Talking Environmental Health

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Introduction

Beginning in 2011, communications researchers joined forces with public and environmental health experts to explore what Americans know about environmental health, how this knowledge base differs from what experts would want people to know, and why existing habits of communication have been largely unsuccessful in furthering this important exchange. Given the broad impacts of environmental health on Americans' lives — affecting everything from the air they breathe, to the food they consume, to the resilience of their communities to natural and man-made disasters — the relative invisibility of the field and its work is both curious and troubling. Moreover, this invisibility is felt by experts to impede informed public deliberation about the importance of sound investments in the nation's environmental health infrastructure and workforce. This MessageMemo summarizes research the FrameWorks Institute conducted for the American Public Health Association (APHA) with funding from the CDC's National Center for Environmental Health (NCEH)/Agency for Toxic Substances and Disease Registry (ATSDR). Over the course of three years, the FrameWorks Institute conducted a series of studies that document conceptual challenges in the public's understanding of environmental health, and prescribe communications strategies that increase public understanding of this field and its work and allow people to think productively about the solutions necessary to ensure a positive relationship between the health of populations and the environments they live in.

APHA and its partner organizations funded the research that informs this report, recognizing that effecting substantive and sustained change in the public conversation around environmental health requires a long-term and comprehensive strategy. This strategy must be informed by a deep knowledge of the cultural and media factors that have, and continue to, shape that conversation, and a commitment to empowering communicators across the sector with a shared set of strategies and tools that can be deployed across communications platforms. The wisdom of this approach is in recognizing that the difficult task of reframing environmental health for the American public is not a short-term task, and cannot be accomplished through a few creative messaging campaigns. There is no magic bullet slogan, bumper sticker or PSA that can quickly transform the deep patterns of thinking and understanding that currently define the public's relationship to the sector. Instead, it requires a strategic and sustained communications approach that is grounded in an evidence base, with tools that have been rigorously tested, and proven effective, in facilitating the kinds of shifts in understanding and thinking that the sector requires. Put into the hands of creative communicators working across the scope of the

environmental health sector, this strategic approach has the best chance to shift the public conversation around the work of environmental health and its importance to our society and nation.

The research base informing this MessageMemo is as follows:[1]

To generate a summary of the expert view of environmental health, four research methods were employed:

1. Ten one-on-one *phone interviews* conducted with expert practitioners and academics;
2. a *literature review* of roughly 85 scholarly articles;
3. *participant observation* at multiple environmental health professional meetings; and
4. an *online feedback session* hosted by FrameWorks with 14 experts from the field, consisting of a structured Q&A session and solicited response to, and critique of, an initial summary of "the expert view" derived from the first three methods.

From these methods, there emerged a consensus document that anchors the subsequent investigation. The knowledge that environmental health scholars, practitioners and leaders wished to communicate to the public is succinctly captured in this graphic:

The Untranslated Expert Story of Environmental Health

- The work of EH is to assure healthy built and natural environments in our communities.

- EH focuses on human-environment interactions through risk management and health promotion.

- The "environment" in "EH" includes social, natural, built, economic and climatic conditions.

- Differences among environments lead to differential health outcomes among populations.

- EH interventions at the population level have the greatest impact.

- Public policies and agencies are critical to EH efforts.

- To do its work, the field of EH needs effective coordination, communication, workforce capacity and community engagement.

- The work of EH is challenged by powerful economic and political interests.

To understand the public's current and potential views about environmental health, five research methods were employed:

1. *Cultural models interviews* with 21 Americans in four states (Texas, Indiana, Colorado and Ohio) to document cultural models in use on this topic;
2. a *media content analysis* of 500 media stories, drawn from a larger sample of 1,788 articles, to document dominant environmental health frames in the American news media;
3. two *peer discourse sessions* with a diverse group of 18 Americans in Towson, Maryland;
4. a large *experimental survey* involving 2,600 American respondents to test the impacts of value frames on public support for programs and policies;
5. *qualitative and quantitative testing* with more than 1,800 Americans of candidate metaphors and their ability to capture aspects of the science of environmental health.

All in all, more than 4,400 Americans were queried as part of this multi-method, multi-disciplinary research. All reports are published at www.frameworksinstitute.org.

Looking across this body of research, this MessageMemo summarizes, evaluates and addresses the challenges communicators face in seeking to engage the public in a conversation consistent with the expert vision of environmental health. It is not intended to take the place of the research reports that inform it; indeed, FrameWorks strongly recommends that communicators avail themselves of these reports and use their own creativity to apply this learning. Representative quotes from research participants are used here to remind the reader of the research base that informs these assertions; more nuance and variety can be found in the original reports. In addition to summarizing and synthesizing that body of work, this MessageMemo extends this descriptive research by providing another level of more detailed and prescriptive interpretation to inform the work of those communicating about the field of environmental health and its work.

This MessageMemo charts a course through the dominant patterns of reasoning employed by the public, identifies the major challenges for communicators, and recommends ways to use communications more effectively to improve public understanding. It is organized as follows.

- We first **Chart the Landscape** of public thinking by providing a description of the dominant patterns of thinking that are accessible to Americans in reasoning about

environmental health and the implications of these dominant models for communicators.

- We next identify the **Gaps in Understanding** between experts and ordinary Americans — features that bring into relief the specific locations where translation is needed if expert knowledge is to become accessible to the public in understanding and reasoning about environmental health.

- We then provide an outline of **Redirections**, research-based recommendations that represent promising routes for improving public understanding of environmental health.

- We end with a cautionary tale of the **Traps in Public Thinking** that must be avoided if reframing is to succeed.

I. Charting the Landscape: Default Patterns of Thinking

Americans rely on a set of highly shared paths, or "cultural models,"[2] when forced to think about *what environmental health is*, *how it works*, *why it matters*, and *what can and should be done to improve it*. These patterns in understanding constitute the challenges that efforts to reframe this issue must address. It is crucial that communicators who seek to build new understandings of environmental health become familiar with these default patterns of understanding in order to accurately anticipate what they are up against, and what their communications must overcome.

