South Carolina Department of Health and Environmental Control

RISK COMMUNICATION: CHALLENGES & OPPORTUNITIES

2019 AAPCA Spring Meeting – Baton Rouge, LA

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Introduction

Ellenberg, J. (2015). *How not to be wrong: The power of mathematical thinking*. NY, NY: Penguin Books.

IT IS ALL A MATTER OF PERSPECTIVE…

The opinions expressed during this presentation are my own.

MY PERSPECTIVE:

- MSPH – Focus: Environmental Health/Industrial Hygiene (UAB 1990)
- Certified Industrial Hygienist , worked in petro/chemical industry 13 years (1990 – 2003)
  - Certified Hazardous Materials Specialist
  - Certified Interior Structural Firefighter
  - Certified (NC) Medical Responder
  - Trained in Wildlands Fire Fighting
- Juris Doctor (USC 2006)/Trial Attorney (2006 – 2008)
- State Toxicologist & SC EPHT Program Manager (October 2008 – November 2013)
- Environmental Risk Consultant (November 2013 – April 2016)
- Adjunct Professor in Emergency Management for Columbia College (2014-2018)
- Director of Applied Science & Community Engagement (April 2016 – Present)

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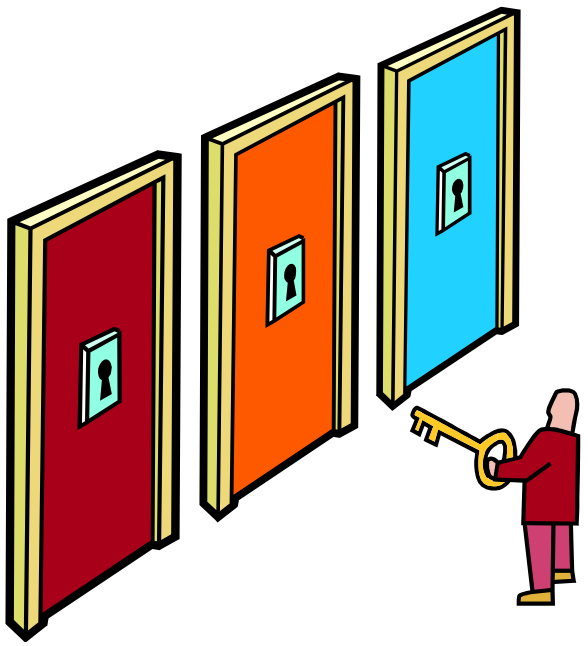
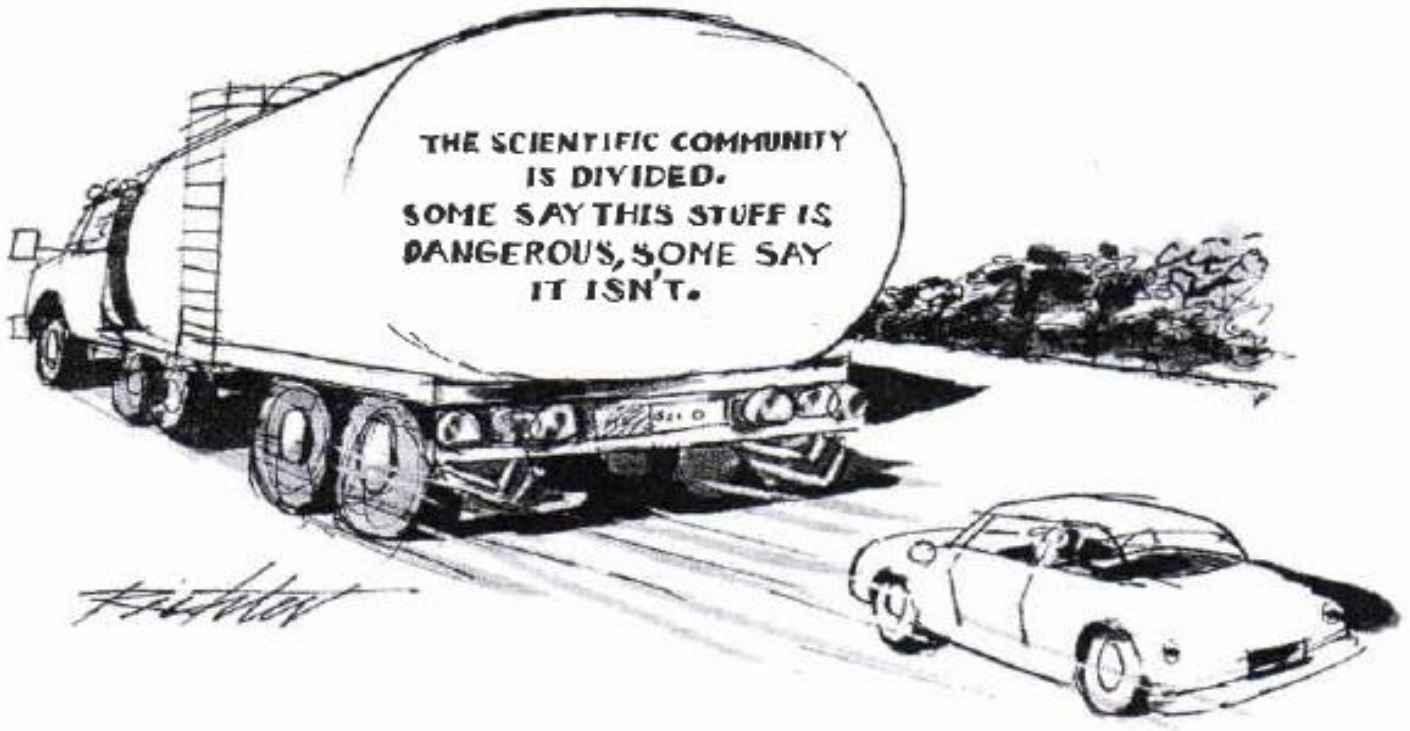
RISK IN GENERAL



