for or against a local issue). As a result, the findings were not analyzed in terms of how those with progressive/conservative or mainstream/radical beliefs engaged in communicative behaviors. Thus, the findings of the study do not provide evidence for whether those who are engaged in communication around local environmental health issues are acquiring, using, or transmitting evidence-based, scientifically supported knowledge.

Another limitation to the study is due to the data analysis process itself. As only a single researcher coded and analyzed the data, there is potential bias due to a single perspective on selecting transcript excerpts for coding and deciding which codes were most relevant for each excerpt. Although participant summary forms and memos were used to help create an "audit trail" and increase the dependability of the findings, re-coding of data after the initial analysis was complete could have helped to strengthen the findings. Also, the credibility of findings could have been enhanced by sharing transcripts, memos, and summaries with study participants and integrating their feedback during the data reduction and summarization process. The researcher does plan to share an overview of findings and recommendations with interested participants and local coalitions; however, it would have strengthened the study findings and interpretations of results for the researcher to engage participants throughout the study process, such as by sharing the conceptual framework and codebook with participants.

Lastly, although the researcher sought to have participants provide their own interpretations and explanations of how they made meaning of terms such as

“environmental health” and “activist”, a number of participants provided feedback at the conclusion of the interviews that they expected that the researcher would provide them with her own definition of “environmental health.” The researcher identified a definition to have on hand during the remaining interviews in case she was asked to provide it. She noted to remaining participants that she included that question because there are many definitions and she did not want to assume what the participant thought about the term. It may be that earlier participants were providing responses based on what they expected the researcher would want to hear, and that later participants were less self-conscious about their response to the question. The interview instrument could continue to be refined for future studies with other participants or in other locations outside of PG78.

Directions for Future Research and Interventions

Additional research within PG78 could build on these findings and support future planning and implementation of partnerships with local environmental action gatekeepers. First, a broader assessment could be made by conducting a survey of individuals in various local coalitions to more objectively measure the relationship between communication behaviors and empowerment, using constructs from STOPS and the Revised Perceived Control Scale examining perceptions of influence at the individual, organizational, neighborhood, and beyond-the-neighborhood levels (Israel, Schulz, Parker, & Becker, 2012). The different attitudes towards and preferences for various information sources (i.e., local health department, federal government agencies, university researchers, etc.) among environmental action gatekeepers should also be explored further through information source horizon studies, as has been done with environmental activists in Finland (Savolainen, 2007). Future studies should also explore

the professionalization of environmental health advocacy work and how communication behaviors of professionals who do not identify as “activists” differ from those who do.

As reported in the study findings, participants commonly called for the development of a web-based resource to address perceived information insufficiency regarding local environmental health issues. They perceived a need for a centralized repository to help collect, manage, and provide information about local resources, data, and organizations. Local public health and environmental agencies may want to further explore the feasibility of creating and maintaining such a resource. A web-based tool could help improve access to and disseminate community plans and studies. For example, Prince George’s County in Maryland provides an online Development Activity Monitoring System to allow public searches of development applications and permits (http://www.pgplanning.org/Resources/Tools_On-line/DAMSWEB.htm), but no participants who described seeking these types of planning documents mentioned this existing resource, which suggests the potential to improve information sufficiency and increase engagement in land use decision-making by disseminating these documents in other channels. Also, as a number of participants noted constraints to involvement due to only knowing about certain meetings or coalitions by word-of-mouth (*hearing*) and perceived some obstacles for those who are not native to the region or part of traditional environmental groups to get engaged in existing partnerships, providing a centralized location for community groups to post about events and meetings would help to address these barriers to action.

Finally, this repository could also support those who *witness* environmental hazards to *testify* easily and informally by allowing open source collection and sharing of

data. Although one participant noted her organization had developed a similar tool to track watershed health, no other participants mentioned that organization's tool, although many did note that a way to easily report and document hazard information would be valuable. The emergence of various monitoring tools which allow "citizen scientists" to track water quality (<http://openwaterproject.io/>) and air pollution (<https://air.plumelabs.com/Washington>) presents exciting possibilities to integrate these data alongside a centralized directory of local community assets and resources (for a further discussion, see Johnson et al. (2014) and Silva (2013)). While a resource such as this repository could enhance community capacity in PG78, by allowing scattered clusters of active publics to organize around shared issues across the region, it would also likely require improved capacity on the part of any governmental organization responsible for maintaining such a tool. Future research in PG78 could explore the feasibility of developing a tool and the technical assistance that could be necessary to operate it effectively.

As many participants also noted a lack of technical expertise and some even expressed a reluctance to provide "high stakes" health information, continued growth of partnerships with the University of Maryland is another future development supported by this study. For example, the University may wish to explore integration of additional environmental health trainings into the Extension Service Master Gardener certification programs mentioned by some participants and provide technical assistance to local organizations such as the Neighborhood Design Center, which participants also identified as a key source of information for many local community organizations working on land reuse and redevelopment initiatives. As suggested by participants, however,

“academians” should tailor information to the needs of community members and make sure to provide culturally and linguistically appropriate health-related information (for example, avoiding jargon and providing actionable information).

Lastly, a number of participants and community contacts requested that the researcher share her findings after study completion. In response to these requests, the researcher plans to share an overview of findings and the detailed recommendations of this study with interested participants and with local coalitions such as the Prince George’s County Environmental Action Council. This would first strengthen the research findings by allowing the population of interest to respond to the interpretations and conclusions drawn from the study data. Also, this would provide an opportunity to share the strongest themes around information needs with individuals who may be in a position to take further action to implement these recommendations. This requires the researcher to be open to alternate interpretations of the study as well as to consider the implications of positioning herself within the information exchange occurring in PG78, as someone herself engaging in information acquisition, management, and transmission behaviors. Case studies in community-based participatory research demonstrate that outside researchers may bring different levels of commitment to a project than individuals within the community; these differences may lead to tensions and distrust, but projects that include critical reflection and open dialogue about shared values may be more effective in building partnerships as well as being able to address environmental health issues (Minkler, Vásquez, et al., 2008). The researcher hopes that the conversations begun as part of this study are carried forward by other academic and community partners to build community capacity to address environmental health issues in PG78.

Conclusion

The purpose of this study was to describe and explore how environmental action gatekeepers in PG78 engage in and make meaning of health-related communication behaviors, based on a series of in-depth qualitative interviews. A theory-based conceptual framework was developed to explain how individuals with distinct community roles acquire, manage, and transmit information in the context of perceptions of environmental health hazards, community and individual characteristics, and beliefs about information sufficiency and information channels. These findings contribute to the literature on health communication by identifying patterns that activists and advocates engage in at a neighborhood or community level, such as witnessing, producing, or testifying about information related to local environmental health issues.

By understanding these behaviors and possible barriers or facilitators to engaging in these behaviors, future interventions can be guided to better reach gatekeepers “where they are at” with tools and resources that help support their existing efforts to improve community environmental health. Furthermore, the findings of this qualitative study suggest a number of additional potential research questions such as the following: how self-identifying as an activist versus an advocate may be related to different beliefs about environmental health hazards; varied attitudes about informational subjective norms; and, ultimately, distinct patterns of environmental health communication behaviors. The study also presents a framework which can be tested in other communities outside of PG78 and can be used to guide interventions aimed at increasing community and individual capacity to access, use, and disseminate health-related information in environmental justice communities. Finally, these findings can support efforts to improve engagement

with community members in decision-making around issues such as land use, planning, trash, water quality, and food access, ultimately leading to healthier living conditions and better quality of life for all.

