Using Community-Based Participatory Research to Identify Environmental Justice Issues in an Inner-City Community and Inform Urban Planning

Author(s): Carol Leler Mansyur, Hueiwang Anna Jeng, Erica Holloman and Linwood DeBrew

Source: *Family and Community Health*, July-September 2016, Vol. 39, No. 3 (July-September 2016), pp. 169-177

Published by: Lippincott Williams & Wilkins

Stable URL: https://www.jstor.org/stable/10.2307/48515479

Using Community-Based Participatory Research to Identify Environmental Justice Issues in an Inner-City Community and Inform Urban Planning

Carol Leler Mansyur, PhD; Hueiwang Anna Jeng, ScD; Erica Holloman, PhD; Linwood DeBrew

The Southeast CARE Coalition has been using community-based participatory research to examine environmental degradation in the Southeast Community, Newport News, Virginia. A survey was developed to collect assessment data. Up to 66% of respondents were concerned about environmental problems in their community. Those with health conditions were significantly more likely to identify specific environmental problems. The top 5 environmental concerns included coal dust, air quality, crime, water quality, and trash. The community-based participatory research process is building community capacity and participation, providing community input into strategic planning, and empowering community members to take control of environmental justice issues in their community.

Key words: community-based participatory research, environmental justice, health disparities, urban planning

IT IS AN UNFORTUNATE fact that impoverished communities worldwide are more frequently exposed to environmental health hazards, including substandard housing, lack of access to clean water sources, hazardous waste, toxic chemicals emitted from industrial facilities into the air, water, and soil, and higher levels of air pollution from other sources, such as vehicle emissions.[1] In the United States this typically includes many low-income, minority communities.[2-4] According to the 1992 Environmental Equity Report,[3] in 3 of 4 communities with hazardous waste landfills nearby, the majority of the population was African American and 26% of the population had incomes below the poverty level. Furthermore, high percentages of African Americans and Hispanics lived in Environmental Protection Agency-designated nonattainment areas, and were thus potentially exposed to higher levels of air pollution, including particulate matter, carbon monoxide, ozone, sulfur dioxide, and lead. These types of exposures could contribute to health disparities. Although it is difficult to establish a direct causal link between exposure to environmental hazards and adverse health outcomes in humans, numerous epidemiological and experimental studies have demonstrated associations between air pollution and chronic and acute respiratory problems, heart disease, and lung cancer.[5-9]

The environmental justice movement arose out of the realization that low-income and minority communities are disproportionately exposed to environmental hazards, both physical and social.[5,10] At its heart is the idea that all people, regardless of race, national origin, or income, have the right to be treated fairly when it comes to environmental exposures that may be associated with adverse health outcomes, to participate in environmental policy decisions that may affect their health, and to insist on the rectification of social injustices that already exist.[10,11] In short, before environmental justice can be achieved, social justice must be realized.[10]

Social justice has been defined as "the equitable distribution of valued goods and necessary burdens."[12(p5)] According to Levy and Sidel, social justice is closely linked to human rights; it is "based on the concepts that (a) governments are established for the benefit of members of populations, and (b) governments must provide for and protect the welfare of these populations."[12(p5)] Those communities most exposed to health hazards in the physical environment tend to be those most exposed to social injustices.[1] These include social determinants of health such as racism and discrimination, food

Author Affiliations: *School of Community and Environmental Health, Old Dominion University Norfolk, Virginia (Drs Mansyur and Jeng); The Southeast CARE Project, Newport News, Virginia (Dr Holloman); and The Greater Southeast Development Corporation, Newport News, Virginia (Mr DeBrew).*

Special thanks to Lucinda Harrington and Kimberly Sawyer for their assistance in compiling questionnaire data for this article.

The authors declare no conflict of interest.

