

Waiting for a Signal: Public Attitudes toward Global Warming, the Environment and Geophysical Research

A Report from [Public Agenda](#)

by [John Immerwahr](#)

April 15, 1999

Background

In 1997, the Public Information Committee (PIC) of the American Geophysical Union invited John Immerwahr, Senior Research Fellow at Public Agenda, to give the committee a background report on public opinion. This initial discussion resulted in a partnership with Public Agenda which grew out of several mutually shared concerns: 1) a sense that public opinion on the topics of concern to AGU was generally not well understood; and 2) a belief that a clearer understanding of public opinion data on these topics could facilitate dialogue on important environmental and geophysical issues. From the perspective of the PIC, the results of the research could also help inform the AGU's communication efforts. For its part, Public Agenda welcomed the opportunity to explore attitudes in this important area, and, at some later point, Public Agenda may seek funding for more ambitious research on some of the topics of interest to geophysicists.

The partnership led to a series of preliminary investigations. The first activity, on March 4, 1997, was an initial exploratory focus group, conducted by Public Agenda, for the members of the PIC. This group was held at a market-research facility in the Washington, DC area, scheduled to coordinate with one of the PIC meetings. The respondents were selected according to a quota sample plan (see methodology section for details), and members of the PIC sat behind a one-way mirror while John Immerwahr moderated a focus group discussion on a variety of pre-selected topics. Both Public Agenda and the PIC felt that the focus group was thought-provoking, so two follow-up projects were added. First, Public Agenda searched a database of existing public

opinion data on geophysical topics, and second, Public Agenda conducted a series of four additional focus groups in 1998. Working with a subcommittee from PIC, Public Agenda selected four cities for the research -- Charleston, SC, Los Angeles, Des Moines, and Phoenix. To focus the discussion, the subcommittee agreed to explore four topics: global warming, water availability, earthquake research, and space research.

This report summarizes the findings from both the database search of existing survey literature and from the focus groups. Two caveats, however, are necessary before proceeding with the discussion.

First, what is reported here are perceptions, rather than objective data. While people responding to public opinion surveys are typically very clear about things that concern them directly, they are often confused or misinformed about topics with which they are less familiar. Many of the topics that we discussed are not routinely debated by average citizens. Not surprisingly, their information was sometimes inaccurate or out-of-date. Nonetheless, public perceptions -- accurate or inaccurate -- are extremely important in many policy issues, and policymakers know that it is much more difficult to move in opposition to public beliefs, even when there is a disconnect between public opinion and expert analysis.

Second, the remarks in this report are based on two different sources of evidence. In some cases, we report survey data from national random sample surveys which were not conducted by Public Agenda. They are, however, as far as we can determine, based on accepted social science research methods, and those who are interested in additional data may consult [Public Agenda's Web site](#) which contains additional information on public attitudes toward the environment.

In other cases, our analysis includes quotations from the five focus groups conducted with a total of about 50 individuals for this project. While the comments of these participants are often highly suggestive, our interpretations are intended to be hypotheses for further study, rather than definitive findings.

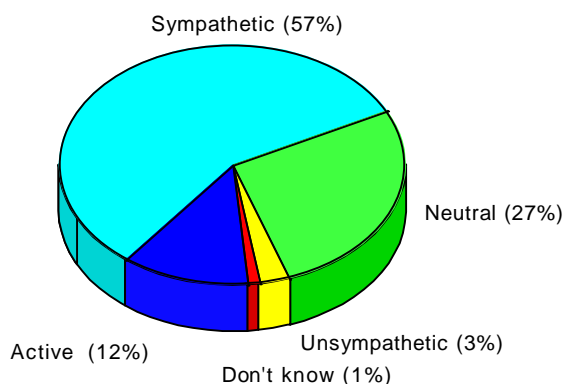
Changing Attitudes toward the Environment

Attitudes toward environmental topics (a major interest to geophysicists) have been remarkably fluid in the last several decades. Sometime back in the 1970s, the public exhibited a growing consciousness of the importance of the environment, of the concern about non-replenishable resources, and of the fragility of the ecosystem. Thereafter, a certain level of environmental consciousness became the cultural norm. In a recent survey, Wirthlin Worldwide found that many Americans list themselves as either sympathetic to environmental concerns (57%) or as active environmentalists (12%). A mere 3% list themselves as unsympathetic to

environmental concerns. ¹ (see Chart 1)

Chart 1

Do you think of yourself as : 1. an active environmentalist, or 2. sympathetic to environmental concerns but not active, or 3. neutral, or 4. generally unsympathetic to environmental concerns?



Source: Wirthlin Worldwide 9/98

Although awareness and sensitivity to environmental issues continue to be widespread, concern about the environment has typically ranked behind other issues the public finds more pressing, such as education, the economy and crime. What is even more striking, however, is that, of late, the intensity of concern about the environment has diminished. Chart 2 documents a significant drop in concern about a wide range of environmental issues.²