Central among these default patterns is that the public has a dominant model for thinking about environmental health *threats*, but only a very weak, fragmented model for thinking about environmental health *work*. That is, members of the public can easily engage with thinking about a narrow set of dangers that environments pose to human health, but have considerable difficulty thinking about the work that is done to mitigate these risks, let alone the efforts required to proactively encourage positive health. This critical distinction structures patterns of public thinking across each of the following areas:[3]

Definition: Unfamiliarity invites unproductive thinking.
Neither the phrase "environmental health" nor "environmental public health" is familiar to most members of the public. This is not surprising, as national media coverage of environmental health stories rarely employs either term. This lack of familiarity does not represent a lack of thinking about environmental health *threats*, but does correspond with a lack of thinking about environmental health *work*. On the topic of environmental health threats, concerns about exposure to contaminants — chemicals, artificial hormones and steroids, heavy metals, pollen, and the like — dominate, a pattern that is reinforced in media coverage that is focused overwhelmingly on stories about contaminant exposures. This dominance of the *contaminant model* of environmental health threats thus structures the overall understanding of the way in which environments affect human health, and constrains thinking about other environmental features and facets that might also affect health, such as the built environment, habits of movement, patterns of energy use, and access to health resources. There is no corresponding dominant model of environmental health *work*. In addition, there is a strong tendency for the public to default to the more familiar arenas of environmentalism and health care in thinking about environmental health.

Importance: The immediacy of threats puts the day-to-day work of environmental health on the back burner, even though people believe both to be important.

Members of the public have an active concern about environmental health threats, and especially about the safety of food, water, air and their domestic environments. Their concerns are derived from a range of sources, including personal and family illnesses (asthma, cancer and other conditions) and popular media stories about environmental health impacts. The public does not, however, have an *active*, top-of-mind model of the importance of the environmental health workforce, and people are largely unable to identify or describe many of the institutions and practices of environmental health that are in place on their behalf. Yet, once engaged in a discussion of environmental health threats and what can be done about them, members of the public can speak to *the criticalness of basic environmental health functions*, including sanitation, air and water quality, and food safety work. Once pulled into active thinking, these taken-for-granted functions shift from absent to very important. Embedded within these statements — and the transition from absent to important — is a core model that affirms the basic principle that everyone deserves to live in a healthy environment.

Organization: The full range of systems and sites that comprise environmental health are only dimly perceived.

The public is familiar with the sectors of air and water quality, sanitation, and food safety, and, when asked, people are able to speak about threats of *contaminant exposure* in these areas. They are much less familiar with issues of radiation exposure, and are likewise unaccustomed to thinking about broader environmental health topics — whether in city planning, energy consumption, infrastructure maintenance or climate change — as types of environmental health work carried out by institutions or agencies. Unpracticed in thinking about the contours and scope of environmental health work overall, members of the public struggle to identify the key agencies, institutions, hierarchies, professions and skill sets of the field. Once again, patterns in media coverage reinforce this trend, as the professionals who do the daily work of environmental health, such as health inspectors or sanitation workers, are notably absent from the coverage.

Responsibilities and Solutions: While people believe government and business should play a role, they consistently default to holding individuals responsible for environmental health.

In discussing issues related to environmental health work, the public employs *a distributed model of responsibility*, locating responsibility with government, businesses and individuals. However, public discussions of environmental health issues consistently focus on decisions and measures that should be taken *at the personal and household level*. While government

is expected to provide reliable information and take protective regulatory action, public thinking consistently returns to steps individuals must take to increase their awareness and improve their decision-making. This pattern is accentuated because of the zero-sum way the media often frame environmental health situations. Despite their generally pro-regulation stance, media stories often promote the idea that government regulation comes at the cost of economic prosperity. Regulation is portrayed as a zero-sum game, or a "war" between business interests and the public's health. This tension in media coverage only encourages members of the public to default to individual-level solutions. At the same time, people do recognize some solutions beyond the individual level, including calls for local empowerment, more social connectedness (neighborliness), reduced patterns of consumption and expansion, and an idealized notion of local production. These, admittedly recessive, notions of largely community-based solutions hold some promise, if they can be invigorated and expanded.

Recessive Models: Environmental health as a man-made construct was less discussed, but nevertheless observable, in public reasoning.

In addition to the dominant contaminant model, members of the public employ a series of more latent, or "recessive," assumptions about environmental health impacts. These understandings are less pervasive, less "top of mind," and less well-formed and articulated. These recessive models include an understanding that *social relationships*, *economic conditions*, and *the organization of built environments* can have profound health effects. These extant, but recessive, models represent promising targets for communications efforts that seek to expand public thinking about environmental health. They are, however, underdeveloped in current thinking and require significant strategy and effort on the part of communicators to pull them forward and make them more top-of-mind and readily applied in thinking about environmental health.

We represent the "swamp" of cultural models — those features of the mental landscape that communicators must anticipate and address — as follows:

Health Individualism
Health is each individual's responsibility
Household=Environment

Contamination
Threats to food, water, air

What's in the swamp of...?
Environmental Health

Environmentalism
Extreme
Puts animals over people

Determinism
Result of modern life
Remediation, not prevention

Environmental Health Work?
=Black box
Taken for granted

Everyone is Responsible
Government corrupt/inept
Business greedy, focused on bottom line
Community is key
Individuals must do what they can

Healthy Environment=Basic Right
Context Influences Health
Organization of the built environment matters
Social relations important
Economic conditions influence outcomes

II. Gaps in Understanding

Gaps in understanding are those places where the cultural models employed by the public to think about an issue differ significantly from experts' understanding of the same issue. As such, they represent strategic opportunities for framing in order to bridge gaps between expert and public understandings. We enumerate the gaps below and, in the subsequent section, assign values, metaphors and other framing strategies to fill them.