Correspondence*: Carol Leler Mansyur, PhD, Assistant Professor, School of Community and Environmental Health, Old Dominion University, 4608 Hampton Blvd, Norfolk, VA 23529 (cmansyur@odu.edu).*

DOI: 10.1097/FCH.0000000000000110

insecurity, lack of resources and services, and high levels of crime. Social determinants and environmental health hazards interact with each other, forming a feedback loop leading to increased environmental degradation and greater health disparities.[1,13] One way to thwart this process is to empower vulnerable communities to take action to ensure a safer and healthier environment for themselves and their families. Community-based participatory research (CBPR) is increasingly being used to empower members of vulnerable communities by increasing their awareness of common problems and strengths, mobilizing them to set priorities and goals, and collaboratively developing strategies to achieve these goals.[14]

BACKGROUND

The Southeast Community

The Southeast Community of Newport News, Virginia, is an inner-city, predominantly African American community that has been exposed to large levels of pollution from nearby manufacturing and industrial facilities and environmental degradation.[15] The Southeast Community contains a coal pier and a shipyard, as well as several industrial facilities, which release hazardous air pollutants, diesel emissions, smog and particulates, and toxic chemicals within the community.[16] A major interstate, I-664, also bisects the community. These environmental hazards may potentially lead to the higher disease incidence and mortality rates that exist among the residents of Newport News.[17] For example, the age-adjusted death rate for heart disease in Newport News is 172.5 compared with 157.4 for the state of Virginia as a whole. For chronic lower respiratory disease, the age-adjusted death rate is 39.5 and 36.6 in Newport News and Virginia, respectively, and for diabetes it is 33.4 and 18.5, respectively. The total age-adjusted death rate (for all causes) in Newport News is 836.2, compared with 724.9 for the state of Virginia.[17]

Newport News also experiences disparities in several social, behavioral, and health indicators. Although Newport News is 39% African American compared with 19% African American in the state of Virginia as a whole, the median household income in Newport News is only $47 421 compared with $62 745 in Virginia.[18] Newport News scores worse than Virginia on unemployment rates (6.6% vs 5.5%), children in poverty (27% vs 16%), food insecurity (17% vs 12%), and physical inactivity (26% vs 22%).[18] It also fares worse in homicides (10 per 100 000 vs 5 per 100 000), age-adjusted premature death (79.6 per 100 000 vs 61.9 per 100 000), diabetes (13% vs 10%), and adult obesity (35% vs 28%).[18] It is likely that these are indicators of persistent social justice issues faced by this population.

Southeast CARE Coalition

The Southeast CARE Coalition was established in 2011 to increase knowledge about environmental exposures in the community, to help community members prioritize their environmental concerns, and to create a sustainable, resident-led partnership for collaboratively taking action to improve the environment and reduce the risk. Members of the Southeast CARE Coalition include nonprofit organizations, governmental agencies, community groups, businesses, and academic institutions in Newport News, Virginia, and the Hampton Roads region. Using CBPR, the Southeast CARE Coalition has been engaging in collaborative outreach and educational efforts to assess community knowledge and concerns about environmental degradation in the Southeast Community, to determine the impact of local environmental pollutants on health disparities, to assist the community in developing strategies to address environmental issues, and to improve environmental quality to reduce health risks.

METHODS

Participants

A survey was developed to collect assessment data from community residents. Inclusion criteria were age greater than or equal to 18 and residency in the Southeast Community. Participants included a convenience sample of attendees at educational symposia hosted by the Southeast CARE Coalition between January 2013 and August 2013, and a sample of Southeast Community residents randomly selected on the basis of street and address and interviewed between February 2013 and December 2014. Working with scientists from Old Dominion University to ensure data were collected appropriately and met human protection policies, trained volunteers from the Southeast Community approached potential respondents at the sponsored events and home visits to ask whether they were interested in completing the survey and to determine eligibility. If respondents were eligible and agreed to participate, informed consent was obtained and they were provided with the survey. Respondents could either fill out the survey themselves or have the interviewers read the questions and fill in their responses. The Old Dominion University Institutional Review Board approved the survey and study protocols.

Survey data

The survey included questions assessing respondents' understanding and awareness of local environmental problems and determining their action priorities, as well as questions asking about demographic characteristics and personal and family health conditions. Respondents were asked how they rated their overall health on a 5-point Likert scale, ranging from "excellent" to "poor." Respondents were asked to reply "yes" or "no" to questions asking whether they had a history of specific health conditions such as diabetes, cancer, heart conditions, and respiratory problems. They were asked to specify types of heart and respiratory problems, including chest pain, heart murmurs, irregular heartbeat, heart disease, high blood pressure, or past heart attack for heart problems, and shortness of breath, wheezing, coughing, hoarseness, sleep apnea, pneumonia, bronchitis, or asthma for respiratory problems. They were also asked whether they had children with asthma or other respiratory problems. We counted the number of "yes" responses and summed them to count the number of health conditions reported.