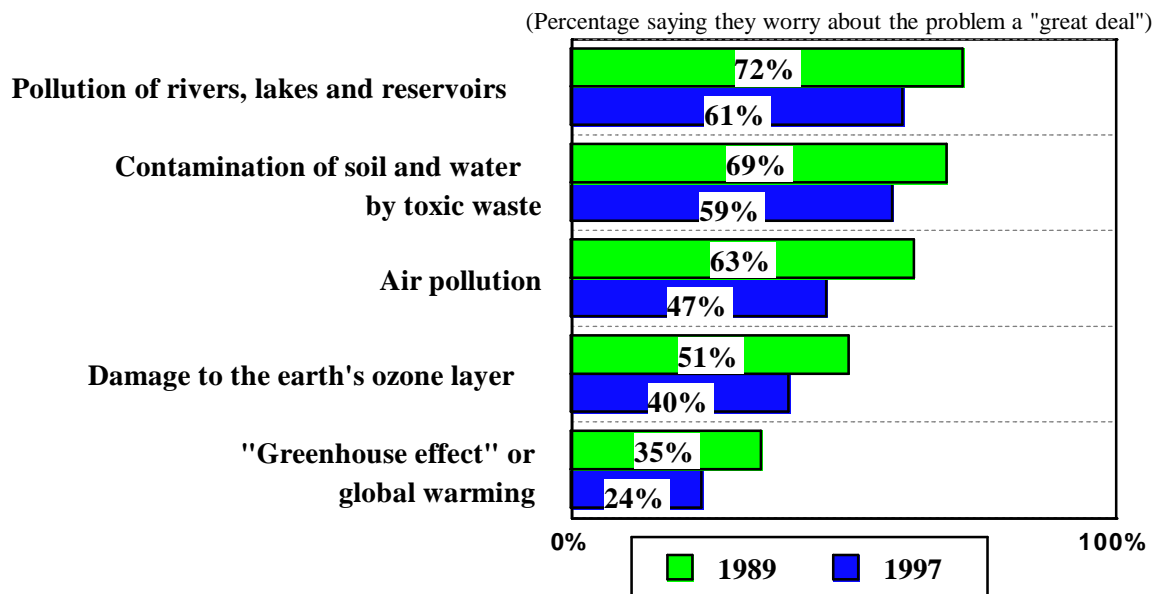
What accounts for this decline in interest, and what would it take to get the public more

engaged by geophysical issues? Some of the geophysicists we have spoken to have suggested that the public is apathetic and needs to be awakened to the seriousness of the consequences of ignoring some of these problems, especially global warming. What is needed, these scientists say, is a concerted educational effort to convince the public of the importance of these issues.

Our research suggests, however, that this may not be the solution. The public's attitudes toward the environment are complex and are affected by a number of different factors. On many aspects of the issue, the public is already convinced of the gravity of the problems. But, other considerations and complexities sap their energy for thinking further or dealing with these problems. For one, these issues are so complex and technical that scientists themselves don't agree about them. Furthermore, many people doubt there are viable solutions to these problems.

Chart 2

I'm going to read you a list of environmental problems. As I read each one please tell me if you personally worry about this problem a great deal, or not.



Sources: Gallup Organization / CNN / USA Today 5/89; Princeton Survey Research / Pew Research Center 11/97

Many respondents in our focus groups were convinced that the underlying cause of environmental

problems (such as pollution and toxic waste) is a pervasive climate of rampant selfishness and greed, and since they see this moral deterioration to be irreversible, they feel that environmental problems are unsolvable. As a result, convincing people of the seriousness of the problems is at best only part of the solution, and may, in fact, be counterproductive.

Communication efforts that are designed to "pump up the volume" on the seriousness of geophysical problems may backfire. The issue is not that people are apathetic, but that they are frustrated and confused. More talk about the seriousness of the problems -- without also convincing people that something can be done to alleviate them -- may only increase their sense of hopelessness rather than lead to productive debate and dialogue.

While public thinking about global warming may be the best example of this pattern, all three of the other issues -- water availability, space research and earthquake research -- also reflect in one way or the other this same ambivalence in public thinking. We hypothesize that a genuine level of concern is being blocked and fragmented by factors that distract the public from reaching consensus or compromise about solutions.

Global Warming

Of the four issues we looked at, global warming is clearly the one with the highest salience among the public, and also one where a great deal of survey literature is available. As a result, we speak with greater confidence about public opinion on this issue.

High Levels of Concern

Americans are concerned about global warming. One survey in 1997 found that three out of four Americans (74%) believe that the earth's atmosphere is gradually warming as a result of air pollution and that, in the long run, this could have catastrophic consequences.³ Nearly everyone we spoke to in the focus groups echoed this view. Virtually everyone had heard of this issue, and most were concerned about it at least to some degree. A few typical comments:

The earth's temperature is rising, due to pollution, and it is destroying our ozone layer. The temperature has come up four degrees, and it could produce devastating impacts such as melting the polar caps. Des Moines, woman.

Global warming. It has a lot to do with the ozone layer, and with all of the ice melting and stuff like that. The warming comes because of the icecaps melting. Los Angeles, man.

In addition to the concern about global warming, many people were concerned about changes in the earth's climate, and about unstable weather. People in Des Moines were particularly concerned about the weather and its impact on farmers.

The farmers are doing badly. A good friend of mine is a farmer. He has planted and replanted because of the climate. Many farmers have lost their farms and gone into other work like selling insurance. Des Moines, woman.

We are farmers here, and we have to have the right climate to grow things. The farm economy is worse than it has been in a while. Des Moines, man.

Weather and unusual weather circumstances seem to be in the news these days. We hear about droughts, tornadoes, hurricanes. This year has been dominated by weather related oddities. Los Angeles, man.

