
PFAS Risk Communication (and Health
Impacts, a little bit)

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Test
subjects





Risk Communication: Definitions

Risk Communication:

communication intended to provide a general or specific audience with the information they need to make informed independent judgements about risks to health, safety, and the environment (Fischhoff).

At EPA, this means providing
MEANINGFUL, UNDERSTANDABLE,
and **ACTIONABLE** information to the
American public.

So that's the definition but why does it matter

Climate Change

PFAS

Radiation

Hazardous Spills

Lead

Air Toxics

Carcinogens



SALT Framework*

- Strategy
- Action
- Learning
- Tools

(* It's not only linear.)

Additional information: <https://www.epa.gov/risk-communication/salt-framework>

SEVEN: MEAT

whole beef shell with
ese and bread crumbs.
shell on the rack. Re-

even a day ahead up

erving, set the beef shell
umb and cheese covering
o the simmer. Heat the
e sauce. Then place the
heap with meat mixture,
. Arrange the vegetables
auce separately. Each guest
der shell with a serving
art of it and its filling.

meat is browned, then sim-
is the most famous. The
o browning, and are much
e describing meat which is
a fricassee; we shall not al-
become current usage.

BEEF STEWS

First Choice: Rump Pot Roast—*Pointe de Culotte*, or *Aiguillette de Rumpsteck*

Other Choices: Chuck Pot Roast—*Paleron*, or *Macreuse à Pot-au-feu*
Sirloin Tip—*Tranche Grasse*
Top Round—*Tende de Tranche*
Bottom Round—*Gîte à la Noix*

COOKING TIME

Beef stews take 2 to 3 hours of simmering depending on the quality and tenderness of the meat. If it has been marinated before cooking, it may take less time. Stews may be cooked either in the oven or on top of the stove; the oven is preferable because its heat is more uniform.

BOEUF BOURGUIGNON

BOEUF À LA BOURGUIGNONNE

[Beef Stew in Red Wine, with Bacon, Onions, and Mushrooms]

As is the case with most famous dishes, there are more ways than one to arrive at a good *boeuf bourguignon*. Carefully done, and perfectly flavored, it is certainly one of the most delicious beef dishes concocted by man, and can well be the main course for a buffet dinner. Fortunately you can prepare it completely ahead, even a day in advance, and it only gains in flavor when reheated.

VEGETABLE AND WINE SUGGESTIONS

Boiled potatoes are traditionally served with this dish. Butter or steamed rice may be substituted. If you also wish a green vegetable, peas would be your best choice. Serve with the beef a fairly good red wine, such as Beaujolais, Côtes du Rhône, Bordeaux, or Burgundy.

For 6 people

A 6-ounce chunk of bacon

Remove

Strategy: Taking
Stock, Goals,
Objectives, Tactics,
Platforms

Objective Setting: Three Types of Risk Communication Objectives

1. **Educate and Inform.**
2. **Change Feelings.**
3. **Change Behavior.**



Objective Setting: PFAS in Drinking and Surface Water

- **Educate:** Inform community about safe and unsafe activities and actions being taken to reduce risk.
- **Change Behavior:** Increase adherence to risk reducing behaviors: for example reduced fish consumption, increased use of filters.
- **Change Feelings:** Increase self-reported feelings of trust in state advisories. Increase feelings of safety for safe activities and appropriate actions for unsafe activities.



The objectives you set can
and should impact the
tactics and platforms you
use.



Action:

- Factors that are known to impact implementation.
- Focus on tactics to help an audience, hear, understand, accept, and act on a given risk communication message.



Hazard factors: Risk Perception



Audience factors: language, literacy, numeracy, identity, cultural norms and biases, community history, time and economic stressors



Communicator factors: agenda and purpose, confidence, identity



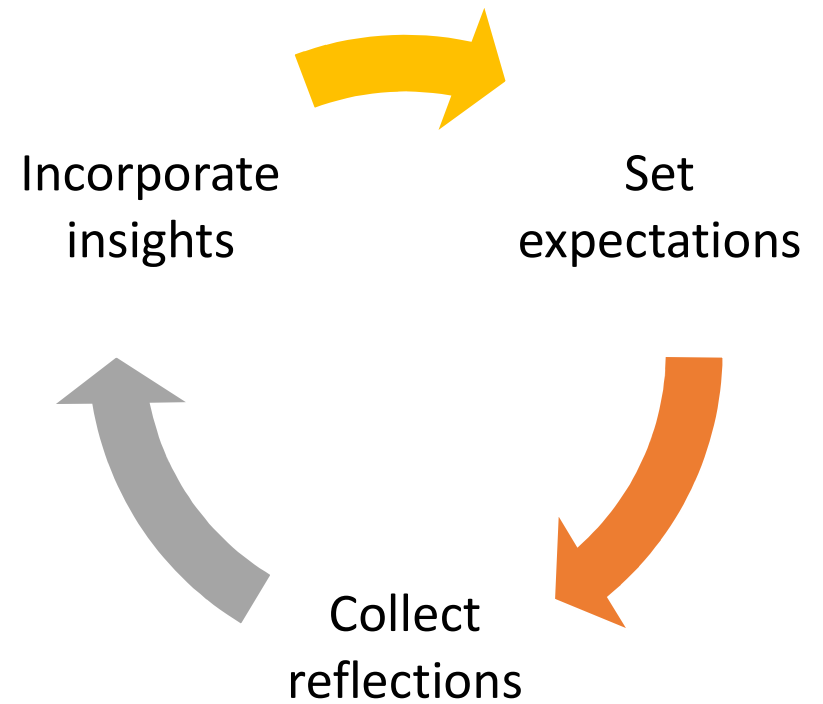
Relationship factors: Trust, values, perceptions of warmth and confidence