Environmental questions included an item asking whether respondents were aware of any environmental problems in their community. If they responded "yes," they were asked to specify which environmental hazards from a list including coal dust, exhaust from vehicle emissions, emissions from industrial plants, emissions from shipyards, and hazardous waste. In addition, the survey asked what respondents thought of the air quality, soil/dirt quality, and overall environmental quality in their community. These 3 items were measured on a 6-point Likert scale, ranging from "excellent" to "very poor." We combined them into 1 environmental quality scale by summing them so that higher numbers indicated worse environmental quality. We also collapsed each into dichotomous variables for poor air quality, poor soil quality, and poor overall quality. In addition, there were 2 open-ended questions asking, respectively, to list the top 5 environmental issues in the community and what respondents thought the city government should do to improve environmental quality.

Data analysis

We examined the percentages of participants with specific health conditions and the percentages who reported that they were aware of environmental problems in the community. We used χ^2 analyses to determine whether there was an association between specific health conditions and the environmental problems reported. We used *t* tests to determine whether those with specific health conditions were more likely to report worse air, soil, or general environmental quality. IBM SPSS Statistics 22 was used for all statistical analyses. We also compiled the most frequently reported top 5 environmental problems and suggestions for what the city could do to improve environmental quality. Responses to both open-ended questions were grouped into categories and counted to facilitate presentation and help to assess community concerns and priorities.

RESULTS

Data were collected from 302 participants. Table 1 describes the participant characteristics. Most of the respondents were from the community sample. A little over half were women, and 89% were African American. The mean age was 41.4 years and the mean years residing in the Southeast Community was 27.4. Body mass index tended to be high, with 26% obese and 53% overweight or obese. Although 45% reported a history of 1 or more health conditions, only 20% reported they were currently in fair or poor health. The most frequently reported health conditions were respiratory problems (25%) and heart problems (22%), followed by asthma (18%) and diabetes (14%).

Table 1 also includes the number and nature of environmental problems reported by respondents. Over half (66%) reported that they were aware of environmental problems in the community. When specifying which environmental problems, 56% reported coal dust, 39% vehicle emissions, 28% industrial plan emissions, 45% shipyard emissions, and 30% hazardous waste. The mean number of environmental problems reported was 2.1. Between 75% and 79% also reported poor air, soil, or general environmental quality. With higher values indicating worse environmental quality, the mean poor environmental quality score was 10.6 (out of 15).

Table 2 contains results of χ^2 analyses of the number of participants with or without specific health conditions who reported that they were aware of environmental problems in the community. Those with respiratory and heart conditions and those with asthma or who had children with respiratory conditions were significantly more likely to report that they were aware of environmental problems than those without the health condition.

Table 3 includes results of χ^2 analyses testing whether respondents with a history of respiratory and/or heart conditions were more likely to identify specific environmental problems. Results indicated that 87% of respondents with a history of respiratory conditions were aware of environmental problems, compared with 64% of respondents without a respiratory history. For those with respiratory conditions, the association was significant

TABLE 1. Respondent Characteristics and Environmental Issues Reported

Variable	N (%) or Mean (SD)
Total N	302
Men	130 (43%)
Women	170 (56%)
Group	
Symposia	86 (28%)
Community	216 (72%)
Sociodemographic characteristics	
African American	269 (89%)
Single[a]	250 (83%)
Employed	137 (45%)
Age	41.4 (16.1)
Years at current address	10.6 (11.5)
Years lived in Southeast Community	27.4 (17.6)
Health indicators	
Current smoker	100 (33%)
Obese	78 (26%)
Overweight or obese	160 (53%)
BMI	27.7 (7.1)
Fair or poor health	59 (20%)
With any health conditions	136 (45%)
Diabetes	43 (14%)
Cancer	16 (5%)
Heart	65 (22%)
Respiratory	74 (25%)
Asthma	53 (18%)
Reproductive	28 (9%)
Environmental issues	
Environmental problems reported	198 (66%)
Coal dust	168 (56%)
Vehicle emissions	117 (39%)
Industrial plant emissions	84 (28%)
Shipyard emissions	135 (45%)
Hazardous waste	90 (30%)
Environmental problems	2.1 (2.0)
Poor Environmental Quality Scale	10.6 (3.4)
Poor air quality	228 (75%)
Poor soil quality	240 (79%)
Poor environmental quality (general)	238 (79%)