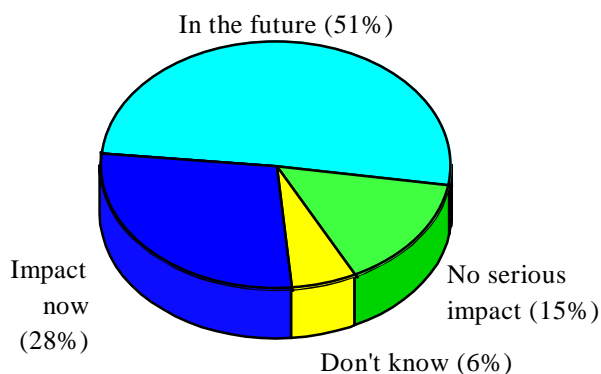
There is also a great deal of agreement about the importance of global warming. Gallup found that many people feel that in the next 25 years, global warming will have a very or

somewhat harmful effect on things such as agricultural production (74%), the survival of many animal and plant species (73%), and even on human health itself (72%).⁴ Many of our respondents said that global warming and the factors that cause global warming are also associated with health problems, especially cancer. While only 28% think that global warming has had a serious impact already, 51% think it will have a serious impact in the future.⁵ (see Chart 3)

There is a real sense of slow, but inevitable catastrophe associated with growing pollution, the destruction of the rainforests,

Chart 3

Do you think global warming is an environmental problem that is causing a serious impact now, or do you think the impact of global warming won't happen until sometime in the future, or do you think global warming won't have a serious impact at all?



Source: CBS / New York Times 11/97

and the gradual warming of the planet. The following quotes illustrate some of the concerns we heard:

We have nowhere else to go, and if we destroy this earth, we are lost. Charleston, woman.

Everything is here to be in balance. Now we are cutting down the rainforest, and we don't even know what it is we are losing. Phoenix, man.

By the year 2020 things will be a lot worse. It makes you question how bad it will really get. Los Angeles, man.

A Stalled Discussion

Given the widespread concern about global warming, one might expect that there would be a growing pressure for solutions. But, as we have seen by at least some measures, concern about the problem is decreasing rather than increasing. The percentage of people who worry a great deal about damage to the earth's ozone layer has dropped from 51% in 1989 to 40% in 1997, and the percentage of people who worry a great deal about global warming and the greenhouse effect dropped from 35% to 24% in the same period. ⁶

Both the focus groups and the survey research suggest that there is also no consensus on what to do about global warming. Our research suggests that there are a number of reasons why people may be stuck.

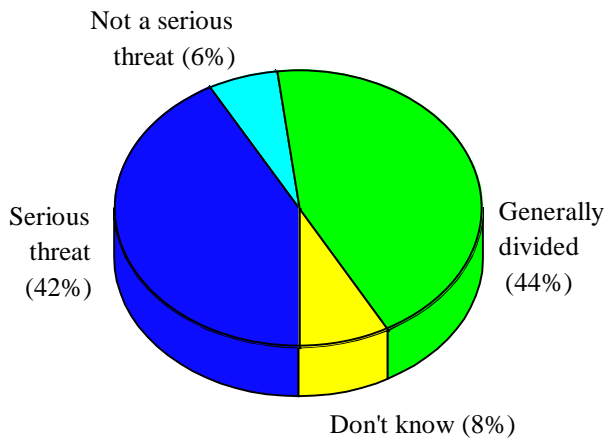
1. *Most people do not really understand global warming.* It is obvious that while people have the general idea that there is a problem with something called ozone, caused by pollution, which is causing the earth's temperature to increase and perhaps causing weather instability, they

clearly have no idea how this works, what the terms mean or what human activities contribute to the problem. Their knowledge is also, in some cases, outmoded or inaccurate and people often confuse it with other problems, such as depletion of the ozone layer or acid rain. While 65% identify automobile exhaust as a cause of global warming, a third of the public also identifies nuclear power plants as a source. Many people think that aerosol sprays are still a major problem.⁷ In focus group discussions, theories and poorly remembered facts were bounced around quickly, with no consensus on what was accurate or inaccurate.

2. *No accepted source of information.* Clearly the scientific community has not conveyed a sense of unanimity on the subject of global warming. A 1997 Gallup survey found that only 42% of the public believes that scientists mostly believe that global warming is a real threat; the public is just as likely (44%) to say that scientists are divided on the issue.⁸ (see Chart 4)

Chart 4

We'd like your impression of what scientists believe about global warming. From what you've heard or read, do scientists mostly believe that global warming is a serious threat, mostly believe that it is not a serious threat, or are scientists generally divided on this issue?



Source: Gallup Organization / CNN / USA Today 11/97

As a result of the fact that they have not heard a clear scientific voice on this subject, people turn to anecdotal and impressionistic evidence as to whether there is such a thing as global warming. Recent hot weather is taken as evidence for global warming, and recent cold weather is taken as evidence against it. People rely on poorly recollected facts from TV or magazines.

[I'm not so sure about global warming] We have had the coolest June we have had in a long time. You

could usually count on your fist the hundred degree days we would have by Mothers' Day, but we didn't get a one this year. Phoenix, woman

I work at a senior citizens center, and they will tell you the climate is not the way it used to be. It is unpredictable, and it is warmer. These old people can tell you some good stories about the long, hard winters. Des Moines, woman.

I heard that one volcanic eruption will put more pollutants into the air than mankind will in its entire history. Phoenix, man.

The scientists, they disagree with each other about this. Des Moines, man.

3. *The real cause is human greed.* The biggest factor that derails any kind of consensus about dealing with global warming is the analysis that people have of the underlying cause of global warming. While our focus group respondents tended to say that global warming is caused by deforestation and pollution, they were also quick to point out that the underlying cause is human greed and moral corruption. Moreover, they believed that, as far as these factors are concerned, "the toothpaste is out of the tube," and we are unlikely to reverse these trends in the near future.