EPA factors: how we regulate and what we can actually do about a given hazard.

Action

Learning: Reflective practice model





Tools

Guides, trainings, templates, worksheets, explainers, and other content and materials to support the SALT framework and EPA staff in their risk communication work.

New resources for PFAS are in process.



Risk Perception Pop
Quiz: Which animals are
the most dangerous in
America?

Deadly Menace



Cuddly Animal Friends



Acceptability
of Risk: Key
Hazard
Characteristics

**What risks
are you upset
about?**

Chart of variables related to risk perception that has been adapted from Slovic and Fischhoff, 1985

More Acceptable	Less Acceptable
Affects adults especially the elderly	Affects children especially babies
Observable	Invisible
Exposure is known to exposed	Can be exposed without knowing
Contained in known and understood locations	Dispersed, could be anywhere
Shared Equally/ Equitably	Unfair or unequal distribution
Well understood and defined	New or poorly understood
Voluntary	Involuntary
Mild consequences	Catastrophic
Immediate effect	Delayed or unpredictable effect
Controllable by individual	No meaningful control steps available
Natural	Man made

Acceptability of Risk: Key Hazard Characteristics

PFAS

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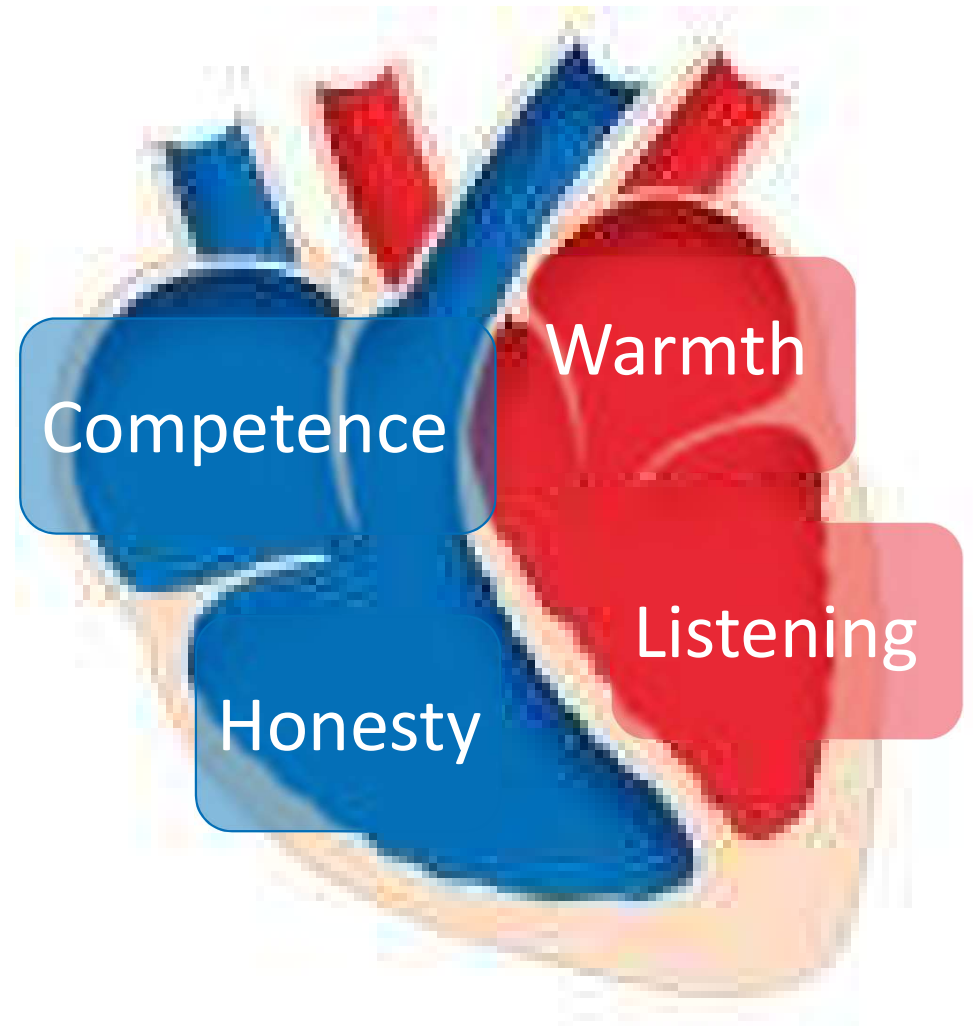