Abbreviations: BMI, body mass index; SD, standard deviation.
[a]Includes single, divorced, separated, and widowed.

for every type of environmental problem specified. The results for those with a history of heart conditions were significant for all environmental problems specified except vehicle emissions and industrial emissions. Coal dust seemed to be the environmental problem most frequently identified by all participants, with 81% of those with respiratory and 78% of those with heart conditions choosing it. Shipyard emission was the next most frequently chosen, with 68% of those with respiratory and 66% of those with heart conditions reporting it to be a problem in their community.

Table 4 shows the results of *t* tests comparing perceived environmental quality for participants with and without a history of respiratory or heart problems. The higher the mean, the worse the perceived environmental quality. Participants with a respiratory history reported significantly worse environmental quality for all 3 individual scales and the combined scales. Participants with a heart history reported significantly worse environmental quality for the combined scale and for soil quality and general environmental quality, but not for air quality. Because the individual scales were ordinal, we also ran nonparametric Mann-Whitney tests, but the results were not substantially different.

The top 5 environmental issues identified through the open-ended question were categorized into the 13 categories shown in Table 5. Out of the 302 participants, 78% reported at least 1 problem and a substantial percentage (41%) reported and ranked 5 environmental problems that they perceived to be the most important issues in their community. The table categorizes and counts all issues reported, as well as those identified as the number 1 issue. Coal dust was the environmental issue most frequently reported, as well as the top issue of concern, followed by air quality, crime, water quality, and trash. The latter category, "Trash," includes concerns about too much trash and the need to clean up the streets.

Although the survey did not ask specific questions about socioeconomic issues, several respondents included them among their top 5 environmental concerns. Crime, including shooting, gangs, violence, and drugs, seemed to be a major concern; hence it was put in its own category, as was housing quality, including abandoned houses, old and substandard housing, and lead poisoning. Some of the other socioeconomic issues reported were numbers of homeless people, unemployment, poorly maintained infrastructure, lack of availability of healthful food, and lack of playgrounds and parks for children. Finally, 7.2% of the respondents reported other concerns, including the need for more trees and nature, land use, and excessive noise.

TABLE 2. χ^2 **Analyses of Percentages Reporting Environmental Problems by Health Condition**

Health Outcome	No Environmental	Yes Environmental	Total Valid Cases	Pearson χ^2 (*df*)	Significance
Any condition				15.328 (1)	$P < .001$
No	61 (39.9%)	92 (60.1%)	153 (100%)		
Yes	24 (18.5%)	106 (81.5%)	130 (100%)		
Total	85 (30.0%)	109 (70.0%)	283 (100%)		
Respiratory				13.067 (1)	$P < .001$
No	71 (35.9%)	127 (64.1%)	198 (100%)		
Yes	9 (12.9%)	61 (87.1%)	70 (100%)		
Total	80 (29.9%)	188 (70.1%)	268 (100%)		
Heart				5.888 (1)	$P = .015$
No	73 (33.8%)	143 (66.2%)	216 (100%)		
Yes	11 (17.7%)	51 (82.3%)	62 (100%)		
Total	84 (30.2%)	194 (69.8%)	278 (100%)		
Asthma				6.109 (1)	$P = .013$
No	73 (32.7%)	150 (67.3%)	223 (100%)		
Yes	8 (15.4%)	44 (84.6%)	52 (100%)		
Total	81 (29.5%)	194 (70.5%)	275 (100%)		
Children respiratory				6.685 (1)	$P = .010$
No	62 (39.5%)	95 (60.5%)	157 (100%)		
Yes	6 (16.7%)	30 (83.3%)	36 (100%)		
Total	68 (35.2%)	125 (64.8%)	193 (100%)		
Children asthma				3.482 (1)	$P = .062$
No	61 (39.1%)	95 (60.9%)	156 (100%)		
Yes	9 (23.1%)	30 (76.9%)	39 (100%)		
Total	70 (35.9%)	125 (64.1%)	195 (100%)		
Diabetes				2.182 (1)	$P = .140$
No	76 (32.2%)	160 (67.8%)	236 (100%)		
Yes	9 (20.9%)	34 (79.1%)	43 (100%)		
Total	85 (30.5%)	194 (69.5%)	279 (100%)		
Overweight				3.160 (1)	$P = .075$
No	33 (35.5%)	60 (64.5%)	93 (100%)		
Yes	37 (24.8%)	112 (75.2%)	149 (100%)		
Total	70 (28.9%)	172 (71.1%)	242 (100%)		

Several also reported that they were concerned about "everything."

