ENVIRONMENTAL HEALTH EDUCATION NEEDS ASSESSMENT

Pittard Road Cancer Cluster Investigation
Athens, Clarke County, Georgia

Private well and surrounding area at Pittard Road residence

Georgia Department of Human Resources
Division of Public Health
Under cooperative agreement with
The Agency for Toxic Substance and Disease Registry

GLOSSARY OF ACRONYMS

ATSDR Agency for Toxic Substances and Disease Registry

CHASE Community Health Assessment Surveillance and Epidemiology

GDPH Georgia Division of Public Health

GEPD Georgia Environmental Protection Division

NEHD Northeast Health District

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INTRODUCTION AND PURPOSE

An environmental health education needs assessment is designed to assist health departments in working collaboratively with communities to identify environmental health education needs and to develop education programs to meet those needs. This needs assessment report compiles information collected from community members concerned about potential hazardous substances in their environment, and makes a determination about the education activities that would best serve this community.

This environmental health education needs assessment includes:

- site description and history
- demographic information
- area maps
- community health concerns
- self-reported symptoms and diseases
- community members' knowledge, attitudes, and perceptions
- gaps in health information
- communication barriers or challenges
- best methods of exchanging information with a community
- needs assessment results
- recommendations
- action plan

The purpose of this environmental health education needs assessment is to assist the Georgia Division of Public Health (GDPH) and residents living on and near Pittard Road to identify public health concerns and then develop an action plan to address those concerns. The information contained in this report only reflects the concerns of the community and not health agencies.

Methodology

This report is structured into several sections. The first section discusses the public health and environmental investigation activities conducted for the Pittard Road community. The next section presents the GDPH cancer cluster investigation results. Next, the needs assessment methods and results are reported. Finally, conclusions, recommendations, and an action plan are provided to address the continuing health education needs of the community.

SITE DESCRIPTION AND HISTORY

Pittard Road is a neighborhood in Athens, Georgia, located between Highway 72 (Hull Road) and Voyles Road on approximately 16 acres near the northeast border of Clarke County (Figure 1). Pittard Road is a small residential community bordered by dense woodland. Approximately in the middle of the length of Pittard Road are two sets of railroad tracks: the eastern end of Pittard Road has single family homes possessing individual water wells, and the western end has single family homes connected to a municipal water source. There are no surface water bodies that would provide an exposure route within one mile.

Within one-half mile of Pittard Road is a church and a few small commercial businesses. There are also two mid-sized industrial facilities—neither facility is currently or has in the past been under investigation by state or federal regulatory authorities. Records review of the facilities' operations and regulatory histories indicate that they do not pose a health hazard to

residents of Pittard Road. There is no evidence or reports that spills or contamination from these industries has impacted land, air, or groundwater on Pittard Road. There is no history of any other industry in the area. There is no known hazardous waste generating site or landfill within a mile radius of this neighborhood. The railroad tracks may have been a source for chemical spills, but there are no reports of such events.

In 2003, a concerned citizen contacted the Northeast Health District (NEHD) in Athens about a suspected cancer cluster on Pittard Road. Initial information gathered by NEHD revealed that several residents living on Pittard Road reported that they had been diagnosed with cancer, and some residents believed that the cancer cases may be the result of exposure to environmental contamination [1]. Residents with wells are the only population that has expressed concern; therefore, the cancer cluster investigation and this community needs assessment are limited to those residents with private wells living east of the railroad tracks. There were approximately 22 private properties included in the initial investigation, but follow-up documentation notes up to 35 homes, not all are occupied [1].

In response, the NEHD, Community Health Assessment, Surveillance and Epidemiology (CHASE) Unit, conducted an investigation into occurrences of cancer in the Pittard Road community. The Georgia Division of Public Health (GDPH), Comprehensive Cancer Registry, was asked by CHASE to determine whether cancer rates, particularly breast cancer, were elevated. More information about the Georgia Comprehensive Cancer Registry can be found in Appendix A, and at http://health.state.ga.us/programs/gccr/index.asp.

GDPH coordinated a groundwater quality investigation, including individual water well sampling. CHASE coordinated radon sampling for the homes on Pittard Road.

In addition, GDPH conducted this environmental health education needs assessment to assist with community health education, and evaluate public health activities.

ENVIRONMENTAL SAMPLE DATA

In April 2003, CHASE and GDPH staff assisted the Georgia Environmental Protection Division (GEPD) as they conducted individual water well sampling at six homes on Pittard Road (Appendix B—site photographs). Homes with wells that were sampled were selected from a list of residents who requested that their wells be tested. Concurrently, the Clarke County Health Department sampled three additional wells for bacteria. Samples were analyzed for approximately 130 parameters including chemicals and bacteria. No contaminants were detected in groundwater above levels of health concern or exceeding environmental regulatory levels.

In July 2003, CHASE provided 17 homeowners with indoor air radon test kits. Eventually 30 homes were tested for radon. Radon is a leading cause of lung cancer. In addition, CHASE sampled nine wells for radon.
No results indicate elevated radon levels in homes or in groundwater on Pittard Road (Appendix C).