Risk Communication Best Practices

Know Your Audience

Trust is the Heart
of Risk
Communication:
It has 4
components





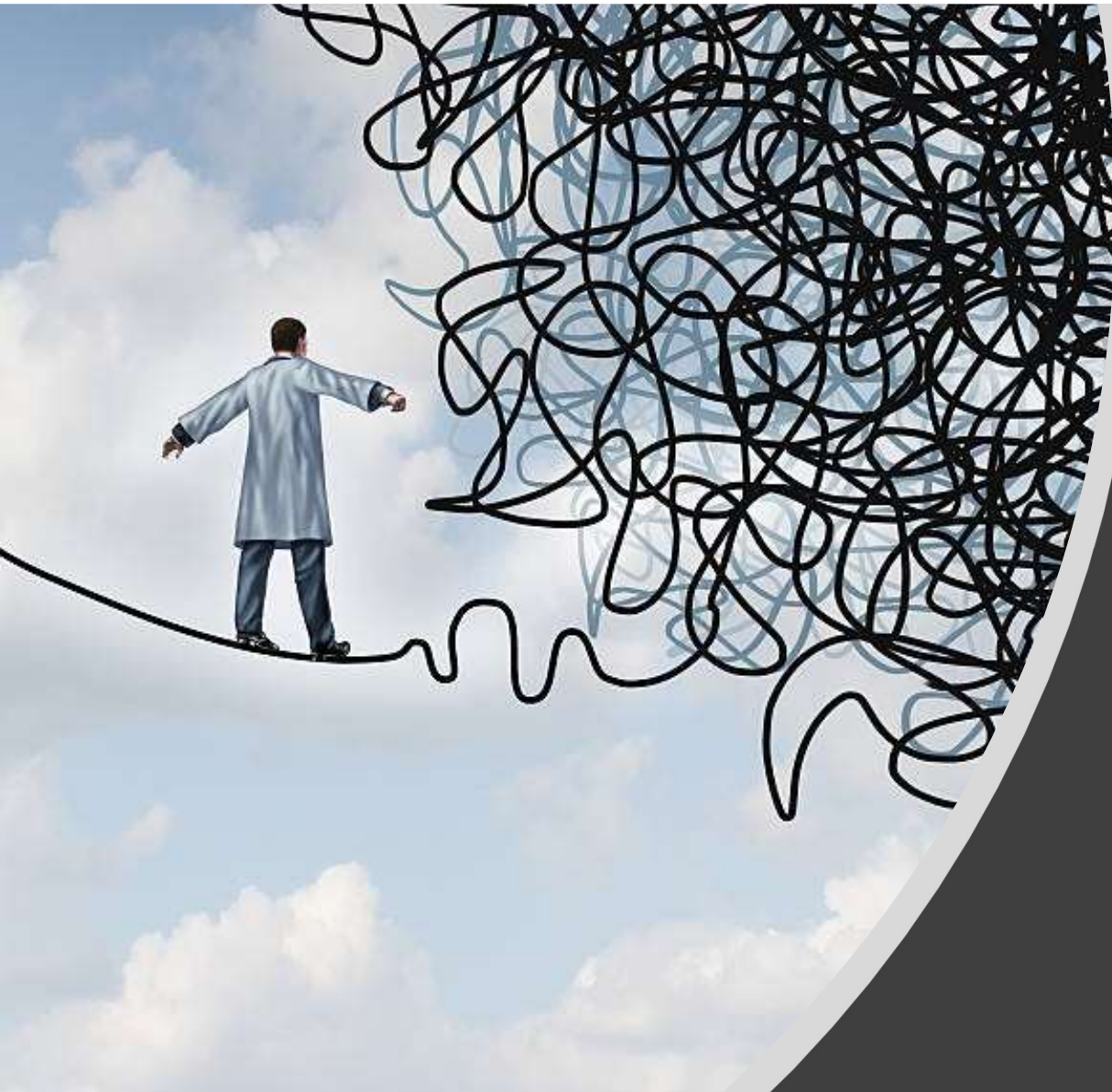
Risk Communications Best Practices