When thinking about global warming, in other words, our respondents typically saw it as being driven by humans who are unwilling to do the right thing, that is a seemingly irreversible deterioration in moral values. What they said, over and over again, was that people have become more self-centered, greedy and materialistic, and as a result, the society is inevitably pushed toward more consumption, which in turn causes more pollution and exacerbates the trend toward global warming. Here are sample comments on this theme:

The cause is people not caring, taking everything for granted. Des Moines, woman.

It is that dream that bigger is better, and who has the most toys wins. That has a lot to do with it. Everyone is either trying to outdo each other, or they are merging to do a little bit more than others. Los Angeles, man.

It is unrealistic to stop doing all of those things that are ruining the environment. It has been around so long, we are now conditioned to this way of life. Has anyone lost power for a week? You will run around like a chicken with the head cut off. But in the old days, we didn't have electricity and we did just fine. Des Moines, man.

We should go back to natural foods and paper products. But we won't because people are too lazy. Washington, DC, man.

Take away people's motivation to live their current lifestyles. That will solve the global warming problem. Charleston, man.

From the public's point of view, solutions are even less likely because they would involve unified action, with many people acting together. Just as it seems impossible to get individuals to change, it seems even more difficult to get large numbers of organizations and individuals to change at once.

If we were going to deal with this, everything would have to change. The people who own the oil companies would have to change, everyone would have to change. Phoenix, man.

We would have to do something drastic and immediate. It would have to happen now and everyone would have to do it. Los Angeles, woman.

4. *There are no actionable solutions.* Looking at global warming as a result of irreversible moral deterioration effectively causes people to think that the problem is unsolvable.

Since most people do not see any obvious way to change human nature and return to a simpler, less selfish lifestyle, the result is that the problem of global warming seems intractable. To put it another way, when people talk about solving the problem of global warming, they almost never point out specific actions which they see as possible. Instead, what the solutions they mention have in common is that they do not involve behavioral changes that are possible in the here and now.

Furthermore, they feel that solutions will require coordination among different countries, and they think this coordination is unlikely to materialize. As one man from Charleston said:

We might agree to deal with some problem here in this country, but how likely do you think it is that people in other parts of the world will go along?

Generally speaking, the two solutions people do mention are either painless technological solutions (so that the problem will be solved without any active participation by individuals) or some sort of apocalyptic breakdown so catastrophic that it forces people to change their behaviors completely. For example, in Phoenix two men said that a complete change in automotive technology would help solve the problem.

We would all have to drive battery powered cars that were affordable and would go 75 miles per hour down the highway.

It would be like when they got rid of carburetors for fuel injection. The cars got more efficient and you didn't know anything about it.

Our respondents more often mentioned the idea of a complete cataclysmic event that was so serious that it caused everyone to wake up, see the danger and change their ways.

Our lives will be so impacted by the devastation we have done that we will be affected enough to realize what is going on. The environment will get worse and we will realize what we have done. Des Moines, woman.

It is like quitting smoking. It is hard to do until you have a heart attack. Des Moines, man.

Frustration and Paralysis

Our respondents, then, seemed to have hit a wall. They said they care deeply about global warming, but their concern did not translate into any forward motion. As they thought about the problem, they seemed to run into brick walls, characterized by lack of clear knowledge, seemingly irreversible causes, and a problem with no real solution. As a result they were frustrated and eager for a solution but unsure of which way to go.

The symptoms of this frustration are clear. The first is that people literally don't like to think or talk about the subject. Our respondents always seemed to want to move the topic from global warming itself to more familiar topics, such as moral deterioration, where at least they felt on firmer ground.

A second symptom of the frustrated state of public opinion on this topic is what might be called volatility. When people are blocked and see no outlet for their concerns, their opinions can change quickly and easily, as they seek a way out of an uncomfortable situation. One of the most interesting exchanges we heard was in the Phoenix focus group. The initial discussion of global warming sounded much as we heard in other cities, with global warming caused by pollution which is caused by irreversible moral deterioration. At one point, one of the respondents, the principal of an elementary school, said:

I don't think the weather has changed. Some of my students were at a conference where they had a debate. And what they learned was that there is scientific evidence to show that the earth is not warming, in fact it is cooling. We go through cycles, but sometimes people have short memories.

After this story, the respondents immediately changed their views and agreed that there is no such thing as global warming. The point is that when people are stuck and frustrated, their views change quickly, especially if they have an opportunity to resolve some of the tension.

The most overwhelming result of this frustration is a sense of fatalism or helplessness, that these are serious problems about which nothing can be done. For some people, even the efforts to correct the problems only lead to other problems:

As a people we are trying to correct so many things we just end up doing more damage. We create one chemical to get rid of another, and all of that stuff has to go somewhere. People don't want to see the earth go away, it is our life, but we are doing more damage than help. Los Angeles, man.

There is, among some people, an idea that the world is going to come to an end as a result of human actions. The threat of universal destruction from global warming fits into broader theological conceptions of apocalypse and destruction. One man in Washington, DC encapsulated the whole picture:

Global warming, greenhouse. It is pretty much written that everything is going to come to an end. No one wants to pull back what they have. Humans are greedy and they want what they want.

We'll be like the dinosaurs, when the meteorite hit the earth. Des Moines, man.

The public has clearly not reached a position of consensus on the issue of global warming. Although there is consensus that there is a problem, there is no sense that scientists have clearly spoken about the nature of the problem. Nor is there a widely perceived sense about what the country might do about it, or whether those steps would be efficacious. As a result people are upset about the problem, but their concern translates into frustration rather than support for action.

Water Availability

We also asked our respondents about the problem of the availability of water. One of the PIC members remarked that "water will be for the 21st century what oil was for the 20th century," with geopolitics being driven by tensions among the haves and the have-nots. In our groups, we tried to determine whether the public is prepared to see water availability as a major problem.