Respondents' suggestions for actions to improve the environment were categorized into the groups shown in Table 6. About 71% of the respondents made at least 1 suggestion, although a few responses, categorized as "other" or "no action," were vague, unclear, or pessimistic. Nearly a quarter of respondents recommended cleaning up the environment. This mostly included actions like cleaning the streets and removing trash, but also included eliminating coal dust and monitoring the quality of air and water. The next largest group of suggestions was categorized under city planning. These included suggestions for developing stricter environmental policies and better enforcement of existing policies, hiring clean-up crews, and putting more resources into beautifying the city. Roughly 20% of the responses in this category suggested doing "everything possible" to make the city look better. Urban community included actions such as planting trees and community gardens, improving

TABLE 3. χ^2 **Analyses of Percentages and Numbers of Those With Respiratory or Heart Conditions Reporting Specific Environmental Issues**

	Respiratory Conditions (% Reporting Environmental Issue)				Heart Conditions (% Reporting Environmental Issue)			
Environmental Issue Reported	**Yes**	**No**	**Total Valid**	χ^2	**Yes**	**No**	**Total Valid**	χ^2
Any problems	(87.1%)	(64.1%)	(70.1%)	13.07[a]	(82.3%)	(66.2%)	(69.8%)	5.89[c]
Yes	61	127	188		51	143	194	
No	9	71	80		11	73	84	
Total	70	198	268		62	216	278	
Coal dust	(80.9%)	(60.1%)	(65.9%)	9.44[b]	(77.6%)	(60.6%)	(64.5%)	5.65[c]
Yes	55	107	162		45	120	165	
No	13	71	84		13	78	91	
Total	68	178	246		58	198	256	
Vehicle emissions	(63.2%)	(40.9%)	(47.1%)	9.81[b]	(53.4%)	(43.4%)	(45.7%)	1.83
Yes	43	72	115		31	85	116	
No	25	104	129		27	111	138	
Total	68	176	244		58	196	254	
Industrial emissions	(48.5%)	(28.4%)	(34.0%)	8.85[b]	(43.1%)	(29.6%)	(32.7%)	3.71
Yes	33	50	83		25	58	83	
No	35	126	161		33	138	171	
Total	68	176	244		58	196	254	
Shipyard emissions	(67.6%)	(48.6%)	(53.9%)	7.17[b]	(65.5%)	(49.2%)	(53.0%)	4.76[c]
Yes	46	85	131		38	96	134	
No	22	90	112		20	99	119	
Total	68	175	243		58	195	253	
Hazardous waste	(48.5%)	(31.8%)	(36.5%)	5.91[c]	(48.3%)	(31.1%)	(35.0%)	5.79[c]
Yes	33	56	89		28	61	89	
No	35	120	155		30	135	165	
Total	68	176	244		58	196	254	

[a]$P < .001$; [b]$P < .01$; [c]$P < .05$.

TABLE 4. ***t* Tests of Mean Perceived Environmental Quality by Respiratory or Heart Conditions**

Scale	Health History	Mean (SD)	*P* Value
Respiratory			
Air quality	Yes	3.8 (1.1)	.011
	No	3.4 (1.2)	
Soil quality	Yes	3.9 (1.1)	.006
	No	3.5 (1.2)	
Environmental quality	Yes	3.9 (1.1)	.040
	No	3.5 (1.2)	
Combined scale	Yes	14.6 (3.1)	.014
	No	13.5 (3.4)	
Heart			
Air quality	Yes	3.7 (1.1)	.120
	No	3.4 (1.2)	
Soil quality	Yes	3.9 (1.1)	.019
	No	3.5 (1.2)	
Environmental quality	Yes	3.9 (1.1)	.021
	No	3.5 (1.2)	
Combined scale	Yes	14.5 (3.1)	.030
	No	13.4 (3.5)	

housing and security for residents, creating parks and after-school programs for children and teens, and building or turning abandoned buildings into homeless shelters. Civic engagement included suggestions that the city leaders get more involved with the community, but also included suggestions for actions community members could do themselves, such as everyone pitching in to clean up the streets