Building trust through shared values

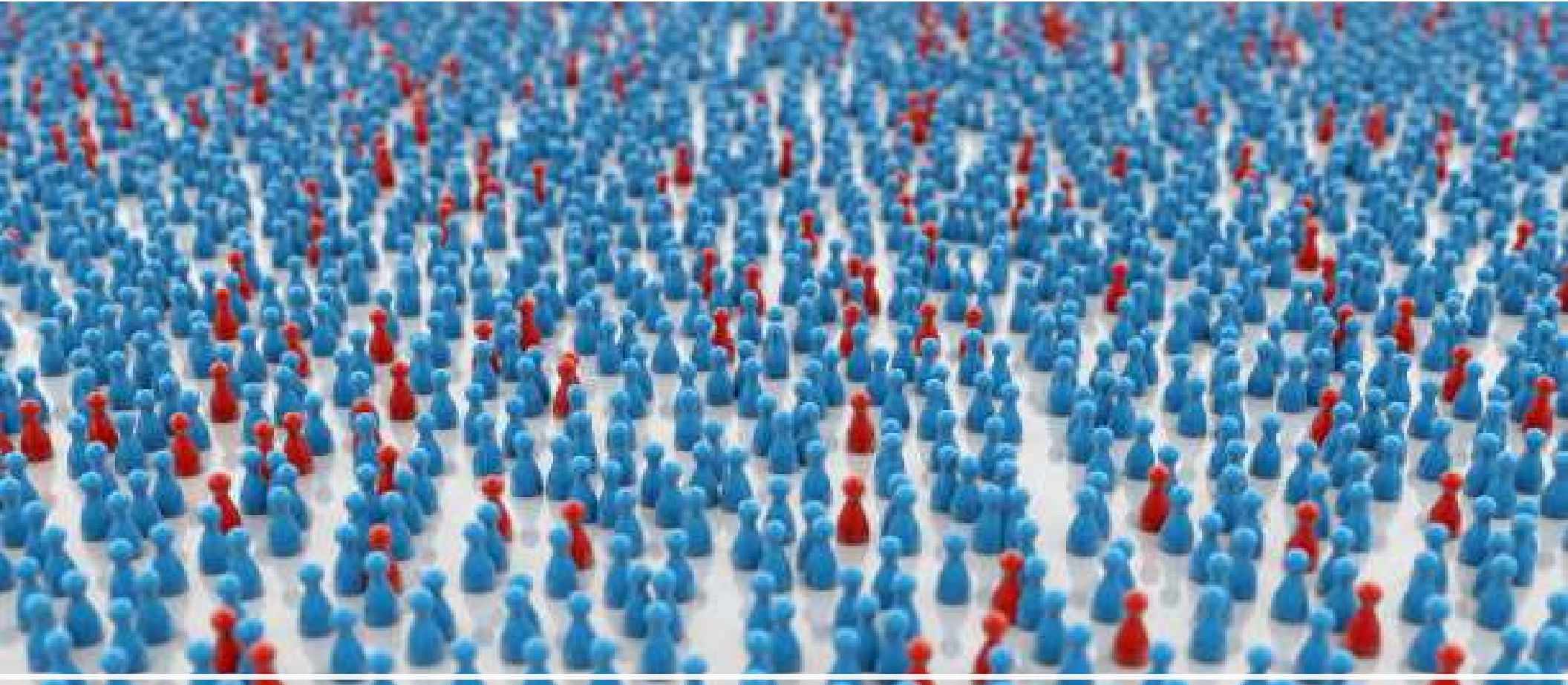
Messaging Tools and Models

1. Hazard Perception Factors
2. Hazard, Impact, Action
3. The Triangle
4. Message Mapping
5. Media and ATM
6. The Message Box