- For some, risk indicates danger; for others reward.
- Within the context of public health, risk is usually defined as a **potential** to harm health or the environment.
- **Science** estimates the likelihood of risk; **policy** helps to define what is acceptable.
- In order to have risk, you must have **BOTH** the presence of a hazard **AND** a route of exposure to **ENOUGH** of it.
- The concept of risk is further complicated by both **perception** and **emotion**.

SHADES OF GREY…

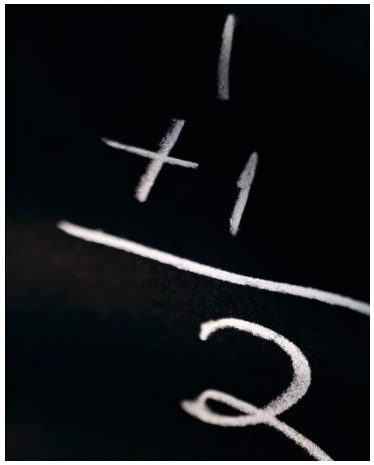
FIGURE 2.1 WHY THE PUBLIC IS OFTEN CONFUSED ABOUT THE DIFFERING VIEWS OF SCIENTISTS ABOUT POTENTIAL HAZARDS AND HEALTH RISKS.



Source: Mischa Richter, *The New Yorker,* March 21, 1988.

[Source 1, page 13.]

Part 1:



SETTING THE STAGE:

1+1=2 (OR DOES IT ?)

WE HAVE LONG TRIED TO MAKE IT SO:

"All the [mathematical] sciences are founded on relations between physical laws and laws of numbers, so that ***the aim of exact science is to determination of quantities reduce the problems of nature to the by operations with numbers***."

[Emphasis added.]

– James C. Maxwell
(Scottish Mathematician: 1831 – 1879)

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PLEASE CHECK "YES" OR "NO."

- We must recognize that it is part of the 'human condition' that we want the world in which we live to be black or white. We want clear answers to any/every question:
  - "*Yes.*" or "*No.*"
  - "*Wrong*." or "*Right*."
  - "*Problem*." or "*Not a problem*."
  - "*Causes*." or "*Does not cause*."
- Unfortunately, often there is no clear answer to the questions we are asked.