- **The Environment/Environmentalism Gap.** Given the public's relative unfamiliarity with the term "environmental health" and the broader concepts it represents, the first gaps any communicator is likely to encounter are definitional: What category does this issue fit into and how is it related to other issues? When asked specifically about environmental health, people often respond with their default assumptions about environmentalism. Coupled with their understanding of environmental health problems as toxic events, this conversation typically foregrounds plant and animal species threatened by pollutants. Depending upon the ideological orientation of the individual, this leads to a sense of regret, and even fatalism, or to anger over the presumed asceticism and extremism of the environmental movement, which is seen as valuing animal health over human health. Regardless of which of these paths a person pursues, this gap does not result in the kind of engagement that experts exhibit when they contemplate interacting systems that can be affected in multiple ways in a synergistic environment. By contrast, on the expert side, the adjective "environmental" elevates the understanding of multiple systems and contexts that contribute to outcomes.

- **The Health/Health Individualism Gap.** To explore the other side of the "environmental health" nomenclature, if this is "about" health, people reason that it must be about health *care*. So, while experts clearly distinguish between environmental and public health, on the one hand, and systems of health care provision on the other, the public often conflates the two. This default to thinking about health individualizes responsibility for personal health, muting attention to systemic environmental factors. This further foregrounds people's tendency to think about remedies to environmental health at the individual level. If this is about health, people surmise, then it confirms this as an issue of individual responsibility.

- **The Scope Gap.** While both experts and the public speak to the importance of material contaminant threats to health, experts recognize a broader set of

interconnected factors that impact human health, including social, economic, infrastructural and climatic factors. The public is far more likely to conceptualize environmental health as local threats, often very narrowly as direct exposure to toxic contaminants. Put simply, experts hold a dynamic model while members of the public see a uni-directional model in which something in the environment suddenly threatens human health. Thus, in thinking about how to promote or improve environmental health, the public starts with a more limited perspective and, hence, a smaller set of actions that appear to "fit" the problem.

- **The Nature of the Work Gap.** While experts demonstrate a consistent awareness of, and commitment to, the importance of environmental health work, the public often takes this work for granted and fails to consider its ongoing nature and critical importance. When coupled with the public's episodic and event orientation to environmental health — as an outbreak, contamination, recall, disaster, etc. requiring instant remediation — the notion that environmental health is always "happening," through prevention, anticipation and promotion, is very hard for people to consider.

The cultural models we identified "in mind" were congruent with the media frames that FrameWorks researchers identified in a review of major U.S. newspapers, political blogs and national TV broadcasts. Similar to public perception of these issues, environmental health is not presented in the media as an identifiable field and its practitioners are rarely referenced or cited. The coverage is dominated by stories about threats and dangers of contamination, and journalists generally fail to explain why environmental health problems occur, or assign responsibility to specific actors for preventing or remediating these problems. These media frames solidify the gaps between experts and the public identified above by creating a self-replicating loop between public perception and public discourse of environmental health.

III. Redirections

From the descriptive research, we learned that building a more productive route along the cognitive map of environmental health will require communicators to address those highly accessible, but unproductive, patterns of thinking that limit the public's understanding of causes, mechanisms and solutions. This will require the introduction of proven strategic framing elements that translate expert understanding by clarifying what environmental health is, how it happens, and how it can be addressed by supporting the broader environmental health sector. Strategies to reframe environmental health will also need to make explicit the public dimensions of the issue. One can think of the descriptive research as establishing a set of tasks that frame elements must be able to address. Importantly, these tasks are specific to this issue; that is, communicators can waste valuable resources and effort if they do not align the specific framing challenges associated with environmental health with specific frame elements. FrameWorks investigated, developed and tested *values* and *Explanatory Metaphors* in order to identify specific tools capable of meeting some of the challenges documented above. Based on the research findings, we offer the following evidence-based recommendations for communicators.

Values

A prime asset in reframing any issue is the identification of a potent value. Values are "enduring beliefs, which orient individuals' attitudes and behavior. As such, effective values form the basis for social appeals that pull audiences' reactions in a desirable direction."[4] There are a number of aspects of the challenges identified above that lend themselves to what we know values do:[5]

- Values help us define, or redefine, what an issue is "about": Here, we might look to values to help steer around the dominant unproductive definitional associations with both "environment" and "health."

- Values redirect attention: Given that the issue of environmental health suffers from a focus on the immediate while people ignore the upstream issues that contribute, we might use values to illuminate the factors and actions that result in a healthy environment.

- Values are effective in assigning responsibility for issues: In this case, we need to redirect attention away from the individual level that dominates thinking, and pull

forward more latent, but undeveloped, notions of shared responsibility with systems, including business and government.

- Values can be used to pull forward one aspect of an issue and to increase its salience: For environmental health, we might, for example, look to bolster people's understanding of the consequences of inequitable distribution or quality of environmental health promotion.

- Values raise support for meaningful solutions and depress support for ineffective actions: We would hope to see values communicate the importance of public funding of environmental health, increase support for the profession, deepen appreciation of proactive and preventive environmental health approaches, and elevate concern for the infrastructures that support human health.

To realize these potential benefits of values, FrameWorks tested four candidate value frames — *Prevention*, *Protection*, *Pragmatism* and *Fairness Across Places/Opportunity for All* — as well as one value we suspected to have negative impacts on thinking — *Health Individualism*.

One value emerged as consistently effective in elevating systems thinking and creating productive solutions perspectives. This was the value of *Fairness Across Places/Opportunity for All*, or the idea that we should give everyone equal access to environmental conditions that foster positive human health. This value increased support for all the outcomes tested,[6] with high statistical significance on the willingness of the public to increase funding for public solutions to environmental health problems and support for the environmental health discipline. Here is a version of the value; communicators should use their judgment and creativity in crafting and deploying the value, given their particular communication goals and audiences.

> *No matter where they live, all Americans deserve healthy environments and need to have the opportunity to live in healthy environmental conditions. To make this happen, we need to improve the environmental health systems in all communities and give everyone the opportunity to live free from environmental threats. This means that we need to devote more resources to places that are facing the greatest threats. The bottom line is that we all need to make sure that all Americans have the opportunity to live in healthy communities.*

This value has numerous advantages for communicating about environmental health:

- In redefining environmental health as a *public* resource that everyone should have an equal opportunity to access, *Fairness Across Places/Opportunity for All* overcomes the tendency to think that health is the responsibility of the individual, and replaces it with a collective sense of responsibility for creating, improving and maintaining fair access across the population.