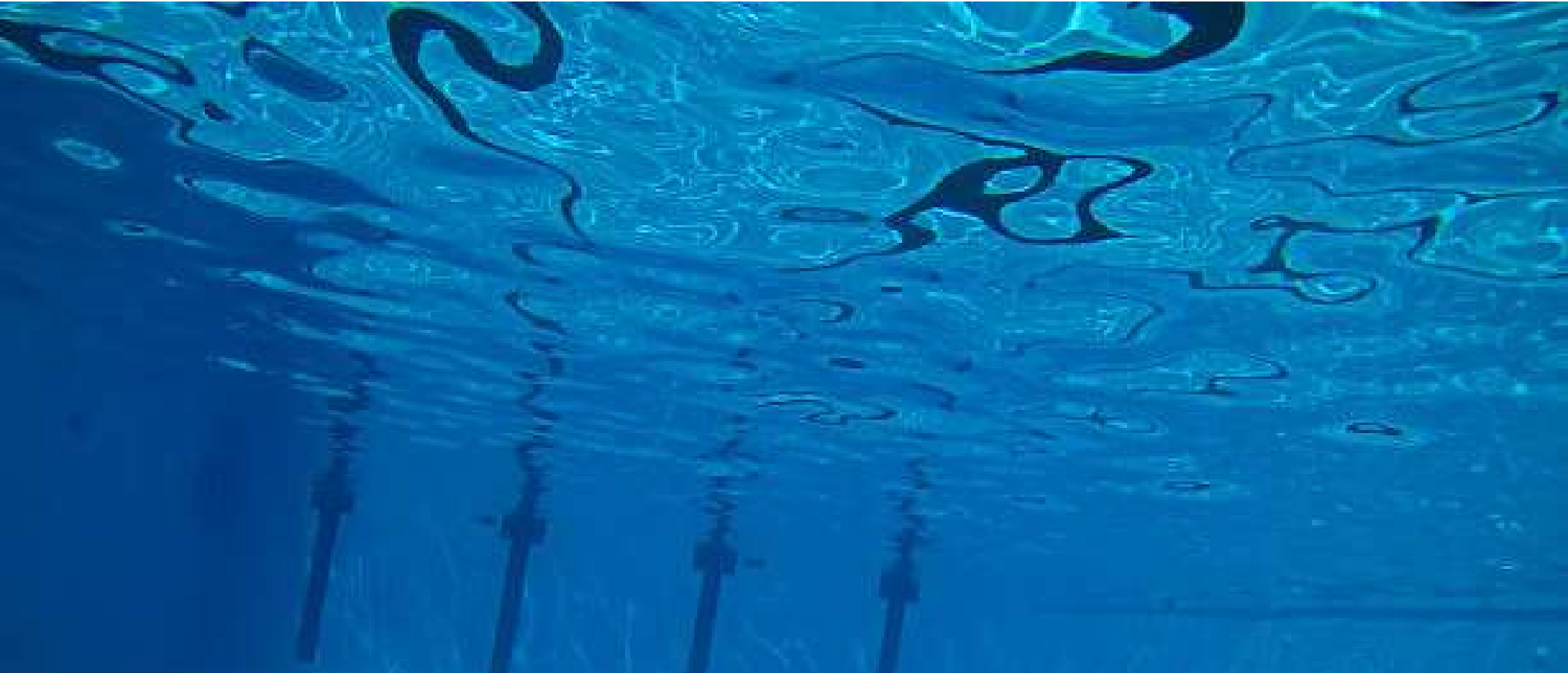




Best Practice: Messaging Uncertainty



Best Practice: Visuals, Numeracy, and Risk



Best Practice: Metaphors: Drops in a swimming pool



Are PFAS safe?

Research is ongoing to determine how exposure to different PFAS can lead to a variety of health effects. Studies have shown that exposure to certain levels of PFAS may lead to:



Cancer Effects

Increased risk of some cancers, including prostate, kidney, and testicular cancers.



Weight Effects

Increased cholesterol levels and/or risk of obesity.



Immune Effects

Reduced ability of the body's immune system to fight infections.



Developmental Effects

Low birth weight, accelerated puberty, bone variations, or behavioral changes.