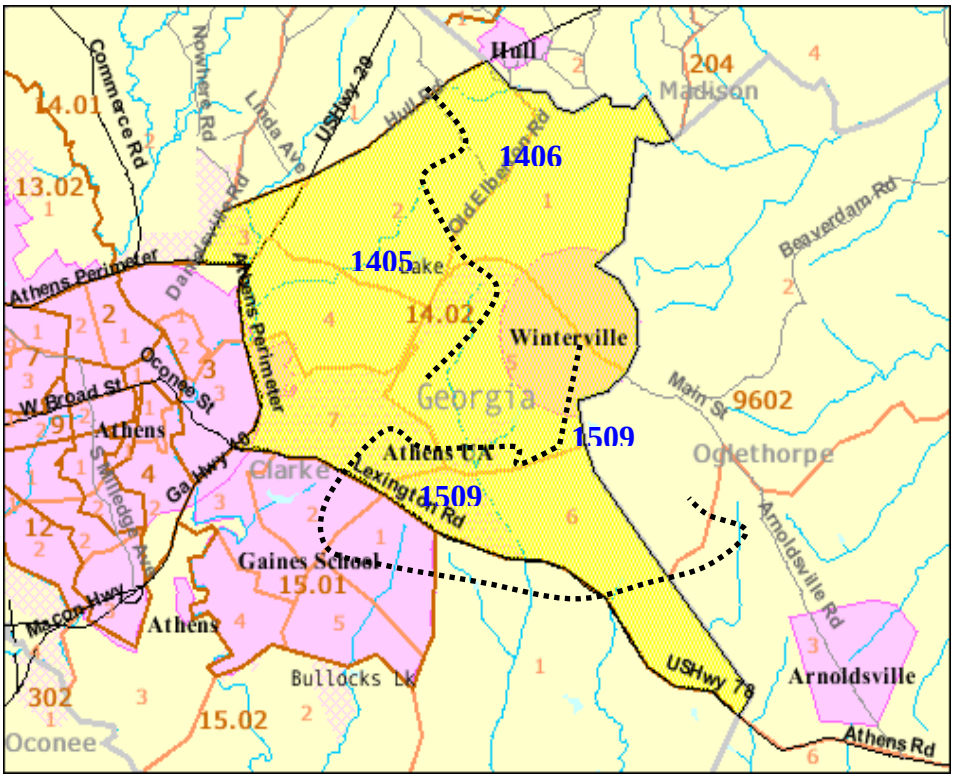
CANCER CLUSTER INVESTIGATION

Beginning in March 2003, CHASE and the Georgia Comprehensive Cancer Registry (GCCR) initiated a cancer cluster investigation in response to citizens' reports of cancer cases. CHASE interviewed 64 residents, former residents and relatives. To collect and document

cancer case reports, various community involvement methods were used: community meetings (held by CHASE staff), coverage of the cancer cluster investigation by local media and door-to-door interviews with residents (conducted by CHASE staff).

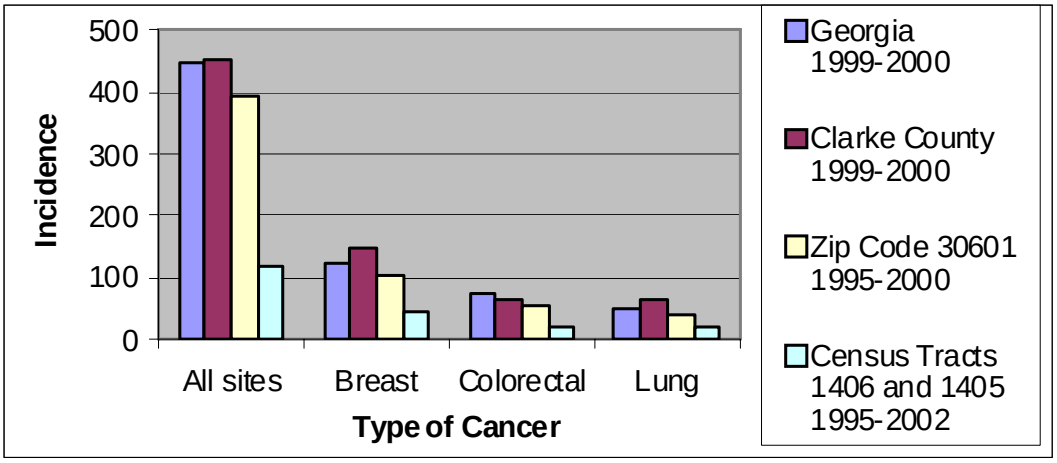
Documentation was also provided by available vital records dating back to 1980. Because diagnosis included cases from 1995 to 2002, two separate U.S. Census tracts (1990 and 2000) were used. This presented a problem as changes to the Census tracts (population address files) were made during this period. Calculations for rates were revised by GDPH in order to include all of these cases. The map below gives an illustration of the changes (dotted lines) to the 1990 Census tract (1402) that the 2000 Census tracts (1405, 1406) reflect. Please note that the proportions and shape are not to scale [2].

CHANGES IN CENSUS TRACTS



In the initial interviews, CHASE found at least 22 reported cases of cancer during the last 34 years and 25 cases of cancer among relatives at other locations [1]. CHASE submitted a list of nine confirmed cancer cases to the GCCR. The most frequent cancer reported was breast cancer in females (Chart 1). A breast cancer diagnosis was confirmed in six current residents by the GCCR database [2]. The cases of breast cancer occur within two families. Two other families reported numerous relatives with cancer, and there were reports of cancer cases in family members who never lived on Pittard Road who had breast cancer, and other types of cancer as well.

Chart 1. AGE ADJUSTED CANCER INCIDENCE RATE BY SITE (per 100,000 population)



Other cancer cases reported from community interviews were: skin cancer, prostate cancer, lung cancer, brain cancer, lymphoma, colon cancer, stomach tumors (non-cancerous), bladder cancer, esophageal cancer, cervical cancer, and unspecified cancer.

After careful consideration of the information collected, it was determined by the GCCR that no cancer cluster exists in the area [2]. The overall cancer rate for Pittard Road over the last 34 years is lower than the expected cumulative rate in Athens/Clarke County. Although there is an elevated number of breast cancer cases in the area; several cases occur among relatives, and the number of cases do not meet the criteria for determining that elevated rates or a cancer cluster exists.

In addition, analyses of cancer rates for Clarke County, as well as for nearby Madison and Oglethorpe Counties, found that there is no indication of elevated rates of cancer in these counties.

- Cancer rates provided by the GCCR indicate that there are no elevated rates of cancer in the area of Pittard Road.
- Breast cancer has a genetic component.
- The rates of cancer incidence for Pittard Road and Clarke County are not statistically significant when compared to other county, state, and national rates.

No further cancer cluster investigation activities are planned. If additional data become available, the information will be reviewed by GDPH and appropriate actions will be taken.

HEALTH CONSULTATION ACTIVITIES

GDPH has characterized this site as **No Apparent Public Health Hazard** because: exposures have not occurred; data are available for all environmental media of concern, and there are no community-specific health outcome data to indicate that the environment has had an adverse impact on human health. If additional data become available, the information will be reviewed by GDPH. GDPH will also respond to any health concerns posed about the site. Furthermore:

1. Based on data available from emission and inspection reports, no industrial facilities are suspected of releasing hazardous substances into the environment that could cause or

contribute to adverse health effects;
2. No suspected exposure to contaminated drinking water has occurred or is occurring;
3. There is no evidence that homes have elevated levels of radon; and
4. Available health outcome data indicate that there is no cancer cluster in the area.

ENVIRONMENTAL HEALTH EDUCATION NEEDS ASSESSMENT

Site Visits and Community Meetings

GDPH and district health department staff visited the Pittard Road community numerous times in 2003, 2004, and 2005 (see photographs of the site and surrounding area (Appendix B). In October 2005, GDPH sent a letter and surveys to Pittard area residents informing them of the plan to conduct an environmental health education needs assessment, and to provide contact information for residents who still have health concerns. On October 13th, staff from GDPH returned to Pittard Road to distribute surveys and gather resident concerns via door-to-door canvassing. The Pittard community is comprised of mostly single family dwellings with no known community group affiliations.