- In highlighting the fact that more equitable distribution of environmental health systems and resources creates collective benefits, *Fairness Across Places/ Opportunity for All* overcomes zero-sum notions that helping some people comes at the expense of the well-being of others, and establishes an implicit call to action.

- In focusing on how those resources get distributed, *Fairness Across Places/ Opportunity for All* deepens appreciation for the discipline and profession of environmental health.

It is important to note that the values often at play in environmental health communications — *Prevention* and *Protection* — performed poorly in quantitative testing. FrameWorks' researchers believe these outcomes derive from the fact that these values presuppose an understanding of causation that, as we know from the research described above, is lacking in the public's understanding of environmental health. Put simply, the idea that you can get ahead of the problem with practical protections requires more "upstream thinking" than people currently have available. Even *Fairness Across Places/Opportunity for All* struggled to overcome this narrowness in Americans' thinking about *how* environments affect human health, as support for addressing built environments and ability to think upstream, even though directionally positive, were weaker than responses to other outcome measures. To meet this challenge, FrameWorks researchers invested in the development of several Explanatory Metaphors.

Metaphors

Explanatory Metaphors are "frame elements that fundamentally restructure the ways that people talk and think about issues … by referencing a topic that is more familiar to people as a way to understand one that is less familiar."[7] At the heart of this facilitative process is the ability of a metaphor to remind people of all they know about a familiar object or

concept (the source domain) in order to help them map this knowledge onto an unfamiliar subject (the target domain). Often, Explanatory Metaphors are used to address "black box" thinking, contexts where the public draws a blank when confronted with an unfamiliar topic or abstract process. There are a number of specific holes and gaps in public thinking about environmental health that lend themselves to metaphorical solutions. Ultimately, FrameWorks researchers settled on several key aspects of the issue that appeared amenable to the work that Explanatory Metaphors are able to perform:

- To make visible and salient the work of environmental health professionals, which is a "cognitive hole" documented in the descriptive research.

- To broaden thinking about causality beyond the narrowness and immediacy of people's current thinking and open a space for greater complexity and diversity in considering the range of environmental conditions that shape population health.

- To establish how human actions can get *in front of* conditions, events and threats; and give greater salience to prevention, protection and intervention.

- To more generally "anchor" the definition of environmental health by getting beyond the contaminant model to a broader and more concrete set of contributing factors.

Two metaphors emerged from FrameWorks' iterative, multi-method tests: *A Ground Crew for Environmental Health* and *Upstream Environments, Downstream Health*. Importantly, these metaphors accomplish different tasks, and therefore need to be understood by communicators in order to suit them to specific objectives.

Explanatory Metaphor No. 1: *A Ground Crew for Environmental Health*

The following is an example iteration of this Explanatory Metaphor:

> *An airport ground crew uses its technical expertise to repair, maintain and coordinate the planes in an airport to keep them working and safe — this takes skill, planning and specialized training. Just as the ground crew at an airport makes sure everything is going smoothly on the runway, there is a ground crew for environmental health. People on the environmental health ground crew use their expertise and skills to make sure we build and maintain environmental conditions that are healthy for people to live in. We need to make sure that our*

"ground crew" for environmental health has diverse skills, is highly trained, and can work together to ensure that our environmental conditions are built and maintained for people's health.

The *Ground Crew for Environmental Health* metaphor proved very effective in helping members of the public think more expansively about:

- The salience and importance of environmental health work.
- The training, expertise and multidisciplinarity necessary to promote environmental conditions for human health.
- The ongoing nature of this work, i.e., that it does not happen overnight and must receive investments over time if it is to be able to meet the challenges of threats and events.

Recommendations for use

1. Specify the source domain of the airport whenever setting up and building out the metaphor — e.g., "Just as an airport has a ground crew, we need a ground crew for environmental health ..."

2. Provide examples within communications that link airport ground crew functions (mechanic, inspector, person who refuels or de-ices the plane, etc.) to environmental health functions.

3. Give examples of parallel functions (between source and target domains) to help build out the metaphor's positive entailments[8] of prevention, surveillance, and attention to safety and well-being, and help people apply them to thinking about environmental health. For example, "Just as inspectors do a visual inspection of an airplane before it's cleared for flight, so too there are people who inspect environments — whether they are restaurants, swimming pools or workplaces — to ensure they are healthy for humans."

4. Link source and target domains in phrasing. Use phrases such as "environmental health ground crew" and "a ground crew for environmental health" to help establish that this is about more than either environmentalism or health care.

5. Avoid references to the health care system, to keep from triggering thinking about health care, and make sure to explicitly flag the relationship between the

environment and health when applying the metaphor: "The environmental health ground crew makes sure that the environments with which we come in contact — parks, roads, buildings — are inspected and maintained so that they do not impair our health."

Explanatory Metaphor No. 2: *Upstream Environments, Downstream Health*

The following is an example iteration of the metaphor:

> *We all live "downstream" from a whole range of environmental factors that affect our health. By ourselves, we can't control all the things that happen "upstream" in our environments, but there are people who specialize in looking and working upstream. We need these environmental health workers to pay attention to what is happening upstream, and ensure that what flows downstream is healthy and safe.*

The *Upstream Environments, Downstream Health* metaphor proved effective in helping members of the public think more expansively about:

- The scope and nature of environmental health as a topic.
- The importance of early intervention and prevention efforts to avoid problems before they arise.
- The importance of having people and institutions upstream who can take proactive and preventative action.

Recommendations for use

1. Include health examples as evidence of *process*, in order to provide linkages between upstream conditions and downstream effects. Emphasize macro-level causes upstream and link these clearly with micro-level effects downstream in order to mute the assumption that individuals can solve environmental health problems by themselves. For example, "When we have environmental health workers on the ground working upstream — gathering data about how healthy our air quality and built environments actually are — then those of us who are living downstream are protected from some of the major contributors to bad health, such as respiratory disease."