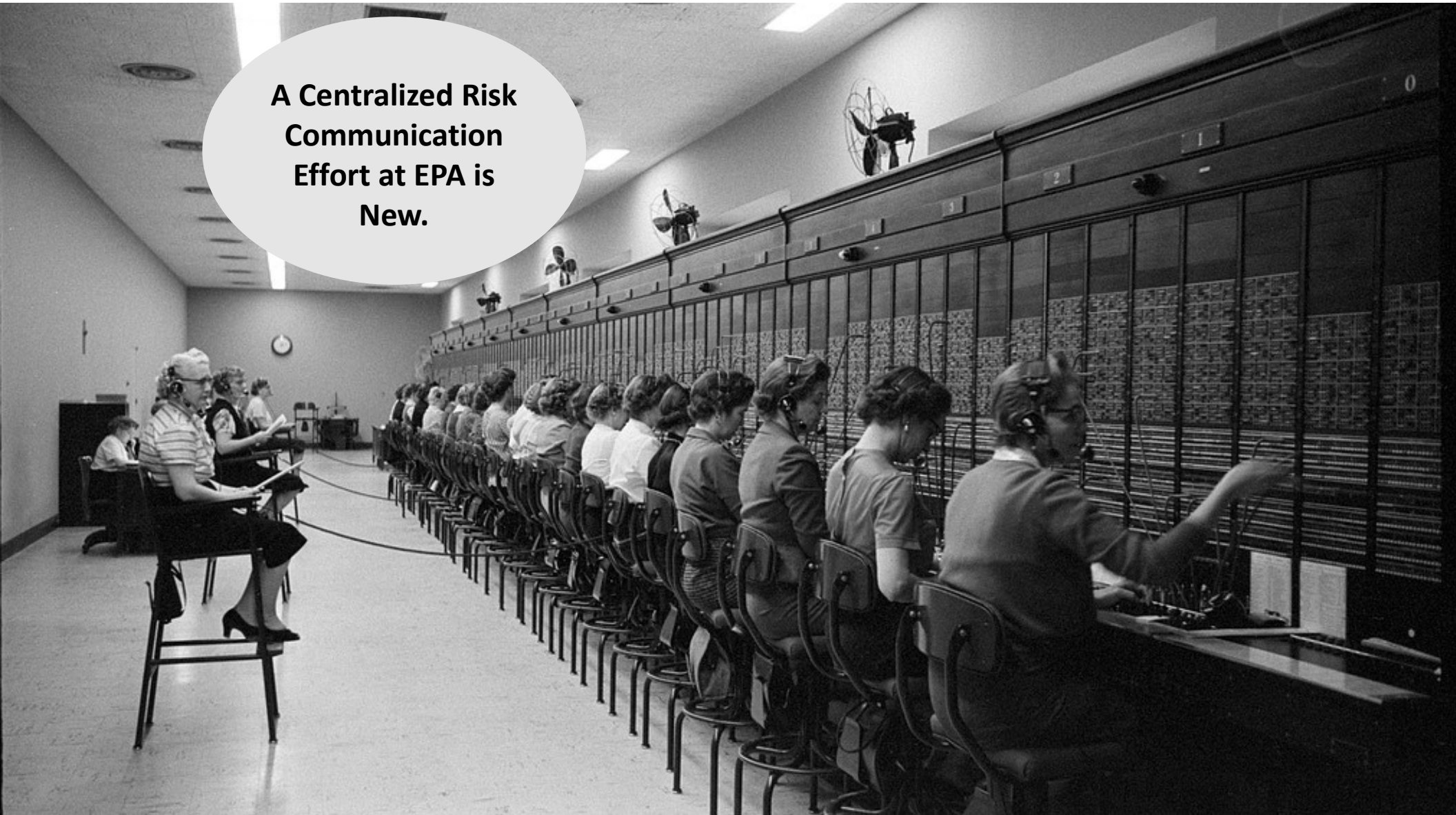


Reproductive Effects

Decreased fertility or increased high blood pressure in pregnant women.

The more we learn about PFAS chemicals, the more we learn that certain PFAS can cause health risks even at very low levels. This is why anything we can do to reduce PFAS in water, soil, and air, can have a meaningful impact on health. EPA is taking action to reduce PFAS in water and in the environment. You can also take action if you remain concerned about your own risk.

**A Centralized Risk
Communication
Effort at EPA is
New.**



Three Legs of Risk Communication at EPA



1. Process and Tools
2. Training
3. Science

Q and A and Transition



Uncertainty Abounds

Different PFAS are different and there are thousands of them.

They are different in:

- toxicity,
- fate and transport,
- exposure routes, and
- potential for control.

Uncertainty remains in who is making new PFAS and in what quantities and for what purposes.

Regulatory uncertainty exists too.

Uncertainty in degree to which PFAS exposure may be a complicating risk to many other risks making it a concern from a cumulative risk perspective (immune, cancer, endocrine/hormone, cardiovascular, etc).



The Type of Uncertainty Matters

- Indeterminacy/unpredictability/randomness
- Ambiguity
 - Conflicting evidence
 - Changing evidence
 - Limited/Weak/Unreliable evidence
 - Imprecision in risk estimates
- Complexity
 - Multiplicity of hazards
 - Multicausality
 - Interactive, compounding, cascading effects

Resources and Tools

Now:

- The SALT Framework as a process to follow
- PFAS Explainers:
<https://www.epa.gov/pfas/pfas-explained>
- Risk Communication Training

In Process:

- Materials on: EPA Actions; Templates for different audiences that handle uncertainty; Better materials/fact sheets on control steps (but it is hard); Know your audience research