Community Survey

Development

To gather community concerns, GDPH developed, distributed, and analyzed the results of an environmental health education needs assessment survey (Appendix D). Participation in this survey was entirely voluntary and offered at no cost to residents. The survey requested basic demographic information including age, gender, race and ethnicity, and education level, length of residence in the area, tobacco use, and employment history. Respondents were asked if they had received information from any Georgia agency about cancer, if they had ever been tested for cancer, and if they were aware of free breast cancer screening services in their area. In addition, residents were asked to provide descriptions of any specific health concerns they had at the time. Well maintenance and disinfection activities were requested. Furthermore, respondents were asked about their preferred methods for sharing information.

Distribution and Collection

Ninety-five surveys were distributed between October and November 2005. Surveys were distributed by mail to residents living on Pittard Road and to members of a church located near Pittard Road. All residences were visited by GDPH staff to help ensue that the entire neighborhood was included. To determine which method of delivery would yield the most respondents, the surveys were color-coded: white surveys were sent directly to homes via mail, blue surveys were sent to the church via mail, and yellow surveys were delivered via door-to-door canvassing.

Surveys were collected during interviews and by return mail and fax to GDPH, as instructed on the survey. In addition to the survey, community concerns were gathered through telephone conversations with residents, local officials and government agency staff, local media coverage, and at community meetings.

Data Management and Entry

GDPH staff managed, entered, and analyzed all data from completed surveys. Upon receipt at GDPH, surveys were immediately coded and then separated from the cover page, which contained personal identifiers (e.g. name, address, and phone number). Cover pages were stored in a locked cabinet and personal information was not shared with any other agency or individuals. Survey data were entered into an Access 2000 database designed by GDPH staff. Some answers required interpretation. Questions with answers left blank were marked as "refused to answer/don't know" if the logical precedent yes/no question was not a "no" response. Survey data were entered by GDPH staff and cross checked for accuracy by random verification by comparing database entries with the actual surveys.

Data Analyses

Epi Info (version 3.2) database software was used for data analyses. Survey questions were analyzed and compared using analytic techniques appropriate for community survey design. Univariate analyses generated descriptive statistics to characterize data from the survey. Missing data were not included in the analyses and therefore not reported in the results.

Results

Over the two-week collection period, GDPH collected 32 surveys for a 34% return rate. Two respondents were later omitted from the study because their current residences were not near Pittard Road. Survey results were plotted on maps using Geographical Information Systems (Figure 2). Relationships between answers to questions and groupings within the community became more apparent when mapped. These maps give a visual representation of the survey findings.

Survey Response

In delivering surveys to residents, three methods were employed: delivery by mail directly to homes, delivery by mail to a church located near Pittard Road, and door-to-door canvassing. Surveys were color-coded in order to determine the delivery method that would yield the most respondents. The results appear to suggest that canvassing was the delivery method that resulted in the most respondents. However, the number of surveys delivered differed for each method. Thus, in considering the response rate for each method, the results reveal that delivery to the church was actually the method with the highest response rate (Table 1). This is consistent with the respondents' reporting that church was the preferred method of sharing information (Table 3).

Table 1. RESPONSE RATE BY DELIVERY METHOD

Survey Delivery Method	Number of Surveys Delivered	Number of Surveys Returned	Response Rate
Mail to Homes	25	9	36%
Mail to Church	20	9	45%
Door-to-Door	50	12	24%

Demographics

Note: basic demographic information was collected for statistical purposes only to compare survey respondents with the total population of the Pittard Road community.

Demographic characteristics of survey respondents were also compared to the U.S. Census Bureau's 2000 city (Athens), state (Georgia), and national population data.

Race/Ethnicity

Race/Ethnicity data for a one-mile radius of Pittard Road show a total population of approximately 626 (Figure 1). The Pittard Road community (Figure2) is mostly African-American/Black (83%) with 17% (5 individuals) either refusing to respond or choosing more than one race/ethnicity (Table 2). There are no known people with White, Hispanic, Asian or other predominant ethnicity.

Table 2. TOTAL POPULATION AND RACE/ETHNICITY

Total Population	Survey	Athens	Georgia	National
	30	100, 266	8,186,453	281,421,906
Race/Ethnicity	***Percent***			
White	*0*	*65*	*65*	*75*
African American/Black	*83*	*27*	*29*	*12*
Total other (or refused to answer/ don't know)	*17*	*8*	*7*	*13*

Age

The survey contained instructions for surveys to be completed by adults only. No surveys were completed for minors and the youngest survey respondent was 31 years of age. Survey respondents ranged in age from 31 to 92, with a mean age of 55 years.

Gender

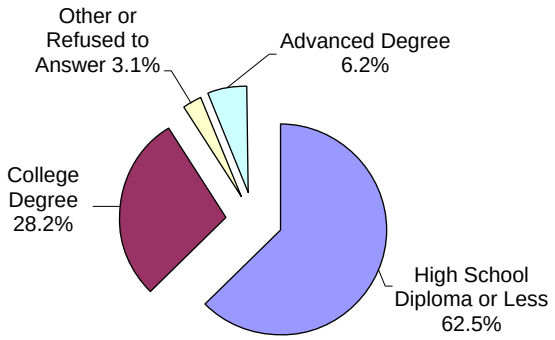
The genders of respondents were 37% male and 63% female. Figure 1 also contains additional data regarding age, gender and sensitive populations (elderly, etc).

Education level

Over half (63%) of survey respondents have a high school education or less, 20% have a degree (Associates or Bachelors) or technical/military training, while 3% have an advanced degree. This question was not answered by 7% of survey respondents.

A map in Figure 2 depicts how education level greater than high school corresponds to having an increased likelihood of having performed well maintenance, including well disinfections.

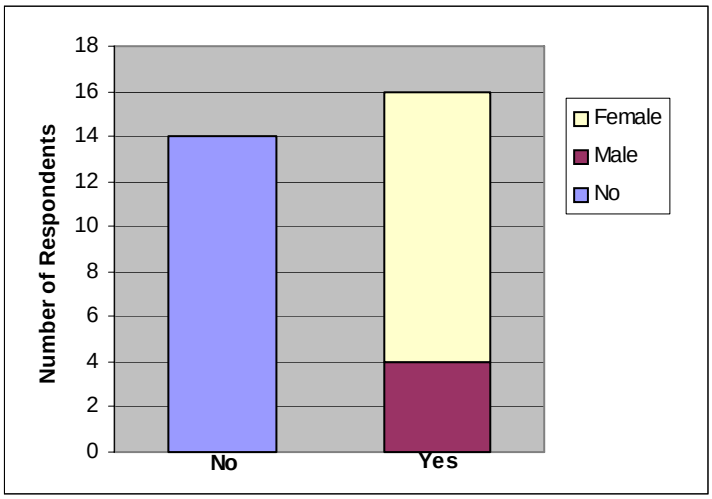
Chart 2. EDUCATION (HIGHEST LEVEL)



Cancer Testing

More than half of respondents (53%) reported they had ever been tested for cancer (Chart 2), and no respondent refused to answer this question even though refusal to answer was an option. A map in Figure 2 shows that most long term residents (10 + years) have been tested for cancer. Although performance of well maintenance and/or disinfection was directly related to education level, testing for cancer and awareness of free breast cancer screening were not. Further analysis of cancer testing history revealed that more women than men had ever been tested for cancer (Chart 2) and that among the women that were tested, their ages ranged from 40 to 67 years, with a mean age of 54.4 years.