2. Avoid examples involving water, including explicit talk about river systems, to avoid literal interpretations of the metaphor as only being about contamination of rivers

or other waterways. Using a wide range of non-water-based examples can prompt broader and more figurative thinking: "Upstream is where we see how patterns of energy use contribute to pollution. Downstream is where we see our daily lives affected, as our air quality deteriorates and more people are troubled by asthma and other health problems."

3. Provide examples that do not involve contamination, in order to broaden application of the metaphor beyond the *contaminant model*. For example, "Upstream solutions — such as redesigning zoning ordinances to reduce commuting — can have great downstream effects on the livability of cities."

4. Begin with, and consistently use, the language of "upstream" and "downstream." This language proved "sticky" and "easy to think" for the public. It provides the cognitive foothold the metaphor needs to gain traction. Additional metaphorical language to dramatize consequences — for example, "cascading effects" — can be introduced secondarily, but only after the basic idea that environments lie upstream and affect health downstream has been established: "When upstream solutions are put in place — increasing car and fuel efficiency, for example — it affects the health of people downstream who enjoy better air quality. These actions have cascading effects when better air quality allows more people to exercise outdoors, further enhancing their health."

5. Point attention to, and provide examples of, agents and institutions that operate upstream, as the public needs help filling in the kinds of public institutions and agents that can operate effectively upstream. Concrete examples of upstream work are especially important, given the partial trend toward fatalism revealed in FrameWorks' cultural models research. For example, "The team of people working upstream for environmental health includes everyone from research laboratories who study how traffic moves in dense urban settings and what consequences this has for public health, to local agencies that inspect chemicals in housing materials to make sure they are safe."

Other Frame Elements

Alongside values and Explanatory Metaphors, other reframing tools and strategies should be deployed as part of a larger strategic framing approach.

Messengers

It is important to note that the public has little familiarity with environmental health practitioners, in large part because they are poorly represented in media coverage. The professionals who do the daily work of environmental health — such as health inspectors and sanitation workers — are notably absent from media coverage.[9] Certainly, they were not well represented as solutions actors, with only 1 percent of environment health stories identifying scientists as implementing solutions to environmental health problems. Almost 80 percent of stories that discussed solutions implicated either government (through greater regulation) or consumers (by making better choices). In this respect, another important frame element — that of messenger — needs to be considered as the field reframes. Getting a wider array of messengers who can speak to the daily work of environmental health on op-ed pages, and in front of the public in other ways, should constitute another important part of this emerging strategy to define and concretize environmental health and the work it entails.

Solutions Stories

Aligning these messengers with solutions, and explaining how the *upstream ground crew* results in healthier environments, should be a communications priority among environmental health groups. In this respect, it can be fulfilled in multiple ways — agencies should focus attention on communicating their competencies and capabilities, and the critical nature of the effective, evidence-based work they do. By linking their successes to a bigger picture that connects causes and consequences, they can begin to plant "sticky" stories that the public can begin to contemplate, overcoming the taken-for-grantedness of much environmental health work. Additionally, by clarifying common mandates of the field — what unites the work of the FDA, CDC, EPA and local agencies with laboratories, etc. — these stories can begin to put forward a common profile of "the ground crew" that allows for organizational diversity even as it defines the common task of environmental health.

Explanation

Recent research conducted by FrameWorks on issues related to climate change, health and social determinants strongly underscores the value of providing information via *explanation* rather than description. By description, we mean the simple practice of presenting a phenomenon and attaching outcomes to it:

> "Climate change creates real risks for people's health. More frequent heat waves and severe storms increase injuries and deaths, and make it harder for

people to access treatment. Carbon dioxide is making it hotter, raising sea levels and melting the polar ice caps. These and other effects of climate change, such as the increased spread of infectious disease, are already harming people's health. We can limit these health problems and avoid worse consequences by reducing the amount of coal and gas we use."

By *explanation*, we mean filling in some of the causal connections that account for *how* a phenomenon works — how determinants and factors lead to outcomes:

"Climate change creates real risks for people's health. When we burn fossil fuels such as coal and gas, we release carbon dioxide into the air, which builds up and traps the Earth's heat. This creates higher temperatures that melt the polar ice caps and raise sea levels. When carbon dioxide traps heat it also results in more frequent heat waves and severe storms, which lead to injuries and deaths. These and other effects of climate change, such as the increased spread of infectious disease due to the increase in average temperatures, are already harming people's health. We can limit these health problems and avoid worse consequences by reducing the amount of coal and gas we use."

While these two paragraphs appear to impart the same information, the explanation provides more linkage and less disconnected data; it effectively "narrates" the connections. The results in quantitative testing were striking. The human health explanation produced significant positive effects on knowledge, while the description failed to produce any significant effects. Environmental health communicators should work to create explanatory chains[10] by explicitly linking what causes what, how that happens, and with what consequences.