Tables

Table 1: Theoretical approaches to data collection and analysis

	Data collection approach	Data analysis approach
RQ1: What are the health-related communication behaviors of environmental action gatekeepers in PG78?	<ul style="list-style-type: none"> • Purposive and snowball sampling 	<ul style="list-style-type: none"> • Open and axial coding phases • Iterative development of coding dictionary • Major categories emerged in inductive process
RQ2: How do environmental action gatekeepers in PG78 make meaning of these health-related communication behaviors?	<ul style="list-style-type: none"> • Purposive and snowball sampling 	<ul style="list-style-type: none"> • <i>A priori</i> (closed) coding • Conceptual framework determines coding dictionary • Key findings identified in deductive process

Table 2: Participant responses to environmental health action question

Environmental health actions within past five years	Participant responses
<u>Attended a public meeting</u> about a local environmental health issue.	14
<u>Talked or written to local (city, county, state, or district) government officials</u> about a local environmental health issue.	13
<u>Signed a petition</u> about a local environmental health issue.	10
<u>Talked or written to the media</u> about a local environmental health issue.	9
<u>Talked or written to private industry</u> about a local environmental health issue.	9
<u>Talked or written to federal government officials</u> about a local environmental health issue.	8
<u>Attended a public protest</u> about a local environmental health issue.	5

Appendices

Appendix A: Interview Protocol

Hello, thank you again for taking the time to speak with me today. My name is Sarah Pomerantz and I am a graduate student at the University of Maryland School of Public Health. The purpose of this research project is to understand how you use information about local environmental health issues.

I will be audio recording our conversation today. The information you share with me today will be kept confidential. This study is for my master's thesis, and your name will not be used in my report. The interview will take 1 to 2 hours to complete. As a reminder, you may stop at any time or skip any question you do not want to answer. There are no right or wrong answers, I am interested in hearing your perspective and opinions. You had previously provided your electronic signature on an online consent form to agree to participate in this study and agree for the interview to be audio recorded.

Did you have any questions about the consent form or the study?

As we go, please let me know if any question is confusing, unclear, or leading. I will also ask at the end if anything I asked didn't make sense or could have been asked differently.

Do you have any questions for me before we begin?

1. How long you have lived or worked in the Prince George's County or Washington, DC region?
 - a. And how long have you been involved in local environmental health issues?
2. What does "environmental health" mean to you?
3. Can you give me an example of a local environmental health issue?
 - a. Who does this issue affect?
 - b. Why do you think this issue is important for the community?
4. How have you been involved in local environmental health issues?

- a. Would you consider yourself an advocate, and activist, neither, or both? Why?
 - b. In your opinion, what is the difference between environmental issues and environmental health issues, if any?
 - c. Why did you choose to get involved in this field?
5. What is the local environmental health issue that has been most important for you, personally?
- a. Why is that issue important to you?
6. How did you first find out about this issue?
- a. Where did you find out about it? [Probe: From what source or channel did you hear about it?]
 - b. Did you seek out any health information about this issue?
 - c. [If yes]: How did you go about finding more information?
7. Have you personally been involved in any actions or activism related to this issue? For example, attending a public meeting, or talking with local officials.
- a. [If yes]: Can you briefly describe your activities related to this issue?
 - b. [If no:] Have you personally been involved in any actions or activism about a *different* environmental health issue? [Then probe a. above]
8. Have you personally shared any information with other people about this issue?
- a. [If yes:] What information did you share?
 - b. [If yes:] Did you include information about why this issue is important for people's health? [Then probe why or why not.]
 - c. [If yes:] How did you share information about that issue?
 - d. [If yes:] What types of people did you share it with? For example, people in your community, or people outside your community, like a county official?
 - e. [If yes:] Is there anything that is difficult about getting this information to people? [If so:] What?

- f. [If yes:] Has the way you've shared information changed over time? [If so:] How?
 - g. [If no:] Have you personally shared any information with other people about a *different* environmental health issue? [Then probe a., b., c., d., e. above]
9. Do other people come to you for advice or information about local environmental health issues?
- a. [If yes:] How do they typically find or contact you?
 - b. [If yes:] What types of information are they looking for?
 - c. [If yes:] What resources have you shared? [If participant already described resources, ask: Would you like to mention any other resources, in addition to the ones you already mentioned?]
 - d. [If yes:] Has this changed over time? [If so:] How?
 - e. [If yes:] Is there anything that can make it difficult for you to share information? [If so:] What?
 - f. [If no:] Would you expect people to come to you for this type of information? [Probe: Why or why not?]
10. Where do you typically go to get information about new local environmental health issues?
- a. [May probe if necessary: Who do you get information from? What resources do you use? How do you access that information?]
 - b. Has this changed over time? [If so:] How?
 - c. Is there anything that can make it difficult to get this information? [If so:] What?
 - d. How do you use the information you find? For example, sharing it with others, or saving it for future reference.
11. Would you say the information you find about local environmental health issues generally meets your needs?
- a. Why / why not? [Probe: can you share an example?]

- b. Has this changed over time? [If so:] How?
12. What, if anything, would you change to make it easier for other people in Prince George's County and DC Wards 7 and 8 to get information about local environmental health issues?
13. Finally, I have a few questions to get some basic information about you:
- a. What is your age?
 - b. What is your gender?
 - c. What is your race or ethnicity?
 - d. What is the highest degree you have received?
14. Was there any question I didn't ask, that I should have?
15. Were any questions unclear, confusing, or leading?
16. Would change anything about the way I asked these questions to make them more appropriate? For example, changing the words I used, or the order in which I asked the questions?

Thank you again for taking the time to speak with me today. I am seeking other individuals who do this type of work to interview. If you know of others who I may speak to, please let me know and I can follow up with them to schedule an interview.

Appendix B: Primary Interview Questions and Related Constructs

#	Question	Purpose / Related Concept
1	How long you have lived or worked in the Prince George's County or Washington, DC region?	Demographics Relevant hazard experience
2	What does "environmental health" mean to you?	Problem recognition
3	Can you give me an example of a local environmental health issue?	Involvement recognition Perceived hazard characteristics Environmental justice consciousness
4	How have you been involved in local environmental health issues?	Community capacity Issue selection Communication behaviors
5	What is the local environmental health issue that has been most important for you, personally?	Relevant hazard experience Personal empowerment
6	How did you first find out about this issue?	Perceived information-gathering capacity Communication behaviors
7	Have you personally been involved in any actions or activism related to this issue? For example, attending a public meeting, or talking with local officials.	Personal empowerment Communication behaviors
8	Have you personally shared any information with other people about this issue?	Social capital Communication behaviors
9	Do other people come to you for advice or information about local environmental health issues?	Informational subjective norms
10	Where do you typically go to get information about new local environmental health issues?	Perceived information-gathering capacity Relevant channel beliefs Communication behaviors
11	Would you say the information you find about local environmental health issues generally meets your needs?	Information sufficiency
12	What, if anything, would you change to make it easier for other people in Prince George's County and DC Wards 7 and 8 to get information about local environmental health	Constraint recognition Community empowerment

	issues?	
13	What is your age?; What is your gender?; What is your race or ethnicity?; What is the highest degree you have received?	Demographics
14	Was there any question I didn't ask, that I should have?	Validation
15	Were any questions unclear, confusing, or leading?	Validation
16	Would you change anything about the way I asked these questions to make them more appropriate? For example, changing the words I used, or the order in which I asked the questions.	Validation

Appendix C: Initial IRB Application Parts 1 and 2

University of Maryland College Park Institutional Review Board IRB Initial Application - Part 1

Last edited by: Sarah Pomerantz

Last edited on: May 30, 2014

[\[click for checklist\]](#)

Full
 Expedited
 Exempt

[616308-1] Health-Related Information Behaviors of Environmental Action Gatekeepers: A Qualitative Study

Answer all questions on this form completely, include attachments and obtain signatures of Co-Investigators and your department IRB Liaison prior to final submission on IRBNet.