We found some interest in this topic, especially in Los Angeles, but generally speaking this is an issue that is not on the public's radar screen. Although this issue has not had the kind of public discussion that we have seen for global warming, our focus groups also indicated that, once again, there are a number of obstacles that may slow the process of this issue coming front and center in public consciousness.

1. *Concern about water availability is sidetracked by concerns about what is perceived to be a more important issue, water purity.* It immediately became obvious that people are extremely concerned about water, but that what concerns them is the purity of water rather than its availability. There was a tremendous concern that drinking water may be contaminated with pollutants. As we noted before (see Chart 2), pollution of rivers, lakes and reservoirs tops the list of environmental concerns. Sixty-one percent say they worry a great deal about this topic, as opposed to only 40% who are concerned about damage to the earth's ozone layer.⁹

Interestingly enough, the growth of the bottled water industry seems to have raised further concerns about the purity of drinking water. One woman from Charleston put it this way:

As far as pollutants in the water, now that I have a child I think about it. I have a filter system and when I am fixing his bottles I use bottled water.

Most people believe that pollution will increase in the future. Only 32% say they think the air and water in this country will be cleaner 100 years from now.¹⁰ (see Chart 5) And our focus group respondents reported that water is more polluted today than in their youth.

In the old days, my dad used to drink water from a creek running beside the road. You wouldn't do that today. Charleston, woman

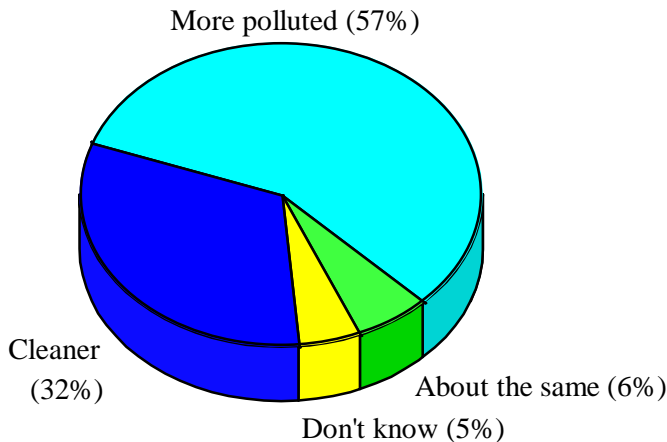
This concern about water pollution tends to sidetrack people from a serious discussion about water availability. To put the problem in a simple analogy, it is hard to get people's attention to the existence of termites in their basement if they think the house is burning down. The public has only a limited amount of energy to focus on problems of any one sort, and the existence of a more pressing problem tends to deflect attention from lesser problems. The effectiveness of the environmental community in sensitizing people to the problems of water pollution, in other words, has made it more difficult to get the public's attention on the problem of water availability.

2. *Again, there was a feeling that the real problems are unactionable.* Our focus group respondents also thought they knew the source of water pollution. Our respondents quickly jumped to the same analysis we heard in the case of global warming, namely that water was becoming contaminated because of irreversible human greed. A few sample comments:

It is human behavior and money that drives the problem. It is easier to dump stuff in the creek than to dispose of it properly. Phoenix, man.

Chart 5

One hundred years from now, do you believe the air and water in this country will be cleaner or more polluted than it is now?



Source: Princeton Survey Research / Newsweek 2/98

transform it into pure, drinkable water. The idea of desalinization entered every conversation.

When I was in Cuba, Castro cut off the water supply to the base, so they hooked up the purifiers and drank it from the ocean. Charleston, woman.

3. *The availability of a painless technological solution.* In the case of global warming, we found that people seemed to have a hard time thinking through the issue because there seemed to be no solution. In the case of water availability, we found exactly the opposite problem. Their thinking immediately jumped to an obvious and, in their thinking, painless solution. When thinking about the availability of water, people were immediately struck with the fact that there is an enormous amount of ocean water on the earth and that, at least in theory, it is possible to

They could make it drinkable, if they really want to, they could filter and purify it. Des Moines, man.

4. *Lack of credible signals.* Even in Los Angeles, where we did find some interest in the problem of water availability, we found that the debate was stalled by a lack of credible information. Although people had heard about water shortages, they were also inclined to be skeptical about the seriousness of those shortages:

I go back to the film “Chinatown.” Politics are definitely involved, plus the geography of this place. There is a real lack of water but it is also being manipulated and controlled politically. Los Angeles, woman.

We have had a lot of water shortages out here in California. They tell you to conserve water, when you conserve water they raise the rates because you aren't using the water. Los Angeles, man.

Among our respondents, then, thinking about water had interesting similarities and differences compared to thinking about global warming. In both cases, the main idea that came up was the idea that pollution, caused by moral decay, is the underlying problem. This derails thinking about water availability in one way. A second obstacle is that, in contrast to global warming, in this area there is perceived to be a painless technological solution -- desalinization -- which seems to effectively stop most serious thinking about the topic. In the end it comes to the same thing. The public cannot think effectively about a problem if its solution seems either too easy or too difficult.

Space Exploration and Research

Space research was the most controversial topic we discussed. Unlike the other issues, the American public has been hearing about space exploration and research since the 1950s. It is not a new topic, and many people have made up their minds about it. The last focus group, in Charleston, was held shortly after the John Glenn space flight, so the topic was especially fresh in people's minds.

In each of the focus groups, the respondents were split rather equally between two opposing views.

1. *Space research opponents.* Several of our respondents spoke rather negatively about the space program. The typical concern was not that space exploration and research is a bad thing in itself, but that it siphons off money from more pressing concerns at home. Some typical comments:

I don't know a lot about it, but I am always amazed by the amount of money that we spend. Phoenix, woman.