Chart 3. CANCER TESTING



Preferred Methods to Receive Information

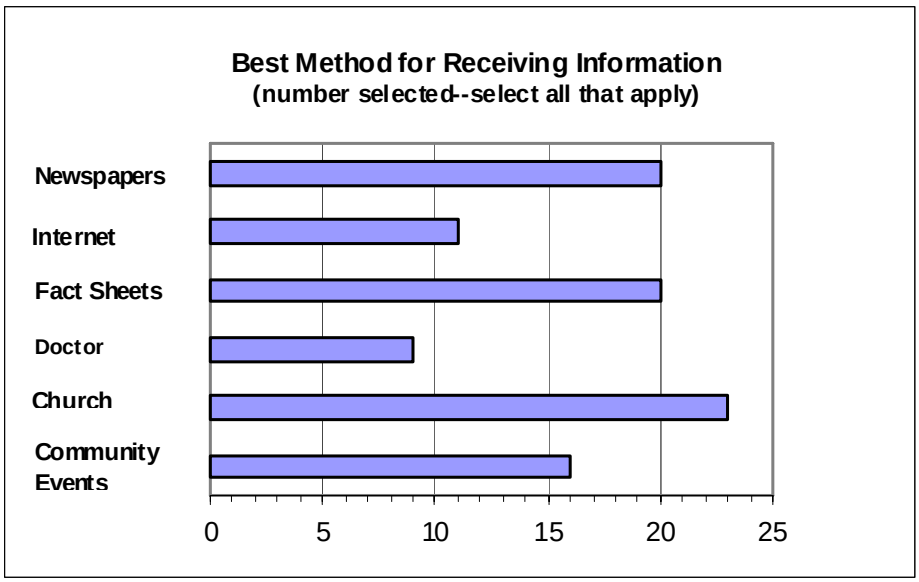
Over three-fourths of the respondents reported they had not received information from a Georgia agency about cancer and cancer screening. There were more residents with greater than a high school education that reported receiving information from a Georgia agency about cancer than those with less education. More than half of the respondents (57%) were not aware of the availability of free breast cancer screening services in their area (Table 4).

Table 4. Knowledge about Cancer and Cancer Screening

	Received Cancer Info from GA Agency?	Aware of Free Breast Cancer Screening?
Yes	17%	40%
No	76%	57%
Refused to answer / don't know	7%	3%

When asked about their preferred method to receive information, the majority of respondents (73%) responded that church was the best way (Chart 5). Others (67%) reported that fact sheets delivered to the home and newspaper ads were the best way. Of all respondents, almost one-quarter (23%) responded with a single answer, and the remaining three-fourths selected multiple answers. Many felt that a variety of methods would best cover the community at large. When offered to provide other ways to receive information, flyers and delivery of information to schools and colleges were suggested.

Chart 5. PREFERED METHODS TO RECEIVE INFORMATION



Length of Residency

- There was a direct relationship between length of residency and awareness of free breast cancer screening in that respondents living in the community greater than 10 years were more (Figure 2) likely to report that they were aware of free breast cancer screening.
- Similarly, there were more residents living in the community greater than 10 years that reported receiving cancer information from a Georgia agency.
- Although receipt of cancer information and awareness of free breast cancer screening did not predict cancer testing, length of residency did. There was an observable difference in cancer testing for residents living more than or less than 10 years in the community. That is, more respondents reporting having lived in the community greater

than 10 years reported having been tested for cancer.
- Performance of well maintenance and/or disinfecting the well was also associated with length of residency. Specifically, all respondents that performed well maintenance and/or disinfection lived in the community greater than 10 years (Figure 2).
- There was an association between survey respondents with higher education and years lived in the community. That is, respondents with greater than a high school education reported living in the community longer (Figure 2).

Health Issues

Most of the survey respondents (56%) did not have any present health concerns, but five respondents (17%), were concerned about cancer. Diabetes, upper respiratory problems and air quality were among the other concerns reported by a minority of residents.

Occupation/Smoking

Occupations were analyzed compared to symptoms experienced and health complaints. Most of the survey respondents who work (91%) reported professional or office occupations in businesses where they are not exposed to chemical emissions as a regular part of duty. Approximately 23% of respondents state they smoke tobacco. There is no indication that there is a correlation between reports of respiratory problems and exposure to respiratory irritants or odors occupationally or from tobacco smoke.

DISCUSSION

1. After careful consideration of the information collected, it was determined that no cancer cluster exists in the area.
2. Although there is an elevated number of breast cancer cases in the area; several cases occur among relatives, and the number of cases do not meet the criteria for determining that an elevated rates exists.
3. To gather community concerns, GDPH developed, distributed, and analyzed the results of an environmental health education needs assessment survey.
4. The survey had a 32% return rate.
5. Survey respondents were primarily Black/African American and at least high school educated.
6. The most common health concerns were cancer, diabetes, upper respiratory problems, and air quality.
7. 53% of the survey population has been tested for cancer.
8. 43% of survey population has performed well maintenance and/or disinfection.
9. Most respondents prefer to receive information through church.

Strengths

Respondents totaled 30; approximately one-third of the population of the Pittard Road community. Written surveys typically have a low response rate of up to about 15%. Thus, the participation rate would be considered successful according to community survey methodology. The majority of respondents answered every question. The survey had many open-ended questions that allowed for more of a descriptive characterization, particularly of present health concerns.

Results of the survey data provide helpful insight for future needs assessments. Specifically,

the results indicate that delivery of surveys to an easily accessible location, such as a church, helps produce a good response rate.

Limitations

Although findings described in this report are the result of a systematic, proven process, limitations do exist.