I. Principal Investigator

Name: Sarah Pomerantz **Status:** Graduate Student
Department: SPHL- Public Health
Phone: 240-630-4439 **Email:** sarahpom@umd.edu
Address: 2367 SPH Bldg, University of Maryland School of Public Health

II. Faculty Advisor

N/A

Note: A faculty advisor is required if the PI is a student resident or fellow and the Faculty Advisor MUST sign this package through IRBNet.

Name: Linda Aldoory
Department: SPHL- Public Health
Phone: 301.405.0388 **Email:** laldoory@umd.edu
Address: SPH 2367E

III. Co-Investigators

N/A

Note: All co-investigators MUST sign this package through IRBNet.

Name:
Department:
Phone: **Email:**
Address:

IV. Funding Information

N/A

Note: A copy of the awarded grant application (minus budgetary information) must be provided.

Status	Funding Type	Sponsor Name	ORAA #	COI
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Funding Title:

V. Project Information

Lay Summary:

The information behavior of environmental action gatekeepers, or community residents who are engaged in community organizing for environmental health concerns, is not well understood. The purpose of this study is to qualitatively explore information behaviors of community members in Prince George's County, Maryland, and Wards 7 and 8 of Washington, DC, regarding environmental health information. This can inform future efforts to exchange information with community members with the ultimate goal of improving environmental health science and promoting environmental justice.

Requested Review Path:

- Full
- Expedited
- Exempt

Projected Completion Date: 12/31/2014

Research Category:

- Faculty or Staff Research
- Graduate Student Research
- Student/Faculty Collaboration
- Undergraduate Student Research
- Other:

Academic Committee Review:

- Yes - Masters committee
- Yes - Dissertation committee
- No additional academic review required

VI. Performance Sites

Performance Sites Engaged in Human Subject Research:

(where the research will be conducted)

- UMCP - Campus:
- University of Maryland - Extension:
- Campus Health Center
- Universities at Shady Grove:
- Schools:

Prison/Jail:

Other:

Interviews will be conducted with environmental action gatekeepers from Wards 7 and 8 of the District of Columbia and Prince George's County, Maryland. Interviews will be held at convenient locations such as their workplace.

The researcher may also offer to meet the participant in a private office at the University of Maryland's Horowitz Center for Health Literacy.

Is this an international study?

Yes [complete Section 10 of Initial Application Part 2]

No

If yes: **International Sites:**

VII. Subject Information

Targeted Populations:

- Normal adult/healthy persons
- Cognitively impaired persons
- Economically disadvantaged persons
- Educationally disadvantaged persons
- Elderly/aged persons
- Hospital patients or outpatients
- Illiterate persons
- Individuals with physical disabilities
- Minority group(s)
- Minors/children
[inclusion of anyone under 18 requires a Parental Consent Form]
- Non-English speakers
- Pregnant women
- Prisoners
- Students (non-minors)
- UMCP employees
- Other special characteristics and special populations:

Informed Consent Process:

- Informed consent will be obtained from subjects and documented with a signed, written consent form
- Informed consent will be obtained from subjects, but no signed consent form will be used. This includes oral consent and implied consent (e.g., completing a survey).
[please see the Requesting a Waiver of Informed Consent Guidance]

- Fully informed consent will not be obtained from all subjects. This includes deception, withholding information, etc.
[please see the Requesting a Waiver of Informed Consent Guidance]

Will health information be collected?

(See the [HIPAA section of the IRB website](#) for more information and additional resources.)

- No
- Yes, data are de-identified or constitute a limited data set.
- Yes, subject's authorization will be obtained or a waiver or alteration of authorization will be requested.
[complete IRB Form HIPAA]

VIII. Research Procedures

Research Procedures:

- Records review - retrospective
- Records review - prospective
- Education research
- Behavioral experiments
- Behavioral observation
- Questionnaires/surveys
- Interviews
- Audiotaping/videotaping
- The Internet
- Deception
[describe debriefing process in Section 7 of Initial Application Part 2]
- None of the above

Biomedical Procedures:

- Tissue banking
- Biopsy
- Blood draw:
- Use of pre-existing tissues
- Clinical tests
- Radiology
- Radiation/X-ray/DEXA
- fMRI
[use IRB fMRI templates]
- Pregnancy screening
- EKG
- EEG
- Genetic analysis

- None of the above

IX. Assurances and Signatures

Assurances

This research, once approved, is subject to continuing review and approval by the IRB. The principal investigator will maintain records of this research according to IRB guidelines. If these conditions are not met, approval of this research could be suspended or terminated.

Electronic signatures certify that:

- The signatory agrees that he or she is aware of the policies on research involving participants of the University of Maryland College Park and will safeguard the rights, dignity, and privacy of all participants.
- The information provided in this application form is correct.
- The principal investigator will seek and obtain prior written approval from the IRB for any substantive modification in the proposal, including but not limited to changes in cooperating investigators/agencies as well as changes in procedures.
- Unexpected or otherwise significant adverse events in the course of this study which may affect the risks and benefits to participation will be reported to the IRB.
- The research will not be initiated and subjects cannot be recruited until final written approval is granted.

The following signatures are required for new project submissions:

- Principal Investigator
- Research Advisor(s)
- IRB Liaison ([click here for list](#))

INSTRUCTIONS TO RESEARCHERS

[\[top\]](#)

Now that you have completed this document, check your work, attach all appropriate documents, electronically sign and submit your work. Based on your responses, the following additional documentation must be included with this package before submission. Upload additional documentation in the Designer.

Documents available in the IRBNet Forms and Templates Library:

- Consent Form (template and Completion Guide in Library)

Additional required documentation:

No additional documents are required for this project.

If you have any questions, please refer to the guidelines in the IRBNet Forms and Templates Library or contact irb@umd.edu.

UNIVERSITY OF MARYLAND COLLEGE PARK
Institutional Review Board
Initial Application Part 2 Last Rev 10/15/13

1. Abstract:

The information behavior of environmental action gatekeepers, or community residents who are engaged in community organizing for environmental health concerns, is not well understood. The purpose of this study is to qualitatively explore information behaviors of community members in Prince George's County, Maryland, and Wards 7 and 8 of Washington, DC, regarding environmental health information. This can inform future efforts to exchange information with community members with the ultimate goal of improving environmental health science and promoting environmental justice.

Protecting privacy through informed consent and secure data collection procedures will minimize risks to human subjects. The research activities pose no more than minimal risk to subjects.

2. Subject Selection:

- a. **Recruitment:** A purposive and snowball sample of environmental action gatekeepers will be drawn from existing local coalitions including the Prince George's County Environmental Action Council and the Maryland-DC Environmental Justice Network. If necessary, snowball sampling will be used to reach additional individuals beyond the subscribers to these two services and obtain sufficient participant numbers for this study. An email invitation will be sent to these mailing lists to recruit potential participants.
- b. **Eligibility Criteria:** To qualify as a study participant, individuals must self-report that they live or work in Prince George's County, Maryland or in Wards 7 or 8 of Washington, DC.