I don't like anything about space. Money is being wasted on something we can't do anything about. I really feel that they should spend that money down here on earth. The money should go to help the poor people. Des Moines, woman.

2. *Space research supporters.* Each group typically had a number of people who supported space research. The supporters stressed a number of reasons. Some of the more frequently repeated comments had to do with the many spin-off technological inventions from the space program:

They have developed special materials, and they invented materials from work in space. It has forced us to be creative. When they have the material available, then they can use it for other things. Phoenix, man.

It has done a lot of good things. It put all of those fabulous channels on our TVs. Los Angeles, woman.

In addition to the more tangible benefits, space research also conjured up images of pioneering, exploration, adventure. One school teacher put it this way:

Space research is important to me. I am an English teacher, and I am a romantic. I want to be assigned to be the principal in the first space colony. Phoenix, woman.

I am interested in the possibility of life on other planets. Los Angeles, woman.

One of the most common responses we heard was that space may provide a cure for the problems associated with global warming. As we pointed out earlier, many people are fatalistic about issues such as global warming. They are convinced that we will not do anything to solve these problems until it is too late. Space exploration, however, provides another technological solution. The belief, shared by many of our respondents, was that if we do destroy the earth, we may be able to live in space colonies.

We are going to destroy the earth with experimenting, so it is a good idea to have some place else to go. Los Angeles, woman.

I think it is a reality that we are going to start colonizing up there. When and if it will happen, I can't say. Los Angeles, man.

3. *A confusing cost-benefit trade-off.* Few of the people we spoke to were opposed to space research itself; their concern had more to do with where it should be on our scale of national priorities. Part of the concern, of course, was that when people see images of space research on television, what they see is obviously extremely expensive. They know that mission control centers, space stations, shuttles and everything else are extremely costly. It is virtually impossible, however, for people to see how these costs relate to other less visible items of public expenditure. We asked several of our groups whether they thought that space research costs the federal government more or less than Medicare. This was clearly a question that people had not given much thought. Several of our respondents thought that space research cost the government much more than Medicare. From their perspective, of course, this makes sense. While they see highly expensive space hardware on television, they see senior citizens struggling to purchase their medications because the government pays only a portion.

Of course, space research is not the only area where people are disturbed about financial issues. Public opinion analysts have long noticed that people have rather skewed ideas about how much government actually spends on various areas, foreign aid being a notable example.

Earthquake Research

We also asked our respondents about earthquakes and earthquake research. Although many of our respondents were convinced that earthquakes were a possibility where they lived, most had little direct experience with earthquakes. One person in Des Moines expressed a concern we heard everywhere: "Earthquakes can happen anywhere, at any time."

1. *Earthquake prediction.* Despite the widespread belief that earthquakes are possible, we found very little support among our respondents for research on earthquake prediction. Most people we spoke with thought that earthquakes are inherently unpredictable "acts of God," and

that no one can predict them with any accuracy. Further, they believed that even if we could predict earthquakes, people would pay little attention to the predictions. Even in Los Angeles, the area that was most concerned about earthquakes, there was little interest in prediction.

As far as predicting earthquakes, that is why you see psychics on the 6:00 P.M. news. No one knows the future. Los Angeles, woman.

If an earthquake is little, what difference does it make? If it is big, where are the people to go? Phoenix, man.

The most interest in earthquake prediction was expressed in Charleston, where some respondents reflected on the contributions that hurricane prediction had made in their area.

2. *Earthquake-proof buildings.* While there was little interest in trying to predict earthquakes, our respondents seemed to be much more interested in the ability to design buildings that can withstand earthquakes. Here people saw a research that does have a kind of efficacy. Several of the respondents expressed their awareness that better building codes had made a real difference, especially in Los Angeles. A few comments:

Earthquakes are important, but there isn't much you can do, except maybe change the building codes. Los Angeles, man.

They can try to make buildings earthquake proof. There weren't a lot of buildings that came down in that big quake. The problem was with the freeway. Los Angeles, man.

Developing earthquake-proof buildings (and pinpointing the areas of the country that need this kind of construction) are directions that make sense to the public. Once again, these are the kind of technological fixes that people find attractive.

Of the issues we studied, earthquakes generated the least discussion and interest among our focus group respondents. Our sense was, as we have observed above, that there is little support for any efforts to predict earthquakes (and from what we can tell, seismologists are less interested in this problem anyway), but much more potential interest in the task of making buildings earthquake-proof. As we have seen before, given the public's skepticism about changing broad public behavioral changes, anything that addresses the problem without asking people to change their behavior has a much higher chance of gaining public support.

* * *

Each of these issues -- global warming, water availability, space research and earthquake research -- occupies a somewhat different space in the public's thinking, but each reflects similar patterns. The public is, in one way or another, concerned about the topics that we investigated. But, at the same time, people are confused and adrift. In the case of global warming and earthquakes, they are convinced that there is a problem but skeptical that there is a solution. In the case of water availability, the existence of an easy pseudo-solution (desalinization) blocks awareness that the problem even exists. Space research is caught up in a divisive disagreement about costs and benefits.

Stagnation Versus Public Engagement

Public Agenda research on a variety of issues suggests that there are many dimensions to public opinion. One dimension that is not often discussed has to do with how ready the public is to engage an issue, namely to think through the complexities and be willing to undergo the painful process of forging a consensus or compromise about how to deal with it. On some issues, the public is willing to be engaged and ready to make hard choices and, if necessary, to sacrifice to meet other objectives. In other areas, the public seems stalemated. While they may concede the seriousness of the issue, they are not ready to engage it, or to take actions to deal with it.