Risk
Communication
and
Environmental
Justice

Language

Trust

Culture



Risk Communication Best Practice: People First Language

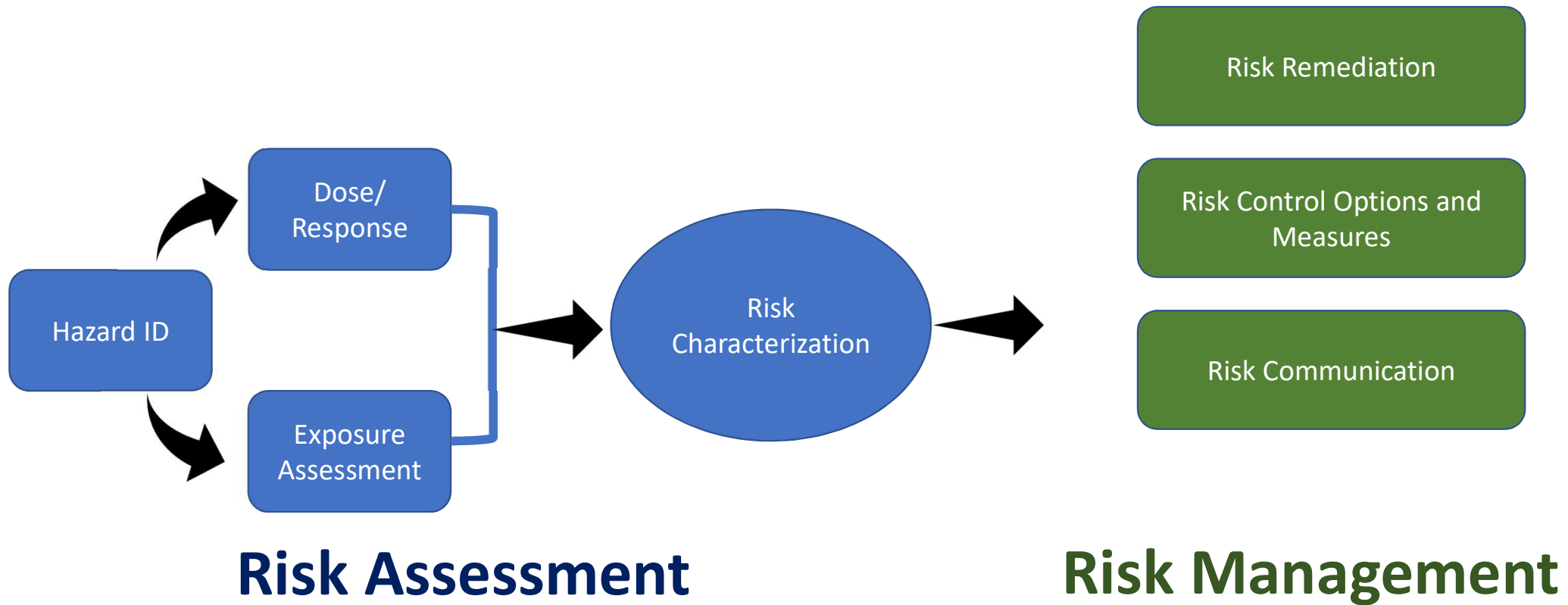


Trust, Trauma, History and EPA's Work



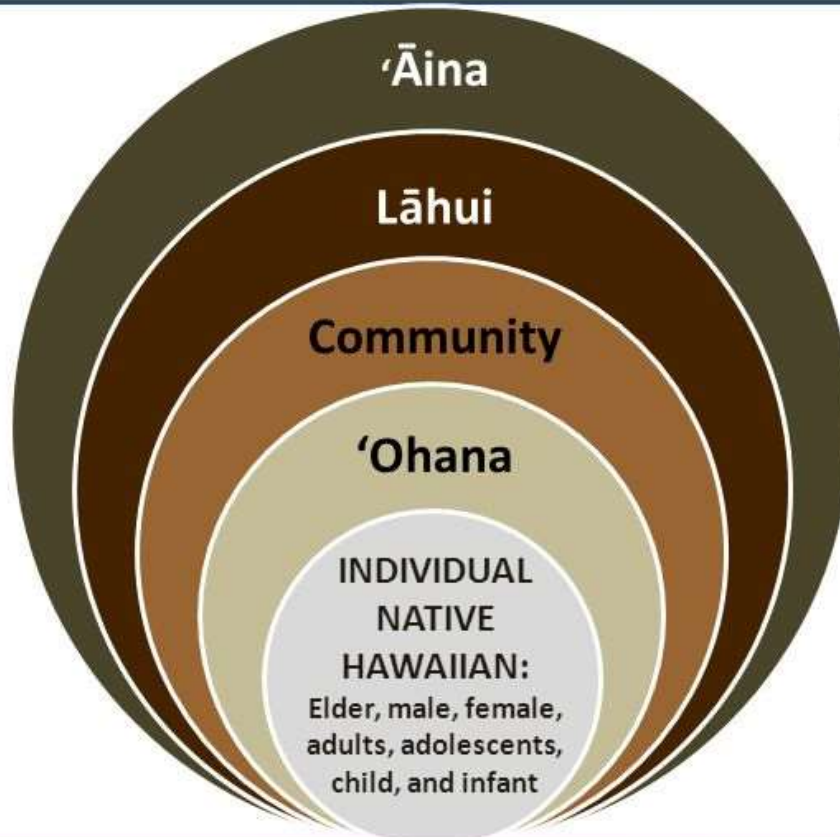
Culture and the Risk Paradigm

The Risk Paradigm





LAYERS OF WELL-BEING

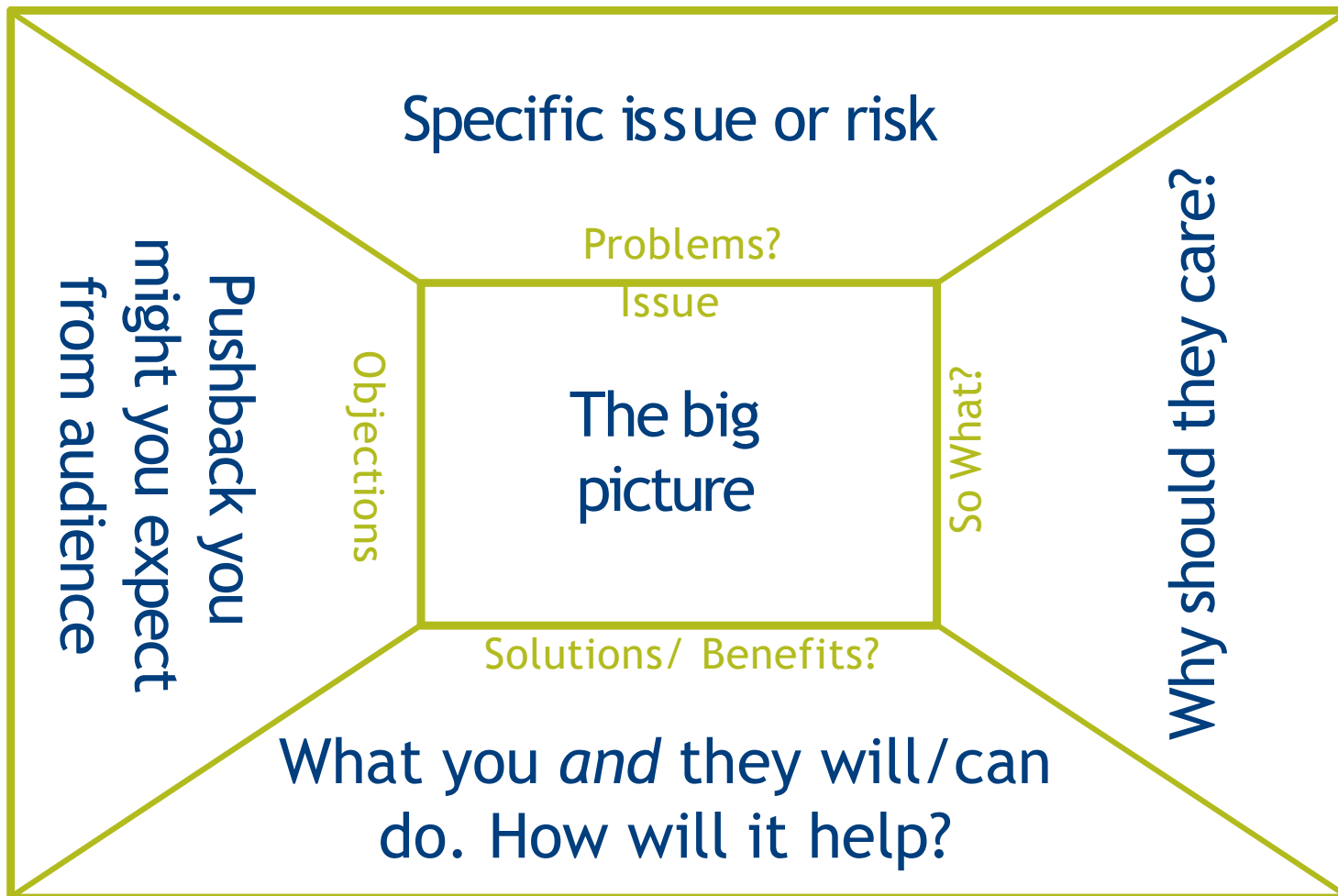


**An Ecological Model Of
Native Hawaiian Well-Being.**

This model examines
each of these arenas
in relation to
achieving and
sustaining Native
Hawaiian well-being.

Source: McGregor, D., Morelli, P. T., Matsuoka, J. K., Rodenhurst, R., Kong, N., Spencer, M.S. (2003). Pacific Health Dialog. An Ecological Model of Native Hawaiian Well-being, 10(2), 106-28.

The Message Box





Ecological Risk Tools and Concepts

- How do you get people to care about ecological risks?

Shared values are key to speaking to an audience
“So What?”



Future Access to Ecological Resources



Stewardship of the Earth



Children
and
Families



Keep it Local



Joy of Discovery



Fairness is
Tricky





Risk Communications Best Practices

Inoculation