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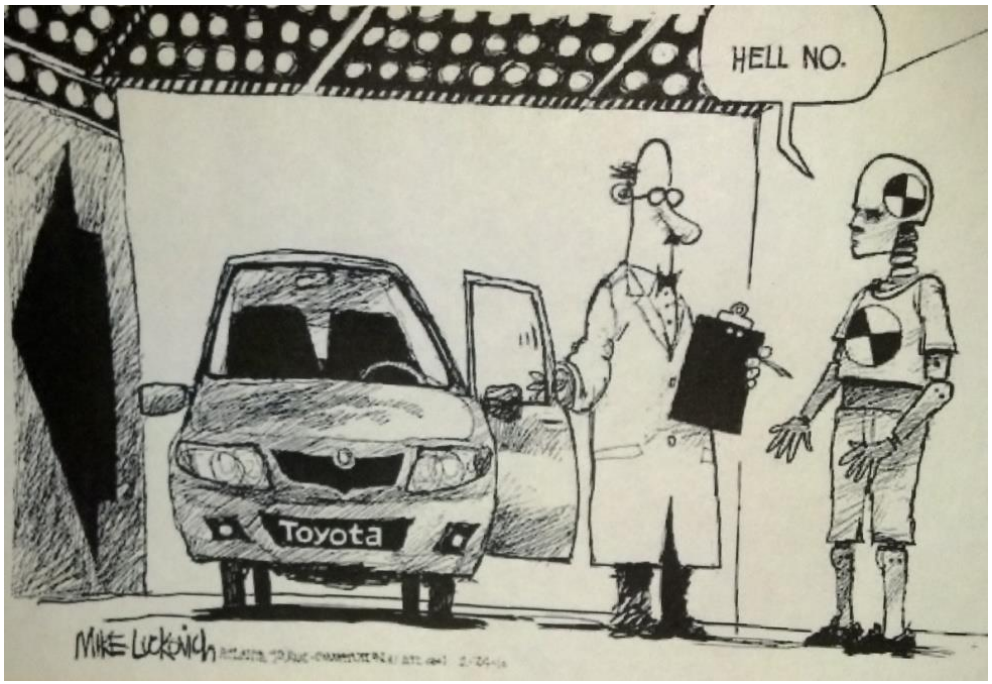
BASIC COMMUNICATION REQUIRES:

1. Information to Convey
2. A Sender of the Information
3. A Willing Receiver of the Information



FORMULA FOR FAILURE:

Crisis +

Heightened public emotions +

Limited access to facts +

Rumor, gossip, speculation, assumption, and inference =

An unstable information environment.[1]

WE'VE GOT SOME 'SPLAININ' TO DO…

- "We face danger whenever information growth outpaces our understanding of how to process it." – Nate Silver
- Our ability to measure now exceeds our ability to explain.

- Analytical Limits of Detection (ALOD) – "less than" has always been assumed to be zero.
- ALODs are orders of magnitude smaller today than they were.

Silver, N. (2013). *The signal and the noise: The art and science of prediction*. London: Penguin.

RC & UNCERTAINTY:

- Risk Assessment often involves providing information to a decision maker when there is little (if any) quantitative information available.
- Results are most often not only NOT an absolute, but have several layers of **uncertainty**/safety factors built in to them.
- How well the information is received is very dependent on how well uncertainty is **explained/communicated**.
- Uncertainty allows for arguments on both sides.