They must also self-report that they have engaged in at least one of the following behaviors within the past five years: talked or written to local (city or county) government officials about a local environmental health issue; talked or written to federal government officials about a local environmental health issue; talked or written to the media about a local environmental health issue; talked or written to private industry about a local environmental health issue; signed a petition about a local environmental health issue; attended a public meeting about a local environmental health issue; or attended a public protest about a local environmental health issue.

The individual must also somewhat agree or strongly agree to the following statement: “It is one of my top priorities to share my knowledge and perspective about local environmental health issues”.

- c. **Rationale:** The study focuses on the information needs of community members of Prince George’s County, Maryland, and Wards 7 and 8 of Washington, DC. Participants must live or work in this geographic region to be eligible for the study. Engaging in specific behaviors related to environmental action is required to ensure that participants are engaged in some environmental health issue. To ensure that participants serve as gatekeepers, they must indicate that they see themselves as having an information-sharing role regarding environmental health issues.
- d. **Enrollment Numbers:** Up to 20 individuals who meet the eligibility criteria will be interviewed for this study.

3. Procedures:

Respondents to the recruitment email will be directed to a Qualtrics page where they will be asked to complete a brief questionnaire to determine eligibility for the study (see attached). If the individual meets the eligibility criteria, informed consent will be obtained using an electronic consent form (see attached). Participants will be made aware that they can stop participating at any time. All information will be kept confidential.

Up to 20 in-depth interviews lasting from 1 to 2 hours will be conducted with participants. The semi-structured interview will follow a semi-structured script of open-ended questions and probes (see attached). Examples of questions that will be asked include how they have been involved in local environmental health issues, and whether other people come to them for advice or information about local environmental health issues.

Interviews will be scheduled at dates and times that are convenient for participants and at convenient locations such as their workplace. The researcher may also offer to meet the participant in a private office at the University of Maryland's Horowitz Center for Health Literacy.

Before beginning the interview, the researcher will verbally review the consent form information including risks and benefits of participating in the research study and state that participants do not have to answer any question they do not want to, and can stop the interview at any time.

The interviews will be audio recorded using a digital recorder. Participants will provide consent to be audio recorded on the electronic consent form and will be reminded of their right to voluntarily participate in the study before beginning the

interview.

Participants will not be remunerated for enrolling in the study or participating in interviews.

4. Risks:

There are no known risks to the participants.

Participants will be asked questions related to their experiences with local environmental health issues. They will be reminded that they can skip questions they do not wish to answer and can stop participating in the study at any time.

5. Benefits:

There are no direct benefits to the participants. It is hoped that in the future, environmental health practitioners might benefit from this study through improved understanding of how to share environmental health information with community members in the region.

6. Confidentiality:

A range of procedures will protect the privacy of participants and maintain the confidentiality of identifiable information.

All information collected in Qualtrics will be password-protected and only the principal investigator will have access to this data. Data collected during interviews including interviewer notes and transcripts will be stored in a locked office. Personally identifying information will not be included in the interview transcripts.

Each interview recording and transcript will be transferred to a password-protected computer to which only the researcher has password access. On a weekly basis until the conclusion of the study, the computer files will be backed up to an external hard drive that is stored in a locked office and the recordings will be deleted from the digital recording device.

Audiorecordings will be retained following transcription for up to 5 years. Tapes, notes, and other data will be destroyed through shredding, demagnetizing/erasure, or other permanent means of discarding within 5 years of the data collection. The human subject files related to this study, including data collected in Qualtrics, will be retained for a period of no less than 5 years after the completion of the research and then will be destroyed. Human subject files will

include IRB applications, approval notices, consent forms, and other related documents.

7. Consent Process:

Informed consent will be obtained by providing an electronic informed consent form to the participant after they complete the eligibility questionnaire and before conducting the interview. The electronic form asks for the individual to type in their name and today's date as their electronic signature. This informed consent form is attached here as a supporting document.

The researcher's contact information will be provided on the questionnaire to allow respondents to email or call if they have any questions. The researcher will ask the participant if they have any questions about the consent form before beginning the interview.

Participants may receive a copy of the consent form for their records by downloading it from the eligibility questionnaire page.

All information collected in Qualtrics will be password-protected and only the principal investigator will have access to this data. The data collected in Qualtrics will be destroyed 5 years after completion of the research.

No part of this project involves deception.

8. Conflict of Interest:

No conflict of interest.

9. HIPAA Compliance:

Not Applicable.

10. Research Outside of the United States:

Not Applicable.

11. Research Involving Prisoners:

Not Applicable.

12. SUPPORTING DOCUMENTS

Appendix D: Study Recruitment Email

To: Email listservs for the Prince George's County Environmental Action Council and the Maryland-DC Environmental Justice Network.

Subject: Seeking to Interview Environmental Health Activists in Prince George's County or DC Wards 7/8

Hello,

I am a graduate student in community health at the University of Maryland School of Public Health. I have been a member of this list for a number of months and would appreciate the chance to learn more about your work. For my master's thesis, I am seeking to interview environmental health activists who live or work in Prince George's County, Maryland, or Wards 7 or 8 of Washington, DC.

The purpose of the research project is to understand how you use information about environmental health issues. Examples of questions I will be asking are, "Have you personally shared any information with other people about a local environmental health issue?" and "Where do you typically go to get information about local environmental health issues?"

Are you interested in taking part in an interview? Please follow these steps:

1. Visit this link [insert Qualtrics link] and answer a few confidential questions.
2. If you are eligible for the study, you will be provided with an electronic consent form.
3. I will then follow up to schedule an interview at a convenient time and location to you. Interviews may last 1 to 2 hours.

If you participate, your responses during the interview will be kept confidential. Interviews will be audiorecorded to allow me to capture details of the conversation.

If you have questions, please contact me at sarahpom@umd.edu or at (240) 630-4439.

Please feel free to forward this email to others who may be interested.

Thank you for your consideration, and I look forward to speaking with some of you soon!

Sincerely,

Sarah Pomerantz

Appendix E: Eligibility Questionnaire

For a research project at the University of Maryland, I am seeking to interview **environmental health** activists who live or work in **Prince George's County, Maryland**, or **Wards 7 or 8** of Washington, DC. The purpose of the research project is to understand how you use information about environmental health issues.

Please answer the following confidential questions to determine if you are eligible for the study. If you are eligible, you will be provided with an electronic consent form. I will then follow up to schedule an interview at a convenient time and location to you.

1. Where do you currently **live**? Please select one answer.
 - I currently live in Prince George's County, Maryland
 - I currently live in Ward 7 or 8 of Washington, DC
 - I currently live in a different locality

2. Where do you currently **work**? Please select all that apply.
 - I currently work in Prince George's County, Maryland
 - I currently work in Ward 7 or 8 of Washington, DC
 - I currently work in a different locality

3. Which of the following activities have you done at least once in the **past 5 years**? Please select all that apply.
 - I have talked or written to local (city, county, state, or district) government officials about a local environmental health issue.
 - I have talked or written to federal government officials about a local environmental health issue.
 - I have talked or written to the media about a local environmental health issue.
 - I have talked or written to private industry about a local environmental health issue.
 - I have signed a petition about a local environmental health issue.
 - I have attended a public meeting about a local environmental health issue.
 - I have attended a public protest about a local environmental health issue.

