



Environmental Health Concerns of Houston-Galveston Area Residents:

Preliminary Results of a Regional Town Meeting Ranking of Concerns Identified by a Pilot Telephone Survey



Winifred J. Hamilton, PhD, SM
Baylor College of Medicine
Houston, Texas

Administrative oversight
Cindy Spiker, MPH

Focus group facilitator
Larry Laufman, EdD

GIS plotting
Brian Pietruszewski

Interviewers
Lily Auliff
Alex Cuclis
Winifred J. Hamilton, PhD, SM
Pris Weeks, PhD

Spanish translation
Luis F. Velez, MD

Introduction

In preparation for the Houston-Galveston regional town meeting on environmental health, “Environmental Health in Our Neighborhoods: Speaking Out About Pollution & Health,” which was held October 20, 2001, we spoke with a number of community experts and area residents about what they thought were the most important environmental health issues facing the region. We used this information to help shape the program of the town meeting, and to assemble a list of primary concerns raised which the participants of the town meeting then rated. This document briefly reviews the methodology of this effort and the results of the ranking of environmental concerns.

Methods

Input from community “experts” (N = 74)

We initially surveyed 74 health professionals, leaders of community advocacy groups, facilitators for the area Citizen Advisory Panels, and pollution officials using various approaches including in-depth interviews, a focus group and a written survey. From these resources we developed a list of 207 area residents who had expressed a concern about pollution and health and who had expressed a willingness to participate in this survey or in area environmental health research more generally.

Phone survey of area residents (N = 122)

Based on the original written survey and further field-testing, we developed and tested a simple phone survey and consent form in English and in Spanish. The consent form and first page of the survey, in English, are shown below. The consent form explained the purpose of the survey and noted that any responses would be confidential.

NIIEHS TOWN MEETING PHONE SURVEY (English)

CONSENT FORM

Interviewee name: «FIRST_NAME» «L_NAME» Date: _____

Preferred language: _____

Hello. My name is _____. I am a researcher with Baylor College of Medicine in Houston. Baylor is helping to organize a town meeting on environmental health issues in the Houston-Galveston region which will be held Saturday, October 20, at the University of Houston.

We would like to ask you a few questions about concerns that you might have about health problems in the Houston-Galveston region that may be caused by pollution. Your input is very important to us and will help us determine what to include in the meeting as well as what kinds of health research needs to be done in the region.

The survey is very short—only 3 questions. Anything you share with us will be regarded as strictly confidential. Although the results of this survey may be summarized at the town meeting or elsewhere, your name or other identifying information will not be used.

Do you have any questions? Should you have any questions later, please feel free to call Dr. Winifred Hamilton at 713-798-3875 or Baylor's Department of Research at 713-798-6970.

Are you willing to participate?

Yes _____

No _____

[Note to interviewer: Study participants were identified by the City of Houston, Harris County and various community groups as persons who have expressed concerns about pollution and health effects and who wish to be involved in these issues. Approximately 1/3 of the participants have explicitly agreed to participate in a Baylor-sponsored focus group or survey, and the others have more generally agreed to be contacted on environmental health issues. If asked, «FIRST_NAME» «L_NAME» was recommended by «RECOMMENDED_BY».]

NIIEHS TOWN MEETING PHONE SURVEY (English)

NAME: «FIRST_NAME» «L_NAME»

STREET ADDRESS: «STREET_NO» «STREET»

CITY: «City» ZIP CODE: «Zip»

PHONE: «PHONE» EMAIL: «EMAIL»

We want to know what you think are the most serious health problems in the Houston-Galveston region that may be caused by pollution. The pollution may be in the air, water or land. A person might be exposed to this pollution by breathing, eating, drinking or through the skin, and exposure might occur indoors or outdoors. Do you have any questions before we begin?

1. In your opinion, what are the 3 most important pollution-related illnesses in the Houston-Galveston region? What kinds of pollution do you associate with these illnesses?

Most important (score 3 pt)	
2nd most important (score 2 pt)	
3rd most important (score 1 pt)	

2. In your opinion, what are the 3 most likely places in the Houston-Galveston region where you, your family or others are exposed to pollution?

Most likely (score 3 pt)	
2nd most likely (score 2 pt)	
3rd most likely (score 1 pt)	

3. In your opinion, what are the 3 most important questions that you would like scientists to try to answer about whether pollution is causing health problems in the Houston-Galveston region?

Most important (score 3 pt)	
2nd most important (score 2 pt)	
3rd most important (score 1 pt)	

Interview guidelines were developed for the phone survey and the interviewers underwent training to help ensure a consistent approach to conducting the interviews. Of the 207 potential participants, we

participants, and the ranking sheets were actively collected at the meeting. Participants were asked to rank items within each category, from 1 to 5, with 1 being the most important. This ranking was transformed for the analysis so that 5 equaled the most important. Analysis of the ranking sheets was accomplished by summing the converted ranking numbers for a total score for each concern in each of the four categories. The highest scores reflected those concerns of most importance to the town meeting participants. Items written in by the participants were collated but not included in the actual ranking.