Why is there the difference between engagement and stalemate? There are at least three factors that are important to the process. First, the public must be convinced that the issue is a real one, either because they believe the messages they are hearing from leadership or because they see the effects of the problem with their own eyes. Merely being convinced of the importance of the problem, however, does not in itself guarantee engagement. Second, the public needs choices for how to deal with a problem and the chance to think through the implications of those choices. Increasing the public's sense of concern about the problem only increases their frustration, not their willingness to deal with the problem. Finally, people need to feel that effective solutions are available, and, if followed, will actually make a difference.

Factors related to stalemate versus engagement	
Stalemate	Engagement
Confusing and contradictory messages from leadership.	Consistent and credible messages from leadership on the importance of the problem.
Absence of clearly defined solutions or choices.	Clearly understood choices, with pros and cons, to serve as a catalyst for public debate and dialogue.
No conviction that proposed actions will actually solve the problem.	Widely shared sense of efficacy that if recommended actions are taken, the problem will be solved.

Recycling provides a good example of how the public can be engaged by an issue. In the 1970s people became convinced of the existence of the problem of garbage disposal (our focus group respondents were still talking about the image of homeless garbage barges floating around the nation). With recycling, the public was given a clearly defined set of actions, which, from a common sense perspective seemed likely to address the problem. As we have already noted, recycling has become enormously popular.

By contrast, global warming provides an example of an issue where these conditions are not present. In this case there is a general consensus that the problem is real and it exists. What is missing is a sense that there are clearly defined choices that will actually solve the problem. Without any clear sense of efficacy about the choices, however, communication about the seriousness of the problem mostly serves to increase public frustration. As a result, people grow more hopeless about the situation and, not surprisingly, lose interest. Regardless of how important the issue is, they seem to be saying, if the problem is unsolvable we should turn our attention elsewhere.

What the Public is Waiting For

Our research suggests that there is a potential pool of interest and support for geophysical issues but that currently the public is not giving these issues their full attention. If our analysis is correct, the public is waiting for at least two things:

1. *Credible signals from the scientific community.* As one member of the PIC remarked, scientists are trained to dispute and debate on the theory that scientific progress can emerge from vigorous disagreements. What works well within the scientific community, however, does not necessarily communicate to the public. The public has been battered back and forth by conflicting scientific theories (for example, the recent reversal of scientific opinion on the relationship between fiber and colon cancer). What the public needs to hear from the scientific community is a greater sense of agreement about what is known.

2. *A sense of efficacy.* As we have said earlier, informing the public of the problems can increase frustration and apathy rather than build support. Our research suggests that what the public is most skeptical about is not the existence of problems but our ability to solve them. What will make the public invest energy in these issues is not the conviction that the problems are real, but that we can do something about them. Currently, the public tends to vary between thinking

either that there is no solution, or that the problems can be painlessly solved without behavioral changes from most people. What they need to hear, if attitudes are to change, is that there are real solutions which require energy, but that can make a difference.

Acknowledgments:

I am indebted to a number of people for help with this project. I am, first of all, grateful to William Graustein, former chair of the Public Information Committee of the American Geophysical Union. Dr. Graustein was convinced that the approach Public Agenda had taken in other areas could shed light on geophysical issues as well, and it was his vision that brought the two organizations together. I am also grateful to the members of the PIC for their frank and thoughtful feedback. A subcommittee, consisting of William Graustein, Robert Cowen, Shelly Lauzon, John Dickey and Harvey Leifert helped further refine and shape the research. I am indebted to my colleagues at Public Agenda, including Jean Johnson, Deborah Wadsworth and Steve Farkas for their advice and guidance. Joanna McHugh and Claire Aulicino were responsible for setting up the focus groups, searching the public opinion databases and for assisting in all aspects of the research. Finally I am grateful to Villanova University for its support and flexibility in allowing me to work with this project.

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Methodology:

This report is based on five focus groups conducted in: Potomac, Maryland, on March 4, 1997; Des Moines, Iowa, on July 14, 1998; Los Angeles, California, on August 3, 1998; Phoenix, Arizona, on August 4, 1998; and Charleston, South Carolina, on November 19, 1998.

Focus groups are discussions with small groups conducted by a professionally trained moderator following a systematic research plan. Researchers can get people's spontaneous reactions, ask questions about unfamiliar concepts, and gauge people's reactions to new arguments and information. Perhaps most importantly, focus groups allow researchers to probe beyond surface answers, and understand why people think as they do. Participants are self-selected; therefore while findings are suggestive, they are not generalizable.

Professional recruiting facilities enlisted members from their communities to participate in this research based on specifications provided by Public Agenda. All groups excluded anyone who worked as a scientist or in environmental groups, or in marketing, advertising, the law, the news media or political campaigns. All groups consisted of ten to twelve adults ages 18-69 from a variety of racial, economic, educational, and occupational backgrounds, as well as an equal number of men and women.