4. Please choose one response to the following statement: "It is one of my top priorities to share my knowledge and perspective about local environmental health issues".
 - Strongly disagree
 - Somewhat disagree
 - Neither agree nor disagree
 - Somewhat agree
 - Strongly agree

Thank you for taking the time to complete this questionnaire. I can be reached at sarahpom@umd.edu or at (240) 630-4439 if you have any questions.

Appendix F: Study Consent Form

University of Maryland College Park	
Page 1 of 3	Initials _____ Date _____
Project Title	Health-Related Information Behaviors of Environmental Action Gatekeepers: A Qualitative Study
Purpose of the Study	This research is being conducted by Sarah Pomerantz at the University of Maryland, College Park. We are inviting you to participate in this research project because you live or work in Prince George's County, Maryland, or in Wards 7 or 8 of Washington, DC. You also have indicated that you engage in activities related to local environmental health issues. The purpose of this research project is to understand how you use information about environmental health issues.
Procedures	<p>The procedures involve participating in an in-person interview lasting up to 1 to 2 hours.</p> <p>During the interview, the researcher will ask open-ended questions about local environmental health issues and how you use or share information about these issues. Examples of questions you will be asked are:</p> <ol style="list-style-type: none"> 1. Can you give me an example of a local environmental health issue? 2. Have you personally shared any information with other people about this issue? 3. Where do you typically go to get information about local environmental health issues? <p>You may stop participating at any time. The information shared in this study will be kept confidential. Your responses will only be used for the purposes of this research study.</p> <p>The interview will be audiotaped to allow me to capture details. All tapes will be stored in a locked file cabinet in the principal investigator's office. Tapes will be destroyed within 5 years. If we write a report or article about this research project, your identity will be protected to the maximum extent possible.</p> <p><input type="checkbox"/> I agree to be audiotaped during participation in this study. <input type="checkbox"/> I do not agree to be audiotaped during participation in this study.</p>
Potential Risks and Discomforts	There are no known risks to participating in this study. You can skip questions you do not want to answer and can stop participating in the study at any time.
Potential Benefits	There are no direct benefits from participation in this research. We hope that, in the future, other people might benefit from this study through improved understanding of how to share environmental health information with community members in the region.

University of Maryland College Park

Page 2 of 3

Initials _____ Date _____

Confidentiality	<p>Any potential loss of confidentiality will be minimized by storing notes and transcripts in a locked file cabinet in the principal investigator's office. A code will be placed instead of your name on interviewer's notes and other collected data. Any personal information will then be removed from all data. Only the principal investigator will have access to the data.</p> <p>This research project involves making an audiotape of interviews. All tapes and will be stored in a locked file cabinet in the principal investigator's office. Electronic data will be stored on a password protected computer. Tapes and other data will be destroyed (shredded, demagnetized/erased and discarded) within 5 years of the study.</p> <p>If we write a report or article about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.</p>
Right to Withdraw and Questions	<p>Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.</p> <p>If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator:</p> <p style="text-align: center;">Sarah Pomerantz 2367 SPH Bldg, University of Maryland School of Public Health College Park, MD 20742 Email: sarahpom@umd.edu Telephone: 240-630-4439</p>
Participant Rights	<p>If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:</p> <p style="text-align: center;">University of Maryland College Park Institutional Review Board Office 1204 Marie Mount Hall College Park, Maryland, 20742 E-mail: irb@umd.edu Telephone: 301-405-0678</p> <p>This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.</p>

University of Maryland College Park

Page 3 of 3

Initials _____ Date _____

Statement of Consent	Your signature indicates that you are at least 18 years of age; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to participate in this research study. You will receive a copy of this signed consent form.	
	If you agree to participate, please sign your name below.	
Signature and Date	NAME OF PARTICIPANT [Please Print]	
	SIGNATURE OF PARTICIPANT	
	DATE	

Appendix G: Participant Summary Form

Participant ID: _____

Contact Type (phone / face-to-face): _____

Contact Date: _____

Today's Date: _____

1. What were the main issues or themes that struck you in this contact?

-
-
-

2. Summarize the information you got (or failed to get) on each of the target questions you had for this contact.

RQ1: Communication behaviors

-
-
-

RQ2: Meaning of behaviors

-
-
-

3. Anything else that struck you as salient, interesting, illuminating or important in this contact?

-
-

4. What new (or remaining) target questions, concerns, implications, or issues still need to be addressed?

-
-

Appendix H: RQ2 Codebook and Response Frequencies

Category / Code	Excerpts Coded
Community characteristics	
Community capacity	97
Community empowerment	59
Constraint recognition	124
Informational subjective norms	132
Social capital	84
Environmental health	
Involvement recognition	80
Issue selection	50
Perceived hazard characteristics	66
Problem recognition	74
Individual characteristics	
Environmental justice consciousness	35
Perceived information gathering capacity	105
Personal empowerment	82
Relevant hazard experience	43
Information	
Information (in)sufficiency	116
Relevant channel beliefs	108

Appendix I: Summary of Participant Suggestions for Improving Information Sufficiency in PG78

Suggestion	Relevant Quotes	Related Constructs and Behaviors
<p>Develop centralized repository of local environmental health information</p>	<p>“It would be great if there were some kind of centralized site, one site or portal that people could access, so specifically if it had any data that was out there about the river or environmental health where people could access it so it didn’t take them too long to get to the information they’re looking for.... Like a centralized database of information that pulled from every agency, every organization, every private study done.”</p>	<ul style="list-style-type: none"> • Perceived information-gathering capacity • Informational subjective norms • Constraint recognition • Community capacity • Relevant channel beliefs • Processing • Producing • Exchanging • Testifying
	<p>“Having even one environmental health person in the health department isn’t always the case, having a community environmental health liaison, there’s just no funding for that anywhere but having someone that works on environmental justice and environmental health at every local health department. And then they inform, they have some national database and they input what they learn, like this solution worked in Baltimore, it can work in Prince George’s County, and it can work in a similar county somewhere else in the country.”</p>	
	<p>“There could be like a hub, one central hub people could go to, to know about storm water management, air pollution, urban agriculture. One hub to go to, broken down into all these different categories, like one place that compiled all the information so you can go there and search through everyone. Find out who’s working on what, oh these people work with trees. That would make it easier instead of going all over the place.”</p>	
	<p>“If we had something on the website—let’s say you had an issue, but you didn’t particularly want to give your address for whatever reason, you could click the neighborhood and then you put in what the issue is—or maybe you did want to give your address and you didn’t care—there’s different levels of concern, and this could be—have it be general so that it’s a website that if you’re having problems with drugs, gangs, environment, health—because if you make people go to five different sites, it doesn’t work. If you really want input you make it easier—maybe you have some topic or whatever, location, you can give your address or if you don’t want, you can give the general area and you give a description—and I’m making this up as I go—but something, and then you make it easy for people to get the feedback out there, because if people are in groups, they may not want to communicate it in front of their neighbors.”</p>	