Results

One hundred and fifteen ranking sheets were received, of which 99 ranked one or more of the categories using the 1-to-5 ranking scale and therefore were able to be used in the analysis. The other ranking sheets generally gave one or more items the same ranking and therefore could not be included in the analysis but were examined for patterns and handwritten items. The ranked concerns are shown below (higher scores reflect greater concern), followed by the hand-written comments for each category. The top five ranked concerns in each category are highlighted in yellow.

I. Illnesses Caused or Aggravated By Area Pollution

Among illnesses caused or aggravated by area pollution, asthma received the highest score, followed by cancer other than leukemia or lung cancer. Had all cancers been listed together, it is likely that cancer would have been rated first. Lung cancer was rated 7th, brain cancer 14th and leukemia 19th in this ranking.

SCORE	ILLNESSES CAUSED OR AGGRAVATED BY AREA POLLUTION
217	Asthma
157	Cancer other than leukemia or lung cancer
124	Allergies
116	Respiratory infections (e.g., bronchitis)
87	Learning problems in children
78	Heart & cardiovascular problems
73	Lung cancer
69	Neurological damage (e.g., Parkinson's)
56	Birth defects
50	Sinus problems
37	Attention deficit disorder in children
31	Headaches
30	Lupus & other autoimmune diseases
27	Brain cancer
25	Psychological damage (e.g., stress)
23	Emphysema
21	Rashes, itchy skin and skin growths
20	Infertility
14	Leukemia
14	Stomach & colon problems
14	Colds & flus
11	Eye irritation
11	Kidney & liver damage
0	None

Other illnesses potentially caused or aggravated by pollution that were handwritten by the participants into the space provided on the survey included (1) hormonal imbalances / changes, (2) multiple chemical sensitivity (listed by 2 individuals), (3) reproductive cancers, (4) skin cancer, (5) diseases secondary to a sedentary lifestyle from being forced to stay inside because of air pollution outdoors, (6) cancer in children, (7) repetitive stress injuries, (8) sick building syndrome, and (9) depression and other mental illnesses.

II. Types of Pollution in the Region

Among the types of pollution of most concern to town meeting participants, pollution from petrochemical plants ranked first, followed by car pollution (see below).

SCORE	TYPES OF POLLUTION IN THE REGION
295	Air pollution from petrochemical plants
151	Air pollution from cars
123	Ozone smog
84	Water pollution in bayous & Galveston Bay
82	Diesel exhaust
69	Chemicals or bacteria in drinking water, food
64	Pesticides
61	Mold
57	Indoor chemicals (e.g., paint & carpet fumes)
47	Indoor biologicals (e.g., dust mites, dander)
41	Dioxin and PCBs
40	Nitrogen oxides (a combustion gas)
40	Smoking
39	Mercury & other pollutants in seafood
32	Carbon monoxide (a combustion gas)
24	Particles & fumes from outdoor burning
23	Lead in paint & in soil
16	Bacteria & chemicals in flood waters
16	Fumes from land fills & water treatment plants
15	Pollen
13	Noise
11	Electromagnetic radiation from power lines
7	Litter & illegal dumping
0	None

Other types of pollution of concern that were handwritten by the participants into the space provided on the survey included (1) chemical interactions, (2) increasing population, (3) freon, (4) visual advertising, (5) greenhouse gases such as CO₂, (6) air fresheners, (7) cleaning compounds, (8) perfumes (listed by 4 individuals), (9) sulfur dioxide from coal-burning power plants, (10) radon, (11) pollution from remediation activities, and (12) particles from construction.

III. Places or Ways to be Exposed to Area Pollution

Town meeting participants ranked pollution in the home as the most likely place or way to be exposed to pollution, followed by nearness to petrochemical and/or traffic pollution. Note that, because telephone interviewees often noted quite specific geographical areas when considering high pollution areas, the places included on the ranking survey were similarly quite specific and may therefore have distorted the more general concerns.

SCORE	PLACES OR WAYS TO BE EXPOSED TO AREA POLLUTION
137	In the home
127	Working in the petrochemical industry
103	Deer Park / Pasadena area
97	Commuting in heavy traffic
90	Living near a major freeway
80	In office buildings with low ventilation rates
77	Places where pesticides frequently used
63	Drinking city or well water
62	Living near a Superfund site
48	Texas City / San Leon / Bacliff areas
47	Channelview / Cloverleaf area
45	Living near an incinerator
44	Going to school near a major freeway
41	Seabrook / La Porte / Shoreacres area
30	Baytown area
29	Downtown Houston
25	Eating locally caught seafood
17	Manchester neighborhood
14	Swimming in bayous or Galveston Bay
13	5th Ward area (I-10 and 59)
13	Living near a major airport
11	Galena Park neighborhood
10	Near construction sites
9	Near Sugar Land Parrish Power Plant

Other places or ways to be exposed to area pollution that were handwritten by the participants into the space provided on the survey included (1) downwind from Ship Channel refineries (listed by 2 individuals), (2) all Ship Channel communities, (3) Lake Houston, (4) living near any refinery or chemical plant (listed by 2 individuals), (5) near ports, (6) in area schools and universities (poor indoor air quality; listed by 2 individuals), (7) exercising outdoors, (8) fireplaces (wood smoke makes winter outdoor activity stressful), (9) sports bars and restaurants where smoking allowed, (10) bicycling near polluting cars, and (11) living and working in the Houston region.