TABLE 5. **Top 5 and Top 1 Environmental Issues Reported by Category[a]**

Top 5 Environmental Issues	Total Reported n (%)	Issue #1 Reported n (%)
Coal dust	110 (12.3)	51 (21.7)
Air quality	96 (10.7)	31 (13.2)
Crime	88 (9.8)	31 (13.2)
Water quality	85 (9.5)	20 (8.5)
Trash	83 (9.3)	20 (8.5)
Hazardous waste	71 (7.9)	12 (5.1)
Pollution (general)	66 (7.4)	18 (7.7)
Other	64 (7.2)	14 (6.0)
Socioeconomic	59 (6.6)	14 (6.0)
Shipyard emissions	56 (6.3)	9 (3.8)
Housing quality	52 (5.8)	9 (3.8)
Vehicle exhaust	46 (5.1)	4 (1.7)
Industrial emissions	19 (2.1)	2 (0.9)
Total issues reported	895 (100.0)	235 (100.0)

[a]Up to 77.8% of respondents reported at least 1 issue; 41.1% reported 5 issues.

TABLE 6. Total Suggestions for Improving the Community by Category[a]

Type of Action	Reported, n (%)
Environmental clean-up	66 (24.1)
City planning	59 (21.5)
Urban community	45 (16.4)
Civic engagement	39 (14.2)
Business/employment	25 (9.1)
Other	31 (11.3)
No action/disillusionment	9 (3.3)
Total	274 (100)

[a]Up to 71.4% of respondents made at least 1 suggestion.

and setting up neighborhood watch programs. Business/employment mostly included creating or providing jobs.

DISCUSSION

The majority of respondents were aware of and concerned about environmental degradation in their community. Coal dust seemed to be the major environmental concern specified. Those with a history of health problems, especially respiratory and heart conditions, were significantly more likely to identify environmental problems and to rate the environmental quality poorer than did those without a health history. Perhaps their health problems made the environmental issues in their community more salient to them. It is also possible that because the survey and symposia were focused on the physical environment they elicited a tendency to associate existing health conditions with those environmental problems listed on the survey.

Given the physical environmental focus, it is particularly noteworthy that the open-ended questions resulted in the identification of socioeconomic issues among the top environmental concerns in the Southeast Community. This finding is consistent with the literature reporting that those communities most exposed to environmental hazards are also those most vulnerable to social injustice.[1,5,10] For example, crime and trash were among the 5 most frequently reported environmental concerns that emerged from the needs assessment. Less frequently reported, but among the top 5 concerns for many respondents were housing quality and other socioeconomic issues such as unemployment, homelessness, and poorly maintained infrastructure. These results are consistent with findings from the environmental justice literature that reported associations between neighborhood quality and exposure to environmental hazards.[5]

Potential limitations of this study include using a convenience sample, the cross-sectional design, and no data measuring actual exposures to environmental hazards. As has been previously noted, however, even when exposure data are available, it is difficult to establish causality between environmental hazards and health disparities.[5-9] There are too many confounders: proximity to environmental hazards, frequency of exposure, behavioral risk factors, indoor exposures to second-hand smoke, lead paint or allergens in homes, resources available to purchase healthful, nutritious food, quality of housing, access to health care, and psychosocial issues such as stress and amount of social support. The purpose of this study was not to establish causality or test a hypothesis, but to assess the knowledge and concerns of community members, determine which issues are most relevant to them, and empower them to come up with solutions themselves.