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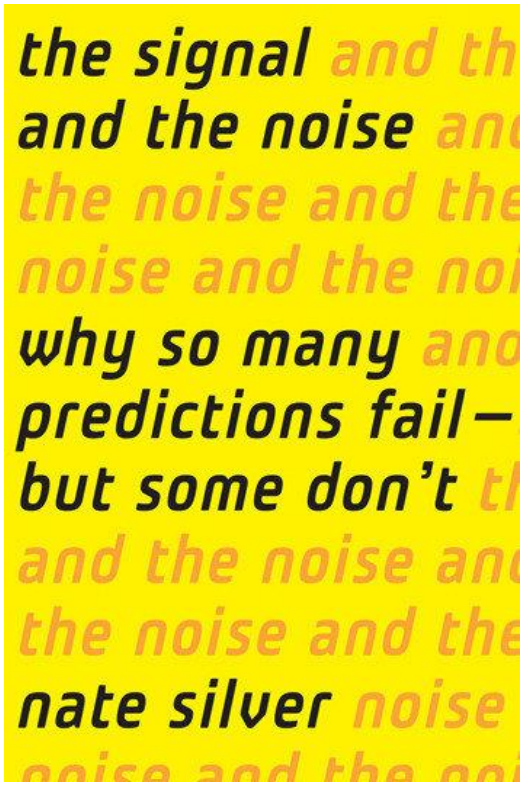
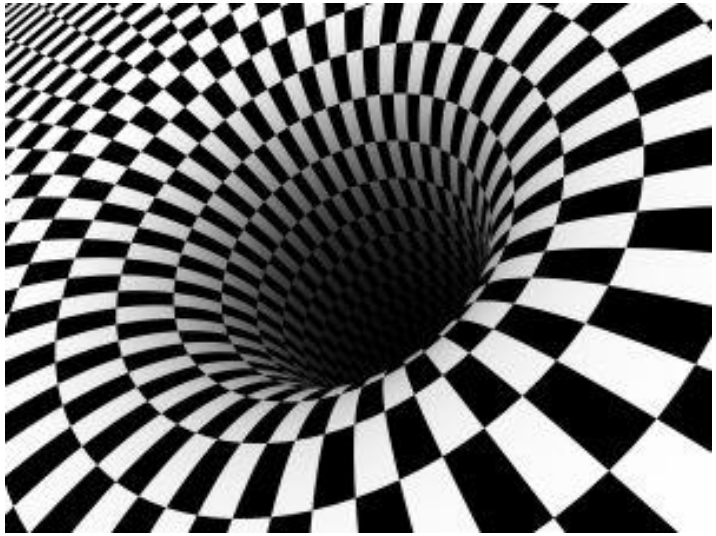


PRODUCTIVITY PARADOX

- "But the number of meaningful relationships in the data …is likely not to be increasing at nearly so fast a rate as the information itself; there isn't any more truth in the world than there was before the Internet or the printing press. Most of the data is just noise, as most of the universe is filled with empty space."
- Translation – it is often more difficult now than ever to find meaningful data in our data-rich environment.

Silver, N. (2013). *The signal and the noise: The art and science of prediction*. London: Penguin.



"The single biggest problem in communication is the illusion that it has taken place."

- George Bernard Shaw

Part 2:

THE EVOLUTION OF RISK COMMUNICATION (RC)

THE FIELD OF RC:

- Like many disciplines, risk communication is part **science**, part **art**;
- It's evolution as a discipline comes primarily from the rise of the use of risk assessment in regulatory processes requiring more public participation in Risk Assessment/Risk Management;
- Over time, Risk Communication has become a formal, recognized and important function of Risk Assessment/Risk Management.
- **It is *NOT* the same as media/public relations; as it requires both technical expertise and communications.**

WHAT IS RC? WHAT IS IT NOT?

- WHO: "…**an interactive process of exchange of information and opinion** on risk among risk assessors, risk managers, and other interested parties."

- CDC/ATSDR: "Merely disseminating information without regard for communicating the complexities and uncertainties of risk **does not** necessarily ensure effective risk communication."