Several methods were used to distribute the surveys to the entire affected community, yet we did not achieve our objective of a 70% return rate. Although some delivery methods yielded surveys with a high return rate, efforts to provide the opportunity for participation to all community members proved less successful. It is worthy to note that the health concerns expressed by those who completed the surveys may not represent the concerns of the entire community. This is especially evident in the findings that only five community members expressed concerns about cancer, although prior to this needs assessment more residents expressed concern about a cancer cluster at a public meeting.

The survey's length and verbiage may have affected the level of participation. A long survey may not have as high of a response rate as a short one. Verbiage may have confused or misled respondents. For example, when asked about well maintenance and disinfection, respondents may not have had a clear understanding of these terms. When the "Refused to answer/Don't know" answer was given, usually the answer circled was "Don't know". This survey did not distinguish between "Refused to answer" and "Don't know", which may be a limitation. In addition, when asked whether they had ever received information from a Georgia agency about cancer, most respondents reported that they had not. Perhaps if specific agencies and/or specific materials were listed, it may have resulted in an affirmative response. Most residents had been provided information about cancer from the local health department, previous to completing the survey.

CONCLUSIONS

1. The community requests education about cancer and cancer screening, especially among men

2. This community will benefit from information about well maintenance and disinfection.

RECOMMENDATIONS

The information gathered from this community survey indicates that future education efforts should include:

- a brief summary of the findings from this needs assessment
- providing education materials about cancer and cancer screening
- an opportunity for the community to have their well examined using down-well camera technology

A public health assessment should be conducted to gather all site investigation information and publish the findings in a report for the community.

GDPH will review additional data if it becomes available, and provide additional community education and/or site investigation, if appropriate.

Public Health Action Plan

Goals: short term:

- To increase community members' knowledge about the health effects of life style behaviors that lead to cancer.
- To promote cancer screening.
- To promote proper well maintenance and disinfection activities.

Goal: long term:
To provide a resource to address residents' environmental health education needs.

ACTIVITIES:

Short-term Goals/Activities:

1. Distribute education materials about cancer prevention.
2. Distribute education materials about cancer screening.
3. Provide free well inspections using down-well camera technology and provide education materials about proper well maintenance and disinfection.

Long-term Goal/Activity: Conduct follow up interviews in February 2006 to determine if residents who participated in the survey conducted well maintenance and/or received cancer screening.

REFERENCES

1. Northeast Health District, *Investigation into Occurrence of Cancer in the Pittard Road Community* (draft), 8/04.

2. Georgia Department of Human Resources, Division of Public Health, Comprehensive Cancer Registry, *Final Report on Pittard Road, Clarke County Inquiry,* 5/03.

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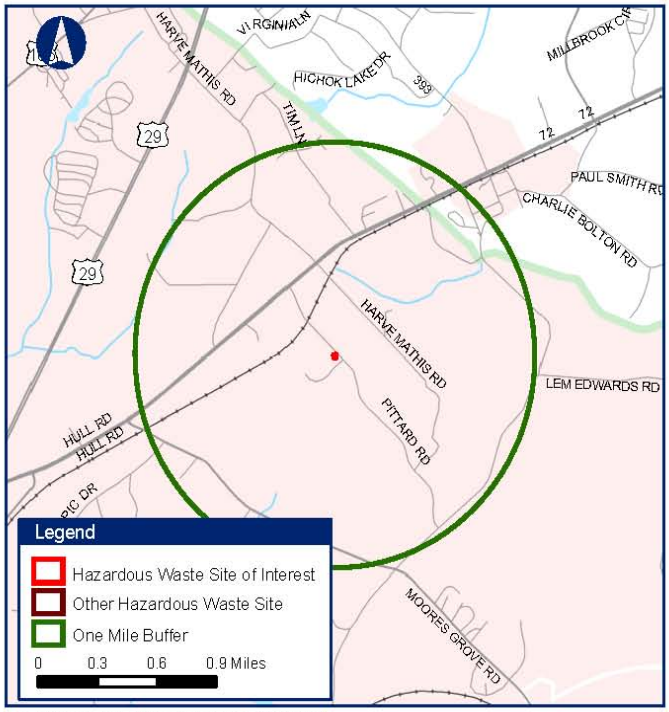
FIGURE 1. SITE LOCATION AND DEMOGRAPHICS

Pittard Road
Athens, GA
EPA Facility ID: UNAVAILABLE

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

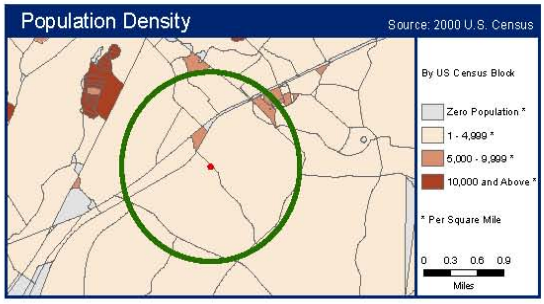


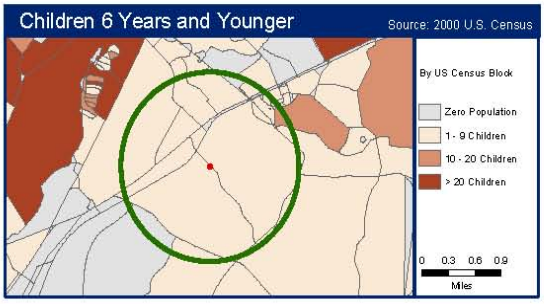
Base Map Source: Geographic Data Technology, May 2005.
Site Boundary Data Source: ATSDR Public Health GIS Program, May 2005.
Coordinate System (All Panels): NAD 1983 StatePlane Georgia West FIPS 1002 Feet

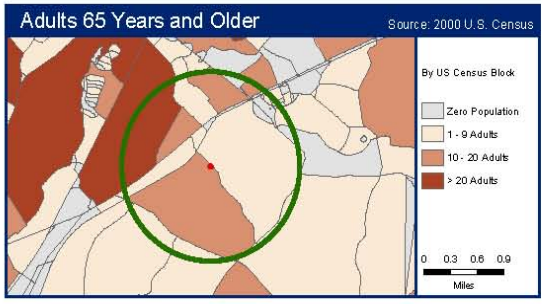
Demographic Statistics
Within One Mile of Site*

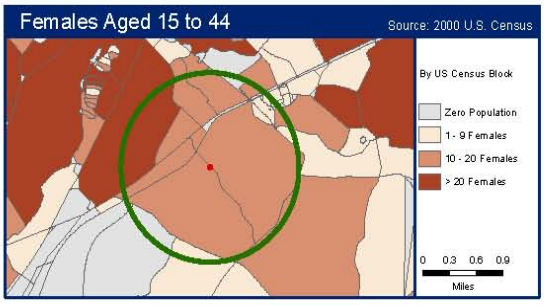
Total Population	626
White Alone	405
Black Alone	150
Am. Indian & Alaska Native Alone	1
Asian Alone	3
Native Hawaiian & Other Pacific Islander Alone	0
Some Other Race Alone	49
Two or More Races	18
Hispanic or Latino**	80
Children Aged 6 and Younger	50
Adults Aged 65 and Older	90
Females Aged 15 to 44	133
Total Housing Units	267

Demographics Statistics Source: 2000 U.S. Census
* Calculated using an area-proportion spatial analysis technique
** People who identify their origin as Hispanic or Latino may be of any race.