Endnotes:

- ¹ Wirthlin Worldwide. National survey of 1,010 adults, conducted September 11-14, 1998. “Do you think of yourself as: one, an active environmentalist, or two, sympathetic to environmental concerns but not active, or three, neutral, or four, generally unsympathetic to environmental concerns?” Responses: Active environmentalist, 12%; Sympathetic to environmental concerns, 57%; Neutral, 27%; Unsympathetic to environmental concerns, 3%; Don’t know/Refused, <.5%.
- ² For example: Gallup Organization (sponsored by Cable News Network, *USA Today*). National survey of 1,239 adults, conducted May 4-7, 1989. “Regarding the following list of environmental problems, do you personally worry about this problem a great deal, a fair amount, only a little or not at all? What about the “greenhouse effect” or global warming?” Responses: A great deal, 35%; Fair amount, 28%; Only a little, 18%; Not at all, 12%; No opinion, 7%. See also, Gallup Organization (sponsored by Cable News Network, *USA Today*). National survey of 1,025 adults, conducted March 12-14, 1999. “I’m going to read you a list of environmental problems. As I read each one, please tell me if you personally worry about this problem a great deal, a fair amount, only a little or not at all. How much do you personally worry about the “greenhouse effect” or global warming?” Responses: A great deal, 28%; Fair amount, 31%; Only a little, 23%; Not at all, 16%; No opinion, 2%.
- ³ Wirthlin Worldwide. National survey of 1,040 adults, conducted August 21-23, 1997. “Some people believe that the earth’s atmosphere is gradually getting warmer as a result of air pollution and that in the long run, this global warming could have catastrophic consequences. From what you have heard or read, do you believe that global warming is real, or not?” Responses: Believe, 74%; Do not believe, 24%; Don’t know/Refused, 2%.
- ⁴ Gallup Organization (sponsored by Cable News Network, *USA Today*). National survey of 1,003 adults, conducted November 6-9, 1997. “Would you tell me how harmful, if at all, you think global warming will be to each of the following during the next 25 years: very harmful, somewhat harmful, not very harmful, or not at all harmful. How harmful, if at all, will global warming be to...?” Agricultural production: Responses: Very harmful, 39%; Somewhat harmful, 35%; Not very harmful, 12%; Not at all harmful, 6%; Don’t know/Refused, 8%. The survival of many animal and plant species: Responses: Very harmful, 43%; Somewhat harmful, 30%; Not very harmful, 11%; Not at all harmful, 7%; Don’t know/Refused, 9%. Human health: Responses: Very harmful, 38%; Sometimes harmful, 34%; Not very harmful, 14%; Not at all harmful, 8%; Don’t know/Refused, 6%.
- ⁵ CBS News, *New York Times*. National survey of 953 adults, conducted November 23-24, 1997. “Do you think global warming is an environmental problem that is causing a serious impact now, or do you think the impact of global warming won’t happen until sometime in the future, or do you think global warming won’t have a serious impact at all?” Responses: Impact now, 28%; In the future, 51%; No serious impact, 15%; Don’t know/No answer, 6%.
- ⁶ Gallup Organization (sponsored by Cable News Network, *USA Today*). National survey of 1,239 adults, conducted May 4-7, 1989. “Regarding the following list of environmental problems, do you personally worry about this problem a great deal, a fair amount, only a little or not at all?” Damage to the earth’s ozone layer: Responses: A great deal, 51%; Fair amount, 26%; Only a little, 13%; Not at all, 8%; No opinion, 2%. The “greenhouse effect” or global warming: Responses: A great deal, 35%; Fair amount, 28%; Only a little, 18%; Not at all, 12%; No opinion, 7%. See also, Princeton Survey Research Associates (sponsored by The Pew Research Center). National survey of 1,200 adults, conducted November 12-16, 1997. “I’m going to read you a list of environmental problems. As I read each one, please tell me if you personally worry about this problem

a great deal, a fair amount, only a little or not at all. How much do you personally worry about...?" Damage to the earth's ozone layer: Responses: A great deal, 40%; Fair amount, 28%; Only a little, 21%; Not at all, 9%; No opinion, 2%. The "greenhouse effect" or global warming: Responses: A great deal, 24%; Fair amount, 30%; Only a little, 26%; Not at all, 15%; No opinion, 5%.

7 Gallup Organization (sponsored by Cable News Network, *USA Today*). National survey of 1,003 adults, conducted November 6-9, 1997. "Here is a list of possible causes of global warming. For each one, please tell me whether you think it is a major cause, a minor cause, or not a cause of global warming, or whether you don't know enough to say?": Automobile exhaust: Responses: Major cause, 65%; Minor cause, 20%; Not a cause, 5%; Don't know enough to say, 10%; Don't know/Refused, 1%; Nuclear power plants: Responses: Major cause, 35%; Minor cause, 23%; Not a cause, 15%; Don't know enough to say, 25%; Don't know/Refused, 2%; Aerosol sprays: Responses: Major cause, 36%; Minor cause, 39%; Not a cause, 6%; Don't know enough to say, 17%; Don't know/Refused, 1%.

8 Gallup Organization (sponsored by Cable News Network, *USA Today*). National survey of 1,003 adults, conducted November 6-9, 1997. "We'd like your impression of what scientists believe about global warming. From what you've heard or read, do scientists mostly believe that global warming is a serious threat, mostly believe that global warming is not a serious threat, or are scientists generally divided on this issue?" Responses: Mostly believe serious threat, 42%; Mostly believe not serious threat, 6%; Generally divided on this issue, 44%; Other, <.5%; Don't know/Refused, 8%.

9 Gallup Organization (sponsored by Cable News Network, *USA Today*). National survey of 1,239 adults, conducted May 4-7, 1989. See also, Princeton Survey Research Associates (sponsored by The Pew Research Center). National survey of 1,200 adults, conducted November 12-16, 1997.

10 Princeton Survey Research Associates (sponsored by *Newsweek*). National survey of 752 adults, conducted February 26-27, 1998. "One hundred years from now, do you believe the air and water in this country will be cleaner or more polluted than it is now?" Responses: Cleaner, 32%; More polluted, 57%; About the same, 6%; Don't know, 5%.