	<p>“It would be easier if there was one place that housed, one or two houses that basically had information on their website, a go-to place for all this information rather than having to be a part of 10 different organizations. Like one really good community public health location to go to. A place that could share other agencies and nonprofit information, all one one site, easily found information about local government. It could be as basic as a list of local organizations, public health organizations, environmental health initiatives, community oriented environmental health—community oriented agencies, nonprofits, community groups. It could even have an events calendar.”</p>	
<p>Tailor information to needs of community members</p>	<p>“Sometimes the quality of the information [is a challenge]. Like perhaps it’s not enough, but the information is there but it could potentially be written from an academic standpoint, and common people can’t understand it, really it’s a literacy issue. This is very simple... Take into account that issues are written in a way everyone can understand.”</p> <p>“What I have found is that academicians know the subject, have done the research, are well versed in the data and can apply the data, but when it comes to transferring the information to the common man or woman, there’s a disconnect, because they don’t know how to communicate on those levels.”</p> <p>“I don’t speak any other language, like Spanish. I would be able to share information with the Latin communities, get information out to them. I would like to work on that.”</p> <p>“The language or just saying it in the right way, I mean I can—sometimes if I’m really excited about something I can fall into jargonizing, I keep talking about stuff and people’s eyes will go blank, but you have to have the right sound bite and really that’s a challenge and you need—once they’re interested you’ve got to have something they can do. It’s nice to say you should use green cleaners, instead of using bleach... If you buy one of the green cleaners, it’s marked up much higher than one of the non—so you really haven’t given them a lot of choice. We need to also be able to give them options that are realistic.”</p>	<ul style="list-style-type: none"> • Informational subjective norms • Constraint recognition • Community capacity • Producing • Educating

Use accessible and familiar channels to transmit information to community members	“We need to have the information about the environment posted everywhere; it needs to be coming from the pulpit, from our churches, our synagogues, our temples and our mosques.”	<ul style="list-style-type: none"> • Community capacity • Constraint recognition • Relevant channel beliefs • Informational subjective norms • Educating • Promoting
	“The older people would probably not use computers that much, so it would have to come through organizations that they belong to and church organizations, especially. So, doing seminars there would probably be very helpful.”	
	“Contemporary activists rely too much on electronic media. There’s a thing called the digital divide, so communities of color and low income are not online in same way that younger community is. Saying I sent out an email – to a listserve with 200-300 people, that’s not the 70,000 people in the ward... People are relying too much upon electronic media. Just because you sent an email doesn’t mean people are informed.”	

References

- Agency for Toxic Substances & Disease Registry (ATSDR). (2011). Health effects of exposure to substances and carcinogens. Retrieved May 12, 2014, from <http://www.atsdr.cdc.gov/substances/ToxOrganSystems.asp>
- Anacostia Watershed Society. (n.d.). Our Programs. Retrieved from <http://www.anacostiaws.org/programs>
- Anderson, H. R., Favarato, G., & Atkinson, R. W. (2011). Long-term exposure to outdoor air pollution and the prevalence of asthma: meta-analysis of multi-community prevalence studies. *Air Quality, Atmosphere & Health*, 6(1), 57–68. <http://doi.org/10.1007/s11869-011-0145-4>
- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, 25(24), 3186–3191.
- Blackwell, A. G., Thompson, M., Freudenberg, N., Ayers, J., Schrantz, D., & Minkler, M. (2012). Using community organizing and community building to influence public policy. In M. Minkler (Ed.), *Community Organizing and Community Building for Health and Welfare* (3rd ed., pp. 371–385). New Brunswick, NJ: Rutgers University Press.
- Botchwey, N. D., Falkenstein, R., Levin, J., Fisher, T., & Trowbridge, M. (2014). The built environment and actual causes of death: Promoting an ecological approach to planning and public health. *Journal of Planning Literature*, 0885412214561337. <http://doi.org/10.1177/0885412214561337>

- Brashers, D. E., Haas, S. M., Neidig, J. L., & Rintamaki, L. S. (2002). Social activism, self-advocacy, and coping with HIV illness. *Journal of Social and Personal Relationships, 19*(1), 113–133. <http://doi.org/10.1177/0265407502191006>
- Brown, P., Zavestoski, S., McCormick, S., Mayer, B., Morello-Frosch, R., & Gasior Altman, R. (2004). Embodied health movements: New approaches to social movements in health. *Sociology of Health & Illness, 26*(1), 50–80. <http://doi.org/10.1111/j.1467-9566.2004.00378.x>
- Brulle, R. J., & Pellow, D. N. (2006). Environmental justice: Human health and environmental inequalities. *Annual Review of Public Health, 27*(1), 103–124. <http://doi.org/10.1146/annurev.publhealth.27.021405.102124>
- Bullard, R. D., Mohai, P., Saha, R., & Wright, B. (2007). *Toxic wastes and race at twenty 1987–2007: Grassroots struggles to dismantle environmental racism in the United States*. Cleveland, OH: United Church of Christ Justice and Witness Ministry.
- Case, D. O. (2002). *Looking for information: A survey of research on information seeking, needs, and behavior*. San Diego, CA: Elsevier Science.
- Corbin, J., & Strauss, A. (2008). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. SAGE.
- DC Environmental Network. (n.d.). Current Campaigns. Retrieved May 12, 2014, from <http://www.dcen.net/current-campaigns/>
- Diaz, J. (2006). The influence of global warming on natural disasters and their public health outcomes. *American Journal of Disaster Medicine, 2*(1), 33–42.

- East of the River Clergy Police Community Partnership. (n.d.). Mission. Retrieved May 12, 2014, from <http://www.ercpcp.org/mission0.aspx>
- Emergency Planning and Community Right-to-Know Act, 42 U.S.C. § 11004-11049 (1986).
- Fox, S., & Duggan, M. (2013). *Health Online 2013*. Pew Research Center. Retrieved from <http://www.pewinternet.org/Reports/2013/Health-online.aspx>
- Gibbs, L. M. (1984). Environmental Community Organizing. In S. Langton (Ed.), *Environmental Leadership: A Sourcebook for Staff and Volunteer Leaders of Environmental Organizations* (pp. 63–78). Lexington, MA: LexingtonBooks.
- Glaser, B. G., & Strauss, A. L. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine.
- Goodman, R. M., Speers, M. A., Mcleroy, K., Fawcett, S., Kegler, M., Parker, E., ... Wallerstein, N. (1998). Identifying and defining the dimensions of community capacity to provide a basis for measurement. *Health Education & Behavior*, 25(3), 258–278. <http://doi.org/10.1177/109019819802500303>
- Griffin, R. J., Dunwoody, S., & Neuwirth, K. (1999). Proposed model of the relationship of risk information seeking and processing to the development of preventive behaviors. *Environmental Research*, 80(2), S230–S245. <http://doi.org/10.1006/enrs.1998.3940>
- Groundwork Anacostia River DC. (n.d.). Programs. Retrieved May 12, 2014, from <http://groundworkdc.org/programs/>
- H.O.P.E. (2014). The Group List for the Hyattsville Organization for a Positive Environment. Retrieved May 10, 2015, from <https://groups.yahoo.com>

- Hoover, A. G. (2013). *Communication at Superfund Sites and the Reification of Division: Toward a Convergence-Building Model of Risk Communication*. University of Kentucky. Retrieved from http://uknowledge.uky.edu/comm_etds/16
- Horning, G. (2004). Social Network and Environmental Justice, a Case Study in Perry, Florida. *Electronic Theses, Treatises and Dissertations*. Retrieved from <http://diginole.lib.fsu.edu/etd/3774>
- Horning, G. (2005). Information exchange and environmental justice. In *Proceedings of the 2005 Informing Science and IT Education Joint Conference*. Retrieved from <http://2005papers.iisit.org/P08f102Horn.pdf>
- Institute of Medicine. (1999). *Toward Environmental Justice: Research, Education, and Health Policy Needs*. Washington, DC: The National Academies Press. Retrieved from http://www.nap.edu/catalog.php?record_id=6034
- Institute of Medicine. (2011). *Climate Change, the Indoor Environment, and Health*. Retrieved from <https://www.iom.edu:443/Reports/2011/Climate-Change-the-Indoor-Environment-and-Health.aspx>
- Israel, B. A., Schulz, A. J., Parker, E. A., & Becker, A. B. (2012). Scale for measuring perceptions of control at the individual, organizational, neighborhood, and beyond-the-neighborhood levels. In *Community Organizing and Community Building for Health and Welfare* (3rd ed., pp. 457–459). Rutgers University Press.
- Johnson, M. F., Hannah, C., Acton, L., Popovici, R., Karanth, K. K., & Weinthal, E. (2014). Network environmentalism: Citizen scientists as agents for environmental advocacy. *Global Environmental Change*, 29, 235–245. <http://doi.org/10.1016/j.gloenvcha.2014.10.006>