Source 6: ATSDR Health Risk Communication Primer (citing *Covello and Allen* 1988). [www.atsdr.cdc.gov/risk/riskprimer/vision.html]

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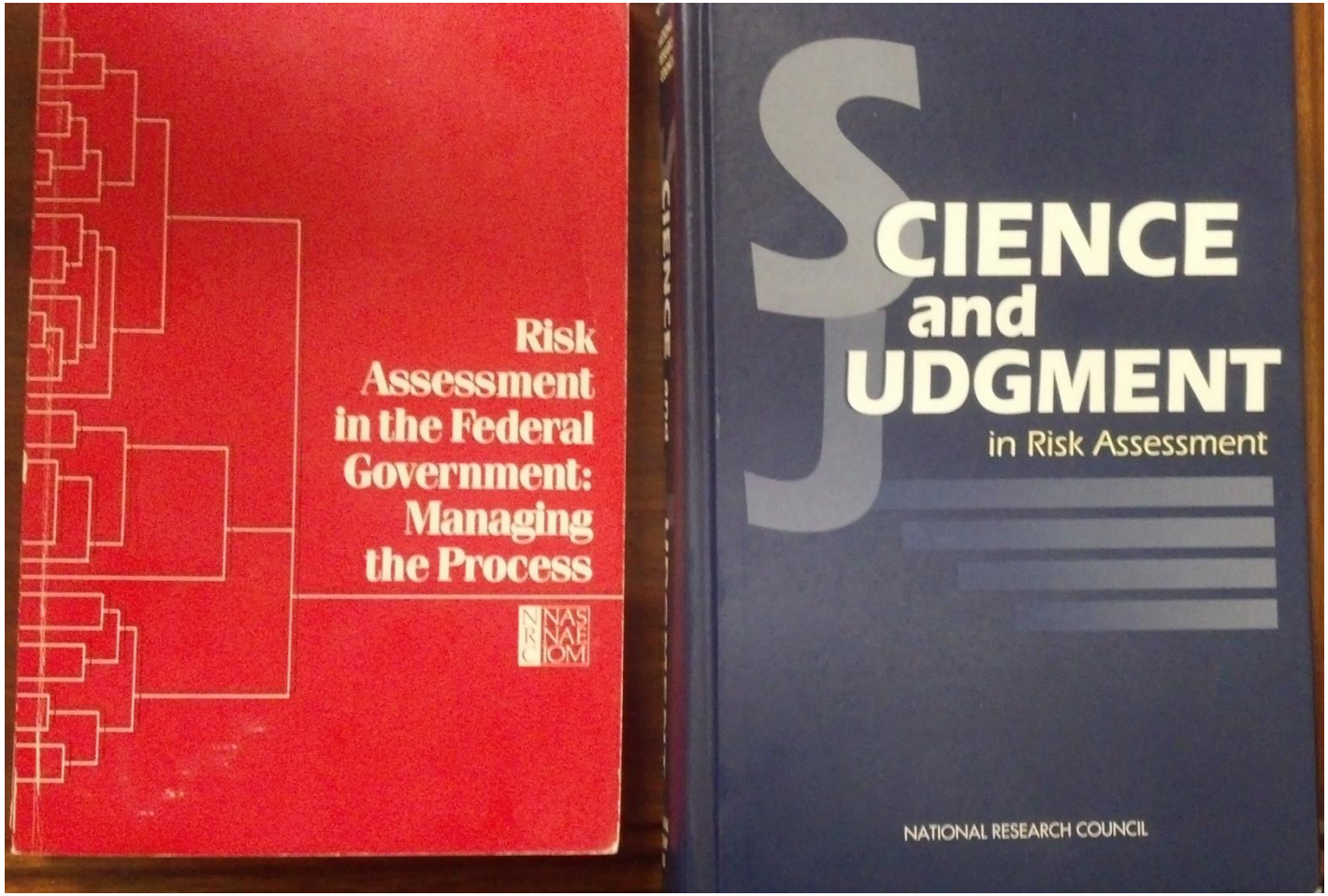
7 CARDINAL RULES OF RC:

1. Accept and involve the public as partner
2. Plan carefully and evaluate your efforts
3. Listen to the public's specific concerns
4. Be honest, frank and open
5. **Work with other credible sources**
6. Meet the needs of the media
7. Speak clearly and with compassion

SOME GOOD RAINY DAY READS:



3-CHALLENGES:

- **Knowledge challenge** – the audience must be able to understand the technical information presented
- **Process challenge** – the audience needs to feel involved in the process
- **Communications skills challenge** – the audience and those who are communicating the risk need to be able to both convey information and to receive information effectively. [Source 2, page 15.]