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ATSDR AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY | UNITED STATES DEPARTMENT OF HEALTH AND HUMAN SERVICES

APPENDIX A. GEORGIA COMPREHENSIVE CANCER REGISTRY

The Georgia Comprehensive Cancer Registry (GCCR) is a statewide population-based cancer registry collecting all cancer cases diagnosed among Georgia residents since January 1, 1995. This information furthers our understanding of cancer and is used to develop strategies and policies for prevention, control, and treatment. The availability of this data at the state level allows health researchers to analyze geographic, racial, and other differences that provide clues that point to risk factors. This data also helps in determining where early detection, educational, or other programs should be directed.

The Department of Human Resources, Division of Public Health has designated the Georgia Center for Cancer Statistics at the Rollins School of Public Health at Emory University as its agent for the purpose of collecting and editing cancer data. GCCR is a participant in the National Program for Cancer Registries that was established by the Centers for Disease Control and Prevention (CDC) in 1992 through the Federal Cancer Registry Amendment Act (Public Law 102-515). NPCR provides funding and guidance for the development of cancer registries throughout the United States. GCCR is also a member of the North American Association of Central Cancer Registries (NAACCR), which is a professional society that was established in 1987. NAACCR provides ongoing development of cancer registries and the establishment of registry standards.

Goals:

- To collect information on all newly diagnosed cancer cases.
- To calculate cancer incidence rates for the state of Georgia.
- To make data available to the public and health care professionals.
- To identify and evaluate cancer morbidity and mortality trends and problems on an ongoing basis.
- To provide cancer incidence and mortality data to cancer control programs to assist them in developing strategies and evaluating their effectiveness.
- To stimulate cancer control research.

Cancer data reports, cancer incidence data, and cancer mortality data for Georgia counties and health districts are available from the GCCR at:

http://health.state.ga.us/programs/gccr/index.asp

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DHR
GEORGIA
DEPARTMENT OF
HUMAN RESOURCES

APPENDIX B. SITE PHOTOGRAPHS

Public Health staff member distributes needs assessment surveys.

Water samples taken from a private well.

Old dug water well with rusty can of leftover paint stored on top.

APPENDIX C. RADON

Radon levels in Pittard Road Community Homes and Groundwater

In July 2003, the Northeast Health District (NEHD) coordinated radon sampling for indoor air in 30 homes on Pittard Road. NEHD also sampled groundwater from nine residential wells for radon. No air or groundwater samples had radon concentrations exceeding ATSDR Health Guidelines or EPA Safe Drinking Water Standards (Table 1)[1].

TABLE 1. RADON SAMPLING RESULTS [1]

Medium	Number of Tests	Average (pCi/l)	Range (pCi/l)	Risk Level (pCi/l)
Air	30	.5	.3 to 1.8	4 (EPA)
Water	9	535	263 to 1147	40,000 (ATSDR)

pCi/l: picoCuries per liter

Radon levels in U.S. homes

Radon is a naturally occurring radioactive gas that is odorless and tasteless. It is formed from the radioactive decay of uranium. Uranium is found in small amounts in most rocks and soil. It slowly breaks down to other products such as radium, which breaks down to radon.

When relaxing at home, we breathe in radon. It is soluble in blood and circulates through the body and all organs. Some tends to accumulate in fatty issues. Then, almost all is harmlessly exhaled by lungs or skin. But radon decay products, radioactive solid particles, much smaller than household dust, float in the air and get trapped in our lungs, trachea, and bronchi. Exposure to high levels of radon may result in an increased incidence of lung diseases, such as emphysema, pulmonary fibrosis, and lung cancer.

Outdoor radon levels in the U.S. range from 0.02 to 0.75 pCi/L (picoCuries per liter), averaging 0.4 pCi/L. But homes draw concentrated radon gas from the ground. Because radon is nine times heavier than air, elevated radon levels build up in basements and on lower floors. Although the U.S. Congress has set the natural radon concentration outdoors as the target level for homes, approximately two thirds of homes exceed it. A half of American homes have a radon level above 0.67 pCi/L (the median level). The average (mean) radon level in US homes is 1.25 pCi/L, or three times higher than the average level outdoors.

Nearly 8 million US homes, or one out of every 15, have radon levels above the EPA's 4 pCi/L "action" limit and nearly one out of six homes exceed the EPA's 2 pCi/L "consider action" limit. It is difficult for people to accept that their home, a place that one looks to for security, is hiding invisible danger. Yet, the average person receives a higher radiation dose from radon at home than from all other natural or man-made sources combined**.**

How about all the other radiation around us?

Background radiation levels are a combination of terrestrial (radium, thorium, radon, etc.) and cosmic radiation (photons, nutrons, etc.) Natural radioactivity is common in the rocks and soil that make up our planet – over 60 radionuclides (radioactive elements) can be found

in nature. Sunshine is a radiation. The visible light is in the middle of its range of wavelengths. The long-wave radiation is infrared and it warms the skin. The shortest wavelength is ultraviolet radiation which causes skin cancer.

Beyond the ultraviolet radiation is a higher-frequency radiation emitted from nuclei of unstable radioactive atoms - ionizing radiation**.** It has enough power to knock out electrons from atoms and convert them to electrically charged ions, which can damage the large molecules of living cells. Ionizing radiation damages DNA and just one mutant cell can cause cancer. Radon decay chain offers a full menu of ionizing radiation: alpha and beta particles, and gamma rays. (Nuclear explosions emit one more radiation - neutrons.) Cosmic radiation consists of a variety of very energetic particles, including protons, nutrons, and neutrinos, which bombard the earth from outer space. Radioactivity is all around us and also within us.

However, two thirds of the total effective radiation dose to the average American from all natural sources comes from radon. Radon in homes is more concentrated and far more dangerous than outdoors - the National Academy of Sciences estimates that the outdoor radon causes only 800 out of the total of 21,000 lung cancer deaths caused by radon in the US each year.