Respondents' suggestions for what could be done to improve the community reflected their top environmental concerns, especially coal dust, air quality, and trash. Numerous statements about cleaning up the streets are illustrative of the environmental degradation experienced by the Southeast Community, but it is one issue that could serve as a rallying point for mobilization. Suggestions on how to go about it ranged from asking the local, state, or federal government to provide needed resources to suggesting that all community residents, including local government officials, should come together and take action to clean the streets. This is representative of how CBPR has raised awareness and started a dialogue. Respondents recognized the need for more community engagement and to work with the city government to reduce environmental degradation. Cleaning the streets has been identified as a priority and is something they can do something about. Attainable first steps, such as mobilizing to remove trash from the streets and working with the city government to keep them clean, would help to build community capacity, empowering the community to come up with solutions to more challenging environmental justice issues as well.

NEXT STEPS

The Southeast CARE Coalition has been engaging in CBPR in an effort to build community capacity and participation. Through environmental education symposia, the coalition has been helping community members to increase their knowledge and awareness about environmental issues in their community, providing opportunities to engage in dialogue about problem-solving strategies and to build skills empowering them to facilitate positive environmental changes collaboratively. The data

collected will help members of the community to select those issues that are most relevant to them, to set priorities, and to formulate strategies for improving their local environment. The coalition has continued working with community members to engage in ongoing efforts to improve the environmental quality. These efforts include toxic air quality monitoring, water quality monitoring, and community gardening to address a food desert issue.

REFERENCES

1. Butler CD, McMichael AJ. Environmental health. In: Levy BS, Sidel VW, eds. *Social Injustice and Public Health*. 2nd ed. New York: Oxford University Press; 2013.
2. Bullard R, Mohai P, Saha R, Wright B. Toxic wastes and race at twenty: why race still matters after all of these years. *Envtl L.* 2008;38(2):371-411.
3. Environmental Equity Workgroup. *Environmental Equity: Reducing Risk for All Communities*. Washington, DC: US Environmental Protection Agency; 1992.
4. Mohai P, Lanz P, Morenoff J, House J, Mero R. Racial and socioeconomic disparities in residential proximity to polluting industrial facilities: evidence from the Americans' changing lives study. *Am J Public Health.* 2009;99(S3):S659-S656.
5. Evans GW, Kantrowitz E. Socioeconomic status and health: the potential role of environmental risk exposure. *Ann Rev Public Health.* 2002;23:303-331.
6. Bernstein JA. Health effects of air pollution. *J Allergy Clin Immunol.* 2004;114(5):1116-1123.
7. Brabin B, Smith M, Milligan P, Benjamin C, Dunne E, Pearson M. Respiratory morbidity in Merseyside schoolchildren exposed to coal dust and air pollution. *Arch Dis Child.* 1994;70:305-312.
8. Brunekreef B, Holgate ST. Air pollution and health. *Lancet.* 2002;360:1233-1242.
9. Kampa M, Castanas E. Human health effects of air pollution. *Environ Pollut.* 2008;151:362-367.
10. Krieg EJ, Faber DR. Not so black and white: environmental justice and cumulative impact assessments. *Environ Impact Assess Rev.* 2004;24:667-694.
11. HHS. Environmental Justice. http://www.hhs.gov/environmentaljustice/. Published 2012. Accessed May 5, 2015.
12. Levy BS, Sidel VW. The nature of social justice and its impact on public health. In: Levy BS, Sidel VW, eds. *Social Injustice and Public Health*. New York: Oxford University Press; 2013.
13. Glass TA, McAtee MJ. Behavioral science at the crossroads of public health: extending horizons, envisioning the future. *Soc Sci Med.* 2006;62:1650-1671.
14. Minkler M, Wallerstein N, Wilson N. Improving health through community organization and community building. In: Glanz K, Rimer BK, Viswanath K, eds. *Health Behavior and Health Education: Theory, Research, and Practice*. 4th ed. San Francisco, CA: Jossey-Bass; 2008.
15. United States Environmental Protection Agency. Community Profiles. http://www.epa.gov/care/community.htm. Published 2011. Accessed May 18, 2015.
16. Agency USEP. TRI Explorer: Release Facility Report. http://iaspub.epa.gov/triexplorer/tri_release.chemical. Published 2013. Accessed May 18, 2015.
17. Virginia Department of Health. Health Profile, Newport News City. http://www.vdh.state.va.us/HealthStats/NewportNews12.htm. Published 2012. Accessed May 15, 2015.
18. Robert Wood Johnson Foundation. County Health Rankings & Roadmaps. http://www.countyhealthrankings.org. Published 2015. Accessed May 15, 2015.