A key takeaway from this work is that communications should always include a **value** (what's at stake), a **metaphor** (how it happens, linking cause and effect) and **a set of actions and programs** (solutions) that are shown to be responsive to the "plot" that has been established.
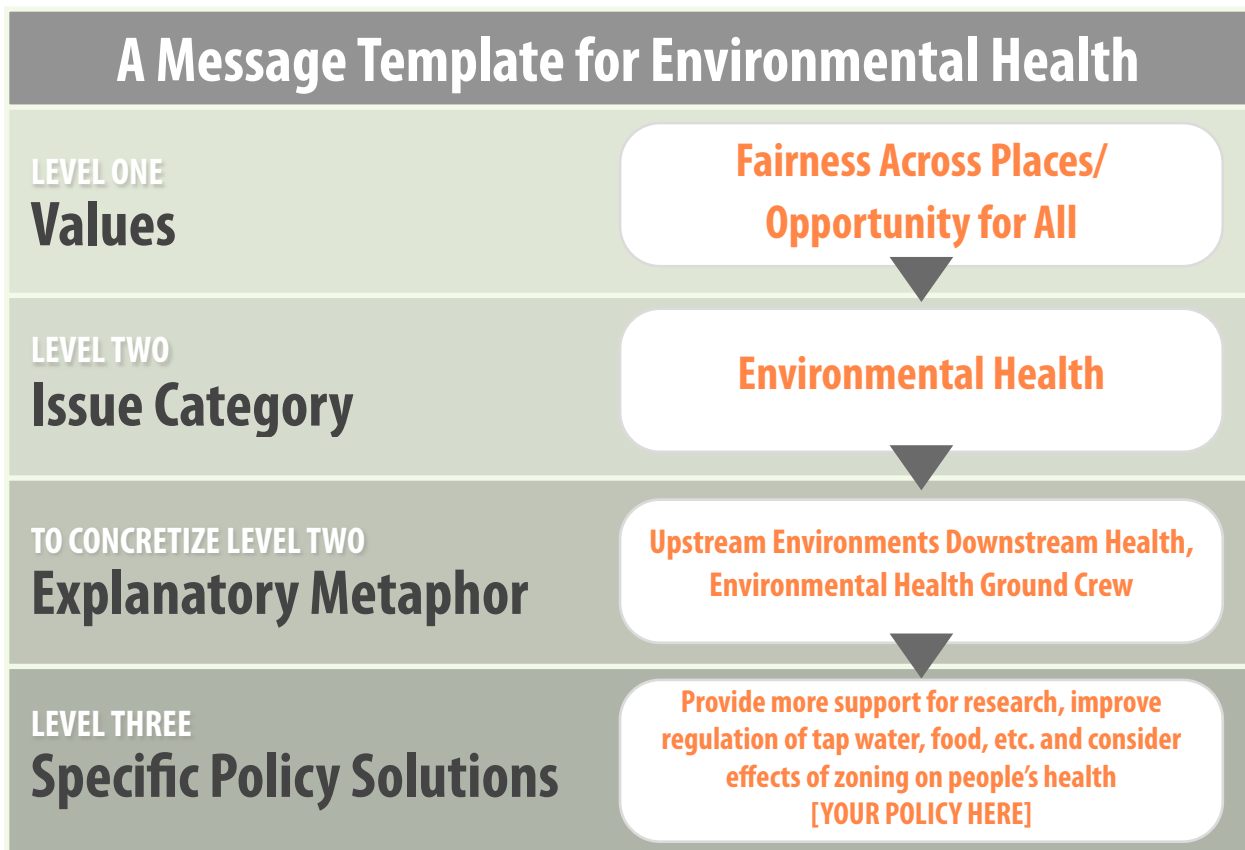
IV. Traps in Public Thinking

In the following section, we list aspects of thinking about environmental health that trigger models that may be "easy to think," but trap public thinking in unproductive evaluations and judgments. We focus here specifically on traps that are common in expert and advocacy communications, as these tend to represent unexamined hypotheses about effective communications. These traps are offered as a caution against the conventional communications wisdom of "meeting the audience where they are," and in recognition that current patterns of public thinking are actually part of the reason why environmental health communications are stuck.

1. **The Contaminant Trap:** Be mindful of the dominance of the *Contaminant Model*. While addressing contaminant threats represents a critical feature of environmental health work, its dominance in both public thinking and media coverage often mutes attention to other environmental health impacts. *In the effort to make visible a broader range of environmental health work upon which the public depends, communicators should look for opportunities to speak to a broader range of relationships between environments and human health.*

2. **The Magic Word Trap:** While values and Explanatory Metaphors are potent, they need a complete narrative structure to realize their redirective potential. Too often, communicators rely upon reframes as isolated tools, rather than recognizing that they need to be connected to a larger narrative. Be mindful of unfilled slots in the media narrative. There are many elements missing from the media narrative of environmental health issues, which leaves room for the public to fall back on default understandings — most notably, causes and solutions. Communicators should explicitly identify both the causal process *and* the causal actor in the stories they tell, and ensure that these narrative elements implicate the types of solutions for which they seek to build public support. All communications must establish a story that addresses: what's at stake (with the use of a value), how the cause and effect are linked (with a metaphor), and how solutions work to address the issue (with concrete examples and discussions of solutions).

3. **The "It's All About Health" Trap:** Avoid using "health" as the lead value. Existing cultural models of health are largely individualistic, and divorced from systems-level solutions. At the same time, both the public and the media place high value on health and hold the belief that all people deserve to live in healthy environments. There is

surely a role for "health" in a reframed narrative, but it is unproductive when it occupies the slot of the lead value in this story. Instead, communicators should lead communications with the value of *Fairness Across Places/Opportunity for All*, so as to prime more population-level, contextual and systems-type orientations before moving into the domain of health.

4. **The Health Individualism Trap:** Communicators will likely be advised to connect the "fuzzy" concept of environmental health to the more immediate and concrete value of *Health Individualism*, i.e., "What's in it for me?" Recall that this value was tested in FrameWorks' experimental survey with some notable results. While *Health Individualism* does, indeed, boost the salience of environmental health and make the built environment easier to think about, it is singularly ineffective in promoting upstream thinking, or support for the discipline of environmental health or public funding. These findings suggest that *Health Individualism* does little more than establish a human-centric, small-picture view on the issue, making long-term and upstream thinking even harder. Communicators would be better off to get the human element into their communications through the use of the *Ground Crew* and *Upstream* Explanatory Metaphors, both of which have the salutary advantage of getting people into the landscape in ways that do not default to individual responsibility.

This combination of values and Explanatory Metaphors creates an organizing principle into which many of the concepts people struggle to understand can now be "fit." Coming behind these frame elements, environmental health communicators should include discussion of systems-level solutions and policies. When communication front-loads systemic solutions, audience thinking is channeled productively towards available ways of thinking about environmental health that predispose them to be more receptive to the messages that environmental health professionals wish to convey.

A Message Template for Environmental Health

LEVEL ONE **Values**	**Fairness Across Places/ Opportunity for All**
LEVEL TWO **Issue Category**	**Environmental Health**
TO CONCRETIZE LEVEL TWO **Explanatory Metaphor**	**Upstream Environments Downstream Health, Environmental Health Ground Crew**
LEVEL THREE **Specific Policy Solutions**	**Provide more support for research, improve regulation of tap water, food, etc. and consider effects of zoning on people's health [YOUR POLICY HERE]**

Applying the Reframes

Drawing from the Media Content Analysis described above, we offer a series of excerpted examples that demonstrate how the reframes recommended above might be inserted into common narratives. Consider the following articles from major American newspapers. In each case, we've shown the original expert quote, followed by an example of how a spokesperson might have used the interview or other media opportunity to promote better frames about environmental health.