- Kim, J.-N., & Grunig, J. E. (2011). Problem solving and communicative action: A situational theory of problem solving. *Journal of Communication, 61*(1), 120–149. <http://doi.org/10.1111/j.1460-2466.2010.01529.x>
- Kim, J.-N., Grunig, J. E., & Ni, L. (2010). Reconceptualizing the communicative action of publics: Acquisition, selection, and transmission of information in problematic situations. *International Journal of Strategic Communication, 4*(2), 126–154. <http://doi.org/10.1080/15531181003701913>
- Kim, J.-N., Ni, L., Kim, S.-H., & Kim, J. R. (2012). What Makes People Hot? Applying the Situational Theory of Problem Solving to Hot-Issue Publics. *Journal of Public Relations Research, 24*(2), 144–164. <http://doi.org/10.1080/1062726X.2012.626133>
- Kim, S., Kim, J.-N., Tam, L., & Kim, G. T. (2014). Inquiring into activist publics in chronic environmental issues: use of the mutual-gains approach for breaking a deadlock: Inquiring into activist publics. *Journal of Public Affairs, n/a–n/a*. <http://doi.org/10.1002/pa.1554>
- Kutner, M., Greenberg, E., Jin, Y., & Paulsen, C. (2006). *The health literacy of America's adults: Results from the 2003 National Assessment of Adult Literacy* (U.S. Department of Education No. NCES 2006-483). Washington, DC: National Center for Education Statistics.
- Laurian, L. (2004). Public Participation in Environmental Decision Making: Findings from Communities Facing Toxic Waste Cleanup. *Journal of the American Planning Association, 70*(1), 53–65. <http://doi.org/10.1080/01944360408976338>

- Laurian, L. (2007). Deliberative Planning through Citizen Advisory Boards Five Case Studies from Military and Civilian Environmental Cleanups. *Journal of Planning Education and Research*, 26(4), 415–434.
<http://doi.org/10.1177/0739456X06298819>
- Maryland Department of Health and Mental Hygiene. (n.d.). State Health Improvement Process: Prince George's County. Retrieved May 12, 2014, from
<http://dhmh.maryland.gov/ship/SitePages/Home.aspx>
- McCallum, D. B., Hammond, S. L., & Covello, V. T. (1991). Communicating about environmental risks: How the public uses and perceives information sources. *Health Education & Behavior*, 18(3), 349–361.
<http://doi.org/10.1177/109019819101800307>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: an expanded sourcebook* (2nd ed). Thousand Oaks: Sage Publications.
- Minkler, M., Vásquez, V. B., Tajik, M., & Petersen, D. (2008). Promoting environmental justice through community-based participatory research: the role of community and partnership capacity. *Health Education & Behavior: The Official Publication of the Society for Public Health Education*, 35(1), 119–137.
<http://doi.org/10.1177/1090198106287692>
- Minkler, M., & Wallerstein, N. (2012). Improving health through community organization and community building: Perspectives from health education and social work. In M. Minkler (Ed.), *Community Organizing and Community Building for Health and Welfare* (3rd ed., pp. 37–58). New Brunswick, NJ: Rutgers University Press.

- Minkler, M., Wallerstein, N., & Wilson, N. (2008). Improving health through community organization and community building. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health Behavior and Health Education: Theory, Research and Practice* (4th ed., pp. 287–312). San Francisco, CA: Jossey-Bass.
- Mokdad, A. H., Marks, J. S., Stroup, D. F., & Gerberding, J. L. (2004). Actual causes of death in the United States, 2000. *JAMA*, *291*(10), 1238–1245.
<http://doi.org/10.1001/jama.291.10.1238>
- Ni, L., & Kim, J.-N. (2009). Classifying Publics: Communication Behaviors and Problem-Solving Characteristics in Controversial Issues. *International Journal of Strategic Communication*, *3*(4), 217–241.
<http://doi.org/10.1080/15531180903221261>
- Ni, L., Kim, J.-N., & Lee, E.-J. (2008). Classifying publics: Communication behaviors and problem-solving characteristics in controversial issues. *Conference Papers -- National Communication Association*. Retrieved from
<http://search.ebscohost.com/login.aspx?direct=true&db=ufh&AN=44851980&login.asp&site=ehost-live>
- O’Fallon, L. R., & Deary, A. (2002). Community-based participatory research as a tool to advance environmental health sciences. *Environmental Health Perspectives*, *110*(Suppl 2), 155–159.
- O’Mara-Eves, A., Brunton, G., Oliver, S., Kavanagh, J., Jamal, F., & Thomas, J. (2015). The effectiveness of community engagement in public health interventions for disadvantaged groups: a meta-analysis. *BMC Public Health*, *15*, 129.
<http://doi.org/10.1186/s12889-015-1352-y>

- Polivka, B. J., Chaudry, R., Crawford, J. M., Wilson, R., & Galos, D. (2013a).
Application and Modification of the Integrative Model for Environmental Health.
Public Health Nursing, 30(2), 167–176. <http://doi.org/10.1111/j.1525-1446.2012.01050.x>
- Polivka, B. J., Chaudry, R., Crawford, J. M., Wilson, R., & Galos, D. (2013b).
Application and Modification of the Integrative Model for Environmental Health.
Public Health Nursing, 30(2), 167–176. <http://doi.org/10.1111/j.1525-1446.2012.01050.x>
- Prince George's County Department of the Environment. (2014). Green Scene
Newsletter: Year in Review. Retrieved from
http://www.princegeorgescountymd.gov/sites/EnvironmentalResources/Resources/DoEPublications/Documents/DoE%20newsletter-DEC14_new.pdf
- Qualtrics. (2014). Provo, UT: Qualtrics. Retrieved from
<http://www.qualtrics.com/university/researchsuite/research-resources/other-resources/cite-or-reference-qualtrics/>
- Reaching the World Community Development Inc. (n.d.). Home Page. Retrieved May
12, 2014, from <http://www.rtwcdi.org/>
- Riffe, D. (2006). Frequent media users see high environmental risks. *Newspaper
Research Journal, 27*(1), 48–57.
- Rosenthal, S. (2011). Measuring knowledge of indoor environmental hazards. *Journal of
Environmental Psychology, 31*(2), 137–146.
<http://doi.org/10.1016/j.jenvp.2010.08.003>