Official limits on radon levels

Although radon in homes has been declared a national health problem, there are no federal or state standards. The Environment Protection Agency was given the task of developing practical guidelines. Considering the high cost of mitigation methods available to homeowners in 1980s, EPA did not want to force homeowners to install costly radon mitigation systems, leaving the decision up to each homeowner. But at the same time, EPA has made it clear that the 4 pCi/L action limit is not a "safe" level and warned the public:

Any radon exposure has some risk of causing lung cancer. The lower the radon level in your home, the lower your family's risk of lung cancer.

How safe is the 4 pCi/L radon "action limit"?

People spend most of their time at home - on average 70%, but more in case of women and particularly, children. Although the 4 pCi/L level has become a benchmark for real estate transactions, it still carries risks. The most substantial epidemiological study ever on the link between residential radon and lung cancer was published the University of Iowa in 2000. This 5-year study proves that radon even at the low levels found in homes causes lung cancer and that the risk is proportional to the radon level. The study shows that the exposure of adult women to radon over 15 years at the EPA "action" level of 4 pCi/L increases the lung cancer risk by 50 percent**.**

Sources: ATSDR, ToxFaqs™ For Radon.

APPENDIX D. COMMUNITY SURVEY

For Office Use Only
Survey ID: _____

ENVIRONMENTAL HEALTH EDUCATION NEEDS ASSESSMENT SURVEY
Pittard Road Cancer Cluster Investigation
Athens, Clarke County, Georgia

Name: _____

Address: _____

The Georgia Division of Public Health (GDPH) is working with residents living in the Pittard Road Community to identify their environmental health education needs. This survey is designed to aid the GDPH with identifying these needs, and to develop education programs to meet those needs.

GOAL: The goal of this needs assessment survey is to determine residents' general knowledge about their neighborhood, provide information about cancer, and discuss health and lifestyle behaviors.

OBJECTIVES: The three objectives of this needs assessment survey are:

1. To achieve a 40% return of surveys distributed to residents in the Pittard Road community during November 2005.
2. To analyze and report all survey data during January 2006.
3. To develop and carry out a health education program that is based on survey results starting in February 2006.

BACKGROUND: In 2003, the Georgia Comprehensive Cancer Registry conducted a cancer cluster investigation. Private well water at several homes in the Pittard Road Community was analyzed for environmental contamination. In addition, radon levels in homes were also tested. Results indicated that there were no elevated levels of radon present.

SUMMARY: In October 2005, residents of the Pittard Road community were invited to participate in this survey. Participation is voluntary and is offered at no cost to residents. The GDPH will analyze the results of the survey to help determine which health education activities will best serve the community. The results of this survey are expected to be available to residents in January 2006.

CONFIDENTIALITY STATEMENT: THE GEORGIA DIVISION OF PUBLIC HEALTH (GDPH) WILL USE THESE RESULTS TO ESTABLISH SITE-SPECIFIC ENVIRONMENTAL HEALTH EDUCATION NEEDS. ANY REPORTS CREATED BY THE GDPH FROM THE SURVEY RESULTS WILL NOT CONTAIN ANY PERSONAL IDENTIFIERS SUCH AS NAME OR ADDRESS. THESE REPORTS WILL CONTAIN GROUPED INFORMATION ONLY.

THIS SURVEY MAY BE COPIED, OR FOR ADDITIONAL COPIES, CONTACT:

GEORGIA DEPARTMENT OF HUMAN RESOURCES
Division of Public Health
Environmental Health and Injury Prevention Branch
Chemical Hazards Program
2 Peachtree Street, 13th Floor
Atlanta, Georgia 30303
(404) 657-6534
FAX (404) 657-6533

Supported in part by funds from the Comprehensive Environmental Response, Compensation, and Liability Act trust fund through a cooperative agreement with the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services.

INSTRUCTIONS - One survey is to be completed for each individual adult resident aged 18 years or older. Please circle your answer(s). You can refuse to answer any question, but please answer all questions you choose to answer as truthfully and completely as possible. When you are finished filling out the survey, please return the survey as instructed or mail or fax to the address on the front page.

To begin, some questions about you.

1.1 Have you received any education regarding cancer?

a. Yes
b No
c. Refused to Answer/Don't Know

1.2 Do you regularly disinfect your well?

a. Yes
b. No
c. Refused to Answer/Don't Know

1.3 Have you ever taken action to maintain/repair your well?

a. Yes
b. No
c. Refused to Answer/Don't Know

1.4 Have you ever been tested for cancer?

a. Yes
b. No
b. Refused to Answer/Don't Know

1.5 Are you aware that free breast cancer screening is available to you?

a. Yes
b. No
c. Refused to Answer/Don't Know

1.6 In your opinion, what are the best ways to get information to the public regarding pollution in our environment?

a. Fact sheets delivered to your home
b. Newspaper ads/articles
c. Your doctor or preferred health care professional
d. Local community events
e. Church
f. Internet
g. Refused to Answer/ Don't Know
h. Other: _____

1.7 Do you have any specific health concerns at this time?

Survey ID: _____

The following questions are intended to give a general context for the neighborhood and will be used to describe your community only.

2.1 Which one of the following best describes your race?

a. African-American b. White c. Asian

d. Native American e. Pacific Islander

f. Multiracial g. Refused to Answer / Don't Know

h. Other: _____

2.2 What is the highest level of education you have completed:

a. Less than high school graduate b. High school graduate/GED

c. Some college d. Four-year college degree

e. Technical school/Military/Associates degree

f. Graduate/advanced degree g. Refused to Answer/ Don't Know

2.3 What is your date of birth? _____

2.4 Are you: a. Male b. Female

2.5 How long have you lived at your current residence?

a. 0 to 5 years
b. 5 to 10 years
c. More than 10 years
d. More than 20 years
e. Refused to Answer/Don't Know

2.6 What is your occupation?

_____

2.7 Do you smoke?

a. Yes c. I have quit smoking
b. No d. Refused to Answer/Don't Know

APPENDIX E. DRAFT HEALTH EDUCATION PROGRAM PLAN

DRAFT WORK PLAN
September 1, 2005 – March 31, 2006

ACTIVITY	2005				2006		
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Distribute Notice of Involvement to community.							
Conduct community Needs Assessment Survey.							
Enter, manage, and analyze Survey results.							
Design new and gather existing community education materials. Publish and distribute health consultation.							
Publish final Needs Assessment Report and a summary and distribute to the community using preferred methods identified in Survey.							
Distribute health education materials using preferred methods identified in Survey.							
Keep community activists informed and updated of information and activities. They can share information to larger community.							
Develop process and outcome evaluation methods suitable for the education programs provided to the community. Evaluate health education methods.							
Develop and implement exit strategy.							