Under Obama, a renewed FDA
Los Angeles Times, October 10, 2010

Within a recent two-week span, the Food and Drug Administration weighed in on the controversial issue of genetically engineered salmon, announced tighter controls on a popular anti-diabetes drug, and rebuked the makers of popular mouthwash products over misleading advertisements.

Simultaneously, it warned consumers that devices supposedly offering protection against sudden infant death syndrome could themselves be lethal, and it pressed ahead with investigations into the biggest recalls in history of contaminated eggs and children's pediatric medicines.

On Friday, the agency announced that the anti-obesity drug Meridia was being pulled from the market.

The flurry of activity reflects a regulatory activism that seems destined to ramp up as the Obama administration seeks to further its agenda through executive orders rather than through an increasingly contentious Congress.

"They're not instinctively anti-industry. They understand the need for regulatory flexibility," said Lewis Grossman, who teaches food and drug law at American University. "I would describe them as cautiously energetic."

FDA Principal Deputy Commissioner Joshua Sharfstein sees a different problem: poor communication. "If the FDA doesn't explain itself well, not only will people object, they will misunderstand the decision," he said in an interview.

The agency proposes to do more to increase transparency, including releasing information about unapproved drugs and medical devices and other currently confidential data, which is likely to trigger industry opposition.

Reframes That Would Help This Narrative

These are all efforts to address the upstream causes of environmental health problems. We need organizations like the FDA to resolve health risks before they get downstream, where they undermine people's abilities to raise healthy families. When the environmental health ground crew is making sure that conditions are safe for us to go about our business, people can rely on the medicines and foods in our markets to raise healthy children. Without this assurance, we are left with a random distribution system where some people get healthy

products and others don't, and it is impossible for the average person to do anything about it.

Unsafe at Any Meal (Eric Schlosser)
Op-ed, *The New York Times*, July 25, 2010

EVERY day, about 200,000 Americans are sickened by contaminated food. Every year, about 325,000 are hospitalized by a food-borne illness. And the number who are killed annually by something they ate is roughly the same as the number of Americans who've been killed in Iraq and Afghanistan since 2003.

Those estimates, from the Centers for Disease Control and Prevention, suggest the scale of the problem. But they fail to convey the human toll. The elderly and people with compromised immune systems face an elevated risk from food-borne pathogens like listeria, campylobacter and salmonella. By far the most vulnerable group, however, are children under the age of 4. Our food will never be perfectly safe — and yet if the Senate fails to pass the food safety legislation now awaiting a vote, tens of thousands of American children will become needlessly and sometimes fatally ill.

Reframes That Would Help This Narrative

The zip code of your grocery store should not determine whether you get sick or not. Health should not be distributed by lottery. Americans deserve healthy environments no matter where they live. To make this happen, we need to improve the environmental health systems in all communities and give everyone the opportunity to live free from environmental threats. This means that we need to devote more resources to places and populations that are facing the greatest threats. When we invest in upstream inspections to make sure that the foods being delivered to all Americans are safe and healthy, we invest in healthy communities. It's not enough to catch problems downstream, once people become ill. We need to have a wide array of environmental health professionals use their expertise to catch problems before they occur and create positive health cascades.

New Alarm Bells About Chemicals and Cancer
The New York Times, May 6, 2010

Traditionally, we reduce cancer risks through regular doctor visits, self-examinations and screenings such as mammograms. The President's Cancer Panel suggests other eye-opening steps as well, such as giving preference to organic food, checking radon levels in the home and microwaving food in glass containers rather than plastic.

In particular, the report warns about exposures to chemicals during pregnancy, when risk of damage seems to be greatest. Noting that 300 contaminants have been detected in umbilical cord blood of newborn babies, the study warns that: "to a disturbing extent, babies are born 'pre-polluted.'"

It's striking that this report emerges not from the fringe but from the mission control of mainstream scientific and medical thinking, the President's Cancer Panel. Established in 1971, this is a group of three distinguished experts who review America's cancer program and report directly to the president.

"We wanted to let people know that we're concerned, and that they should be concerned," Professor Leffall told me."

The report blames weak laws, lax enforcement and fragmented authority, as well as the existing regulatory presumption that chemicals are safe unless strong evidence emerges to the contrary.

Reframes That Would Help This Narrative

Just as Americans rely on a ground crew at the airport to make sure they can land safely without having to do it themselves, so we need to rely on a ground crew that inspects our environmental health and makes sure the air, water and food we consume is safe for us and our families. No one can do this alone. It requires skilled professionals who are trained to go upstream and see what problems we are being exposed to, and to study ways to protect us from unhealthy environments. This is the work that our public health agencies need to do — and need funding to do. Concern is not enough to protect people. We need rules that make sure the products we get have been inspected well in advance of our use.

Conclusion

We began this investigation with a somewhat somber assessment of public thinking about environmental health: people had little idea what the concept meant; they easily defaulted to unproductive patterns of thinking, including a narrow, if not exclusive, focus on contaminants; they lacked an ability to connect causes to solutions; and they tended to assign responsibility at the individual level. All of these inclinations are at odds with expert views that wish to direct people's attention to the multiple upstream factors that influence environmental health, and to the necessity of investing in a multi-disciplinary field of experienced practitioners who can get ahead of problems before they occur and secure the environmental conditions that promote human health. At times, the reframing task has seemed daunting, with so many parts of the narrative converging to undermine reasoned public thinking. In the end, however, environmental health as an issue shows great promise of overcoming these conceptual deficiencies; that is, reframing effects proved to powerfully redirect people's thinking and to fill in missing slots in the existing story about what environmental health is, how it works, who does it and who benefits from it.