- Russel, D., Lewis, S., & Keating, B. (1992). Inconclusive by design: Waste, fraud and abuse in federal environmental health research. National Toxics Campaign Fund.
- Sager, A., & Zakaras, A. (2014). The Hanford Advisory Board: participatory democracy, technology, and representation. *Journal of Environmental Studies and Sciences*, 4(2), 142–155. <http://doi.org/10.1007/s13412-013-0160-x>
- Satariano, N. B., & Wong, A. (2012). Creating an online strategy to enhance effective community building and organizing. In *Community Organizing and Community Building for Health and Welfare* (3rd ed., pp. 269–287). Rutgers University Press.
- Savolainen, R. (2007). Information source horizons and source preferences of environmental activists: A social phenomenological approach. *Journal of the American Society for Information Science and Technology*, 58(12), 1709–1719. <http://doi.org/10.1002/asi.20644>
- Sample, S. (2005). Assessing occupational and environmental exposure. *Occupational Medicine*, 55(6), 419–424. <http://doi.org/10.1093/occmed/kqi135>
- Severtson, D. J., Baumann, L. C., & Brown, R. L. (2006). Applying a health behavior theory to explore the influence of information and experience on arsenic risk representations, policy beliefs, and protective behavior. *Risk Analysis: An Official Publication of the Society for Risk Analysis*, 26(2), 353–368. <http://doi.org/10.1111/j.1539-6924.2006.00737.x>
- Silva, C. N. (Ed.). (2013). *Citizen E-Participation in Urban Governance: Crowdsourcing and Collaborative Creativity*. IGI Global. Retrieved from <http://services.igi-global.com/resolvedoi/resolve.aspx?doi=10.4018/978-1-4666-4169-3>

- Snijder, C. A., Velde, E. te, Roeleveld, N., & Burdorf, A. (2012). Occupational exposure to chemical substances and time to pregnancy: a systematic review. *Human Reproduction Update*, dms005. <http://doi.org/10.1093/humupd/dms005>
- SocioCultural Research Consultants, LLC. (2014). *Dedoose Version 5.0.11, web application for managing, analyzing, and presenting qualitative and mixed method research data*. Los Angeles, CA. Retrieved from <http://www.dedoose.com/>
- Sommerfeldt, E. J. (2012). The Dynamics of Activist Power Relationships: A Structurationist Exploration of the Segmentation of Activist Publics. *International Journal of Strategic Communication*, 6(4), 269–286. <http://doi.org/10.1080/1553118X.2012.686256>
- Srinivasan, S., O’Fallon, L. R., & Dearth, A. (2003). Creating Healthy Communities, Healthy Homes, Healthy People: Initiating a Research Agenda on the Built Environment and Public Health. *American Journal of Public Health*, 93(9), 1446–1450.
- Stamatakis, E., Nnoaham, K., Foster, C., & Scarborough, P. (2013). The influence of global heating on discretionary physical activity: an important and overlooked consequence of climate change. *Journal of Physical Activity & Health*, 10(6), 765–8.
- Strauss, A. L., & Corbin, J. M. (1990). *Basics of qualitative research: grounded theory procedures and techniques*. Newbury Park, Calif: Sage Publications.

- Susan G. Komen For The Cure. (2013). National Capitol Region Community Grants. Retrieved from http://globalrace.info-komen.org/site/DocServer/KGR_2013_Grantees.pdf?docID=5622
- Suter, W. N. (2012). *Introduction to educational research: a critical thinking approach* (2nd ed). Thousand Oaks, Calif: SAGE.
- Taylor, D. E. (2000). The Rise of the Environmental Justice Paradigm Injustice Framing and the Social Construction of Environmental Discourses. *American Behavioral Scientist*, 43(4), 508–580. <http://doi.org/10.1177/0002764200043004003>
- Taylor-Clark, K., Koh, H., & Viswanath, K. (2007). Perceptions of environmental health risks and communication barriers among low-SEP and racial/ethnic minority communities. *Journal of Health Care for the Poor and Underserved*, 18(4 Suppl), 165–183. <http://doi.org/10.1353/hpu.2007.0113>
- Trochim, W. M. K. (2005). *Research methods: The concise knowledge base*. Mason, OH: Cengage Learning.
- Turner, D. (2010). Qualitative Interview Design: A Practical Guide for Novice Investigators. *The Qualitative Report*, 15(3), 754–760.
- U.S. Census Bureau. (2014). Prince George’s County, Maryland. Retrieved from <http://quickfacts.census.gov/qfd/states/24/24033.html>
- U.S. Census Bureau. (2015a). District of Columbia QuickFacts. Retrieved July 25, 2015, from <http://quickfacts.census.gov/qfd/states/11000.html>
- U.S. Census Bureau. (2015b). Prince George’s County, Maryland. Retrieved from <http://quickfacts.census.gov/qfd/states/24/24033.html>

- U.S. Department of Health and Human Services (HHS). (2013). *Healthy People 2020: Environmental Health*. Washington, DC: Office of Disease Prevention and Health Promotion. Retrieved from <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=12>
- U.S. Environmental Protection Agency (EPA). (2013a). Superfund: Basic Information. Retrieved May 12, 2014, from <http://www.epa.gov/superfund/about.htm>
- U.S. Environmental Protection Agency (EPA). (2013b, November 15). Mid-Atlantic Superfund Sites by State. Retrieved May 12, 2014, from <http://www.epa.gov/reg3hwmd/super/index.htm>
- U.S. Environmental Protection Agency (EPA). (n.d.). myRight-to-Know. Retrieved May 12, 2014, from <http://myrtk.epa.gov/info/search.jsp>
- United Medical Center. (n.d.). About Us. Retrieved May 12, 2014, from <http://www.united-medicalcenter.com/about-us.html>
- University of Maryland School of Public Health. (2012). *Transforming Health in Prince George's County, Maryland: A Public Health Impact Study*. Retrieved from http://sph.umd.edu/princegeorgeshealth/SPH_ImpactStudy_fullreport.pdf
- Vardeman-Winter, J., Jiang, H., & Tindall, N. T. J. (2013). Information-Seeking Outcomes of Representational, Structural, and Political Intersectionality Among Health Media Consumers. *Journal of Applied Communication Research*, 41(4), 389–411. <http://doi.org/10.1080/00909882.2013.828360>

- Vrijheid, M. (2000). Health effects of residence near hazardous waste landfill sites: a review of epidemiologic literature. *Environmental Health Perspectives*, 108(Suppl 1), 101–112.
- Wakefield, S. E. L., Elliott, S. J., Eyles, J. D., & Cole, D. C. (2006). Taking environmental action: The role of local composition, context, and collective. *Environmental Management*, 37(1), 40–53.
<http://doi.org/http://dx.doi.org/10.1007/s00267-004-0323-3>
- Washington Area Women’s Foundation. (2009, March). Stepping Stones Proposal Guidelines. Retrieved from
<http://community.thewomensfoundation.org/Document.Doc?id=71>
- Washington DC Local Initiatives Support Corporation. (n.d.). 2012 Wards. Retrieved May 12, 2014, from <http://neighborhoodinfodc.org/wards/wards.html>
- Washington East Foundation. (n.d.). Community Information. Retrieved May 12, 2014, from <http://www.wefdirect.org/community.htm>
- Watson, B. R., Riffe, D., Smithson-Stanley, L., & Ogilvie, E. (2013). Mass media and perceived and objective environmental risk: Race and place of residence. *Howard Journal of Communications*, 24(2), 134–153.
<http://doi.org/10.1080/10646175.2013.776325>
- Zimmerman, D., Larson, M. A., & Scherer, C. (1982). Communication behavior by environmental activists compared to non-active persons. *Journal of Environmental Education*, 14(1), 11.

Zoller, H. M. (2005). Health Activism: Communication Theory and Action for Social Change. *Communication Theory*, 15(4), 341–364. <http://doi.org/10.1111/j.1468-2885.2005.tb00339.x>