Risk = Hazard + Outrage
RISK COMMUNICATION: What is it?
(Covello, 1992; DHHS 2002)

The exchange of information among interested parties about the nature, magnitude, significance, and control of risks.
Key Areas Related to Risk Communication:

- Perception
- Assessment
- Messaging
- Decision-Making
- Planning/Management

+ Media response to crisis/risk
Fischhoff (1995)

Table I. Developmental Stages in Risk Management (Ontogeny Recapitulates Phylogeny)

- All we have to do is get the numbers right
- All we have to do is tell them the numbers
- All we have to do is explain what we mean by the numbers
- All we have to do is show them that they’ve accepted similar risks in the past
- All we have to do is show them that it’s a good deal for them
- All we have to do is treat them nice
- All we have to do is make them partners
- All of the above
### Opinion Differences Between Public and Scientists

% of U.S. adults and AAAS scientists saying each of the following

**Biomedical sciences**

<table>
<thead>
<tr>
<th>Statement</th>
<th>U.S. adults</th>
<th>AAAS scientists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe to eat genetically modified foods</td>
<td>37%</td>
<td>88%</td>
</tr>
<tr>
<td>Favor use of animals in research</td>
<td>47%</td>
<td>89%</td>
</tr>
<tr>
<td>Safe to eat foods grown with pesticides</td>
<td>28%</td>
<td>68%</td>
</tr>
<tr>
<td>Humans have evolved over time</td>
<td>65%</td>
<td>98%</td>
</tr>
<tr>
<td>Childhood vaccines such as MMR should be required</td>
<td>68%</td>
<td>86%</td>
</tr>
</tbody>
</table>

**Climate, energy, space sciences**

<table>
<thead>
<tr>
<th>Statement</th>
<th>U.S. adults</th>
<th>AAAS scientists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate change is mostly due to human activity</td>
<td>50%</td>
<td>87%</td>
</tr>
<tr>
<td>Growing world population will be a major problem</td>
<td>59%</td>
<td>82%</td>
</tr>
<tr>
<td>Favor building more nuclear power plants</td>
<td>45%</td>
<td>65%</td>
</tr>
<tr>
<td>Favor more offshore drilling</td>
<td>32%</td>
<td>52%</td>
</tr>
<tr>
<td>Astronauts essential for future of U.S. space program</td>
<td>47%</td>
<td>59%</td>
</tr>
<tr>
<td>Favor increased use of bioengineered fuel</td>
<td>68%</td>
<td>78%</td>
</tr>
<tr>
<td>Favor increased use of fracking</td>
<td>31%</td>
<td>39%</td>
</tr>
<tr>
<td>Space station has been a good investment for U.S.</td>
<td>64%</td>
<td>68%</td>
</tr>
</tbody>
</table>


PEW RESEARCH CENTER
Symbolic legitimacy
Dual processes in reasoning and decision making
Slovic et al (1987) Two factors that define risk perception: Dread, Known

Factor 1
- Uncontrollable
- Dread
- Global catastrophic consequences
- Fatal consequences
- Not equitable
- Not easily reduced
- Risk increasing
- Involuntary

Factor 2
- Observable
- Known to those exposed
- Effect immediate
- Old risk
- Risks known to science

- Controllable
- Not dread
- Not global catastrophic
- Consequences not fatal
- Equitable
- Individual
- Low risk to future generations
- Easily reduced
- Risk decreasing
- Voluntary
The Affect Heuristic AKA Risk as feelings... (Slovic et al., 2004)
Biases In Risk Perception

- Overconfidence
- Optimistic Bias
- Illusion of control
- Belief in law of small numbers
Assumptions About Uncertainty
How is uncertainty communicated?

- Numbers (probabilities, ranges as opposed to point estimates, distributions)
- Verbal probability statements (likely/not)
- Evaluative Statement - “safe” vs. “unsafe” “high” vs. “low”
- Other factors about a hazard that are reported as unknown
  - Cause, Consequence, Response
Psychological distance
**THE SCIENCE NEWS CYCLE**

**Your Research**
Conclusion: A is correlated with B (ρ=0.56), given C, assuming D and under E conditions.

**Your Grandma**
I'm wearing this to ward off "A"... eventually making it to...

**University PR Office (Yes, you have one)**
For immediate release: Scientists find potential link between A and B (under certain conditions).

**Local Eyewitness News**
WHAT YOU DON'T KNOW ABOUT "A"... CAN KILL YOU! MORE AT 11...

**Cable News**
We saw it on a Blog! A causes B all the time. What will this mean for Obama?

**The Internets**
Scientists out to kill us again. POSTED BY RANDOM DUDE

**News Wire Organizations**
A causes B, say scientists.

WWW.PHDCOMICS.COM
Social Amplification of Risk

- Why do improbable and insignificant risks get blown out of proportion?
- Why do probable and significant risks get ignored?
- Risks get amplified and attenuated when they are sent, transmitted, received
Some Goals of **RISK COMMUNICATION**
(FDA 2011)

- Share information
- Change beliefs
- Change risk perceptions
- Change behaviors
Questions?

btakahas@msu.edu