The "swamp" of public thinking about environmental health offered a number of positive cultural models which were, unfortunately, highly recessive. This fertile part of the swamp included the idea that a healthy environment is a basic right, and that contexts influence health, including social relationships, built environments and economic conditions. The job of reframing is to pull these ideas forward using frame elements that invigorate them. Importantly, these cultural models represent a communications goal, but simply repeating them factually does little to enliven them. Only by *building a new narrative* that situates these concepts in a coherent plot can we begin to pull these nascent ideas forward. This is the "art" of framing — using communications science to identify important elements of that narrative and then drawing upon communicators' creativity to execute stories in multiple ways.

Communicators in the field of environmental health will benefit from a strategic use of the two Explanatory Metaphors described in this report. Both the *Ground Crew for Environmental Health* and the *Upstream Environments, Downstream Health* metaphors improve public understandings of what environmental health is, how environments and health are linked, and why a robust environmental health workforce is critical to our nation. Both metaphors shift members of the public towards more population-level thinking, and open people up to better recognizing the value of public approaches to improving environmental health conditions.

Importantly, the work of the metaphors aligns most constructively with the collectivizing value of *Fairness Between Places/Opportunity for All*, which also evidenced its usefulness in reorienting public thinking towards population-level thinking. The *Fairness Across Places/ Opportunity for All* value also discouraged zero-sum thinking, shifting people away from a marketplace model where one person's gain is another's loss and towards the idea that healthy environments for all is a worthy and achievable goal.

Because of the powerful ways that values serve to orient thinking around key commitments, communicators should place the *Fairness Across Places/Opportunity for All* value frame at the top of their messaging. They can then strategically deploy both the *Ground Crew for Environmental Health* and the *Upstream Environments, Downstream Health* Explanatory Metaphors to fill out the specifics of how environmental health works and why a strong environmental health workforce matters.

Once these core reframing elements are in place, the additionally powerful techniques of messenger, explanation and solutions framing can be added to reinforce a coherent narrative.

A new narrative about environmental health will borrow from these important features, and will repeat them in novel ways over time such that ordinary Americans can begin to see the fundamental importance of environmental health to their lives, their communities and the nation.
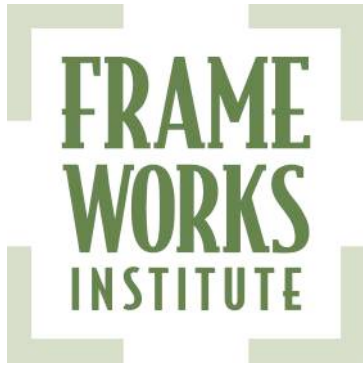
About the FrameWorks Institute

The FrameWorks Institute is a national nonprofit think-tank devoted to framing public issues to bridge the divide between public and expert understandings. Its work is based on Strategic Frame Analysis™, a multi-method, multi-disciplinary approach to empirical research. FrameWorks designs, commissions, publishes, explains and applies communications research to prepare nonprofit organizations to expand their constituency base, to build public will, and to further public understanding of specific social issues — the environment, government, race, children's issues and health care, among others. Its work is unique in its breadth — from qualitative, quantitative and experimental research to applied communications toolkits, eWorkshops, advertising campaigns, FrameChecks™ and Framing Study Circles. See www.frameworksinstitute.org

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Bales, S.N., & Lindland, E. (2014). *Talking environmental health: A FrameWorks MessageMemo.* Washington, DC: FrameWorks Institute.

Appendix A

The following research reports have been published by FrameWorks Institute (Washington, DC) as part of this inquiry.

People, Polar Bears, and the Potato Salad: Mapping the Gaps Between Expert and Public Understandings of Environmental Health. Eric Lindland and Nathaniel Kendall-Taylor (2011)

The Media Narrative of Environmental Health. Moira O'Neil, Adam Simon, Abigail Haydon and Nathaniel Kendall-Taylor (2012)

Using Values to Build Public Understanding and Support for Environmental Health Work. Adam F. Simon, Nathaniel Kendall-Taylor and Eric Lindland (2013)

We Need an Environmental Health Ground Crew to Work Upstream: Using Explanatory Metaphors to Improve Public Understanding of Environmental Health and Its Workforce. Eric Lindland, Andrew Volmert and Abigail Haydon (2014)

Endnotes

[1] All research from the project can be found at: http://www.frameworksinstitute.org/environmental_health.html

[2] Quinn, N., & Holland, D. (1987). Culture and cognition. In D. Holland & N. Quinn (Eds.), *Cultural models in language and thought* (pp. 3-40). New York: Cambridge University Press.

[3] Lindland, E., & Kendall-Taylor, N. (2011). *People, polar bears, and the potato salad: Mapping the gaps between expert and public understandings of environmental health.* A FrameWorks research report. Washington, DC: FrameWorks Institute.

[4] Simon, A. (2012).*The pull of values: A FrameWorks working paper.* Washington, DC: FrameWorks Institute

[5] *Ibid.*

[6] Government/Public Funding, which measures respondent attitudes about the importance of having a strong role for government in environmental health work, and robust government funding for this work.

Support for the Environmental Health Discipline, which measures attitudes about the importance of developing the profession of environmental health.

Upstream Thinking, which measures respondent beliefs about the need for proactive and preventive environmental health approaches.

Built Environment, which gauges the degree to which people think it is important to create infrastructure that supports human health.

Salience of Environmental Health Issues, which measures prioritization of environmental health concerns relative to other social issues.

[7] Lindland, E., & Volmert, A. (2014). *We need an environmental health ground crew to work upstream: Using explanatory metaphors to improve public understanding of environmental health and its workforce.* Washington, DC: FrameWorks Institute.

[8] By entailments, linguists mean the thinking that results from exposure to a metaphor — its cognitive consequences, or the ideas that are advantaged or disadvantaged by exposure to the metaphor.

[9] O'Neil, M., Simon, A., Haydon, A., & Kendall-Taylor, N. (2012). *The media narrative of environmental health. A FrameWorks research report.* Washington, DC: FrameWorks Institute.

[10] For more on explanatory chains and causal sequencing, see: http://www.frameworksinstitute.org/assets/files/eZines/causal_sequences_ezine.pdf