IV. Area Environmental Health Research Questions

The last area asked town meeting participants to rank environmental research questions that they would like addressed. The three questions that received the highest scores (see below) addressed (1) the cumulative effect of multiple pollutants, (2), the effect of pollution on learning in children, and (3) whether there are cancer clusters in the area.

SCORE	AREA ENVIRONMENTAL HEALTH RESEARCH QUESTIONS
296	What is the cumulative effect of multiple pollutants on human health?
159	What is the effect of pollution on learning in children?
157	Are there cancer clusters in the Houston-Galveston area?
119	What are the long-term effects of fine particulate pollution in children?
105	How can one reduce exposure to pollution?
96	What is the role of genetic susceptibility in pollution-related illnesses?
92	What is the effect of lack of or reduced green space (e.g., trees, parks) on human health?
76	What is the role of social factors, such as nutrition and job status, on developing pollution-related illnesses?
60	Do people who live near freeways have more allergies, asthma or cancer?
50	How do area hospital admission rates correlate with daily pollution levels?
44	What is the risk of brain cancer among petrochemical workers?
29	Do children who go to school near freeways or industry miss more school?
25	What is the effect of odors on human health?
10	Do pets in Ship Channel neighborhoods have more cancer?
2	Do people who live near cement crushing facilities have more health problems?
0	None

Other research questions that were handwritten by the participants into the space provided on the survey included (1) what are people actually exposed to (not what an outside monitor measures; listed by 2 individuals), (2) how does public misinformation skew survey results, (3) do newspapers and TV stations censor industrial pollution data, (4) what are the health costs of pollution (listed by 2 individuals), (5) what is the correlation between lost work / school days and pollution, (6) is “environmental health” as a subject being taught in medical schools, (7) is nutrition being taught in medical schools, (8) what is the long-term health and socioeconomic effect of early occupational exposure / disease, (9) how can private citizens overturn grandfathering laws, (10) what is the correlation between pollution and mental health / depression (listed by 2 individuals), (11) what does

the medical community need to help effect positive change (i.e., lower pollution) in the Houston area, (12) what have other states and countries done to lower pollution and improve health, (13) what are the effects of noise pollution on health, (14) what is the chronic effect of ozone exposure, (15) what level of VOCs are area residents exposed to, (16) how do children vary in their susceptibility to pollution, (17) what is the role of endocrine mimickers on thyroid uptake, (18) what is the relationship between other diseases, such as diabetes and hypertension, on susceptibility to pollution-induced disease, and (19) how does access to health insurance vary among area residents.

Discussion and Limitations

This was a preliminary attempt to open a discussion between Houston-Galveston area residents and health professionals regarding environmental health issues. The participants in both the phone survey and at the town meeting do not represent a random sample of area residents and the results are therefore not necessarily generalizable to the community at large. The participants tended to be citizens who were concerned about area pollution and their or their family's health. The participants in the phone survey (see map) represented east Harris County, which is heavily industrialized, more strongly than other parts of the region, although 40 different zip codes were represented in the survey and these included a number of rural areas.

Although random sampling might have been preferable, results from our focus group suggested that persons who had not given any thought to these questions would not be able to respond usefully to the questions we were posing to help plan the town meeting program. The structure we used did, however, help us to identify geographic areas of special concern to area residents, some of which were included on the bus tour of environmental sites preceding the town meeting.

The phone survey identified numerous areas of overlap or microenvironments, which were then listed in the ranking sheets generated from the survey. For example, people from specific Ship Channel communities tended to list these communities as areas of high pollution but the listing of several of these communities in the ranking may have diluted the relative concern about living along the Ship Channel. Future analysis of environmental health concerns might use the concerns expressed but attempt to consolidate or tease apart the concerns to avoid such disparities in the scope of the individual concerns.

Future exploration of environmental health concerns needs to penetrate more deeply into communities where English is not spoken, especially the Spanish- and Vietnamese-speaking communities. Although we surveyed numerous individuals in minority communities and utilized survey and consent forms written in both English and Spanish, most interviewees answered the survey in English. The town meeting ranking was only conducted in English.

A preliminary analysis of the ranking sheets by "number of hits" in each category generally produced the same top five concerns, as did the analysis using the ranking, although the order varied slightly. The number one concern in each category was the same using either method: illness = asthma, type of air pollution = from petrochemical plants, place of exposure = in the home, and most important research question = cumulative effect of multiple pollutants. Additional analyses of the results might look at correlations between categories or look at only the top rated concerns. Such analyses could be useful in formulating a more rigorous survey instrument that could be tested in the field as well as using statistical methods such as principal component analysis.

Last, it was apparent that little dialog has existed between the medical community and area residents. Area residents would not only like to see the medical community more involved in environmental health issues of importance to the community, but that area residents would like to help determine some research initiatives. Many opportunities exist for mutual education and for community-based participatory research projects.