ADDENDUM

Health Education Action Plan Report
Pittard Road Cancer Cluster Investigation
Athens, Clarke County, Georgia

PURPOSE

Georgia Department of Public Health (GDPH) prepared an Environmental Health Education Needs Assessment (EHENA) for the Pittard Road Cancer Cluster Investigation site area in December, 2005. This needs assessment was a culmination of site work and activity dating back to 2003. This addendum will specifically address the health education efforts conducted by GDPH as recommended by the EHENA.

DISCUSSION

GDPH developed the survey for the Pittard Road EHENA in September 2005. The survey questions were designed in a pre-test/post-test format in order to obtain future outcome measures. Once completed, the survey was distributed in October to area residents at the Pittard Road site. The initial mailing addresses included all those obtained from the August, 2004 report from the Northeast Health District. A total of 28 packets were prepared containing the addresses of 27 residents and the New Grove Baptist Church. Of these, only one was returned to GDPH by the United States Postal Service (USPS) as "return to sender". Each packet contained the following: (1) Introduction letter, (2) needs assessment survey (3) GDPH brochure about the Chemical Hazards Program (Appendix A), (4) GDPH Staff business card, (5) and a self address stamped envelope (SASE). The church received 20 copies and was selected as it is near the community and public meetings have been held there about health issues in the past.

Feedback was immediate. Although we did not receive any telephone calls, (Athens is long distance), many residents did return the survey in the SASE. To better track who, where, and how residents received the surveys, we color coded the surveys. White surveys were in the packet mailing, blue surveys were sent to the church and for our future canvassing efforts, we made yellow copies for drop-off. From this we discovered this most surveys were received from individual residents mailing them back in, either as the white originals or blue copies. This also corresponds to the EHENA survey question
1.7, of preferred method of information distribution, which was found to be, facts sheets delivered to church (45%) followed closely by home delivery (36%).

GDPH staff returned to visit the Pittard community in November 2005 to collect health concerns and to distribute pre-test surveys and cancer screening videos. Early indications reflected the community's desire for more cancer information, so we obtained a video about the importance of cancer screening. GDPH Cancer Control Section had previously developed this video, *An Important Conversation: Georgia Speaks*, and it was to be one of our outcome measures and health education tools. The community was very welcoming and appreciated the fact that we had taken the time to visit with them. There weren't too many health concerns noted at this time although some did report that cancer in the community was still their main concern.

We distributed approximately 95 pre-test surveys between October and November 2005. After collecting all returned surveys, GDPH created and entered the results into a Microsoft Access 2000 database. From these results GIS maps were created to show relationships between survey questions. After examining the results, GDPH prepared a heath education intervention plan in keeping with the EHENA proposed Public Health Action Plan.

A follow-up educational packet to the Pittard community was mailed on December 9, 2005. These packets were distributed only to residents who had completed the pre-test survey. 26 packets were mailed along with one for the New Grove Baptist Church. Of these 3 were returned by the USPS. These returned addresses were supplied to us by area residents who completed the survey during the door-to-door canvassing event. Several of these residents did report as having been former long-term residents. We included them in the EHENA as the Pittard community has had cancer concerns for many decades and it is a tightly knit community with many familial relationships. These packets contained the following: (1) Letter describing our activities, (2) Well inspection flyer, (3) Water well quality brochure, and (4) four cancer brochures (Appendix B).

The flyer described the offering of free well examinations by appointment only. Approximately one month was allowed for residents to contact us to schedule a free down well camera inspection. We also reiterated the need for residents to visit their doctor or local health clinic for cancer screening.

Public Health Action Plan

The EHENA proposed several short and long term goals for the community. Short term goals were related to providing cancer education. Since GDPH Comprehensive Cancer Registry did not validate the presence of a cancer cluster, our health education efforts primarily focused on cancer screening and prevention. We provided a GDPH cancer screening video and four brochures about cancer. One brochure was from the Clarke County Health Department and two of were from the America Cancer Society (Appendix B). We were also available several during our two canvassing events to answer any questions.

Long-term goals involving environmental health education needs would indicate a continued need for on-going well maintenance education. We introduced well maintenance and disinfection guidelines since previous well water sampling events indicated the presence of bacteria and poor well maintenance issues. GDPH developed and distributed to residents a Water Well Quality brochure (Appendix B). This brochure describes ways to keep well drinking water safe and how to disinfect ones private water well. GDPH, in collaboration with the University of Georgia Cooperative Extension Service also offered free down well camera inspections for residents at Pittard Road (Appendix B). Only a handful of residents availed themselves of the opportunity to have their well inspected and well problems identified. Pre-test survey results indicated that regular well maintenance and disinfection were education concerns that needed to be addressed. Upon examination of some of the video footage of these events, it appears that future well inspections would also be encouraged at Pittard Road. We have already referred this community the UGA Cooperative Extension Service for subsequent programs in well maintenance education.

On January 19, 2006 the post-test survey was distributed via USPS. These packets were sent out to the same addresses as were the pre-test. The packets contained a letter, survey and a return SASE. The letter described our activities to date, and included another encouragement for residents to visit their doctor or local health clinic for cancer screening. On January 27th,

GDPH Staff returned to Pittard Road to collect post-test surveys and obtain any remaining questions and concerns. When we returned, few residents took the time to fill-out the surveys as before. There was a marked decrease in interest noted. GDPH staff also captured a few photographs during this event (Appendix C).

This EHENA survey, distributed first in October 2005 and then again in January 2006, provided a synopsis of what issues concern the Pittard Road community. Through various measures we have collected feedback and provided an education plan to meet many of their needs. The pre- and post-test nature of the survey instrument provided a way for us to capture any changes over the three month period we provided. Our main objectives were to measure changes in two areas, cancer screening and well maintenance. Under cancer screening, we were looking to measure how many residents watched the video and/or made medical appointments related to cancer screening. Involving well maintenance, we were looking to measure how many residents completed well a down well camera well inspections and/or conducted any maintenance or disinfections.

CONCLUSIONS

Conclusions from the needs assessment indicated that the community requested and would benefit from additional information being provided on cancer and cancer screening. We provided that as noted above. Our findings also recommended well examinations and education on well maintenance and disinfection. GDPH collaborated with UGA to provide free down-well camera well inspections (appendix B). GDPH also produced and distributed a well water quality brochure (Appendix B)

RECOMMENDATIONS

It is recommended that residents receive the one page summary of findings of the EHENA and the Health Education Action Plan Report. This flyer (Appendix D) is to be distributed to area residents and the New Grove Baptists Church upon final publication of the Pittard Road EHENA. It is also recommended that residents are presented with a short video workshop of well results in their community on behalf of UGA.