PURPOSE OF RC CHANGES WITH THE SITUATION:

- In some situations, Risk Communication is used **to encourage an action** on the part of the audience – like evacuation prior to a hurricane.
- In others, Risk Communication is used to educate, **to inform and to build consensus** regarding a situation that either contains risk or is perceived to contain/involve risk.

METHOD USED ALSO CHANGES…

- It was common to use reverse dial systems, then people stopped having landlines and started using cell phones;
- Social media has played an increasing role in:
  - Informing coastal residents of evacuation orders;
  - Two-way communication between police and citizens during active searches like in the Boston Marathon Bombing event;
  - Communicating shelter-in-place orders during a facility or transportation emergency/chemical release;
  - Providing information on where to get drinking water during recovery after tornado, etc.

HAZARD PLUS OUTRAGE

- Peter Sandman proposes the premise that risk should be defined as hazard plus outrage;
- His opinion is that the audience's view of risk reflects not just the danger of the situation but also **how they feel about it** and, even more important, what emotions they feel about it (their outrage).

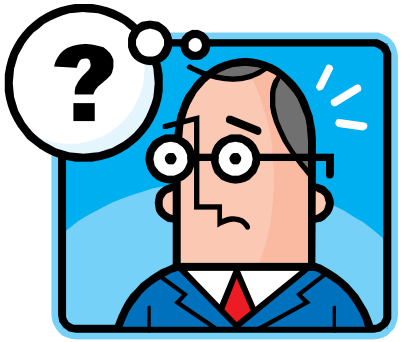
[Source 7, page 17.]

THE PROBLEM AS DEFINED BY DR. SANDMAN*

"The public often **misperceives the hazard**.

The experts often **misperceive the outrage**.

But the overarching problem is that **the public cares too little about the hazard, and the experts care to little about the outrage**."



* Source 7: *Responding to Community Outrage: Strategies for Effective Risk Communication*, AIHA Press 1993, page 8.

RISK PERCEPTION

- Lest we forget, perception **IS** reality to those who perceive it.
- Perceptions are influenced by many factors, some more emotional than logical.
- Generally speaking, people are much **more willing to accept high risk behaviors that they can control** than much lower risk(s) of exposure to environmental hazards that they cannot control.

"For the great enemy of the truth is very often not the lie – deliberate, contrived, and dishonest – but the myth – persistent, persuasive and unrealistic."

- JFK

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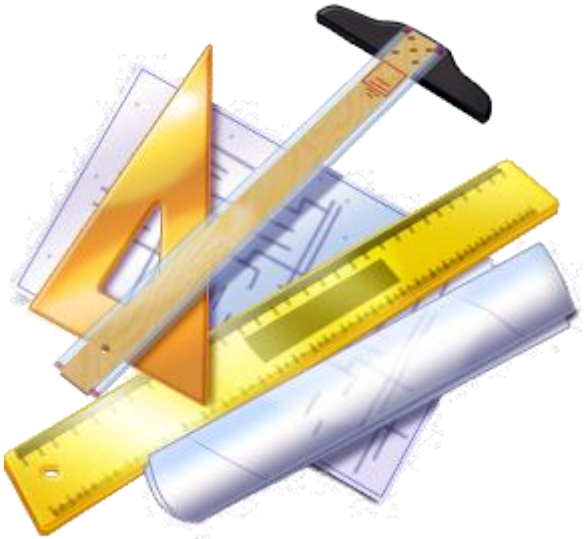


Part 3:

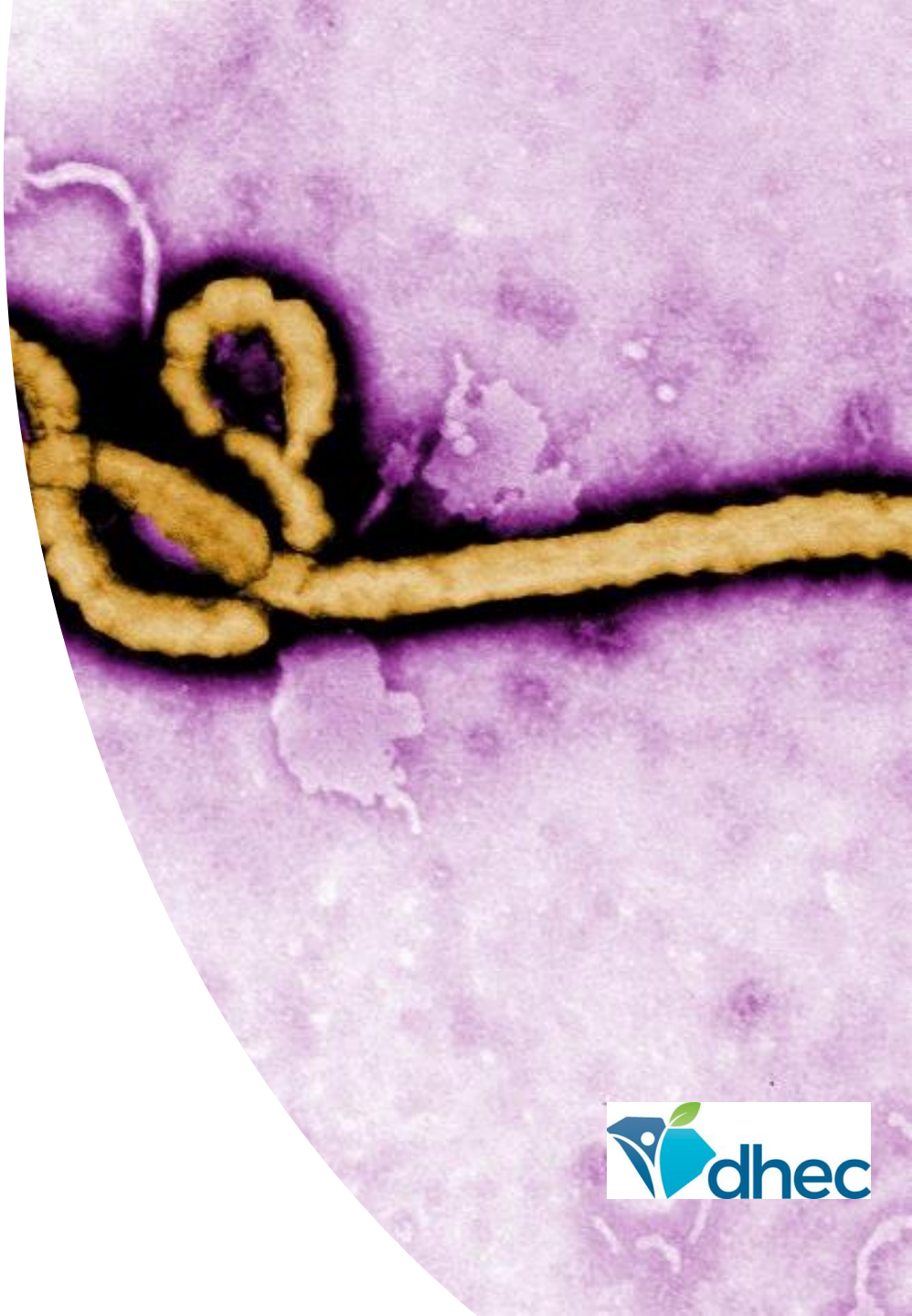
PRACTICAL RISK COMMUNICATION:

LESSONS LEARNED & POINTS TO PONDER

UNCERTAINTY IS OFTEN TWISTED BY THE MEDIA

- "When the first case of *Ebola* was reported in the news, it didn't take long before it was rampant, destructive and completely unavoidable. Not the disease – the news coverage."

– MAD Magazine



LEAVE YOUR ACRONYMS AT THE DOOR

We know acronyms (EPCRA, RCRA, EPA, CDC, ATSDR, Superfund, Hazwoper etc.); but ask one of your non-scientist friends what some of these stand for and see what responses you get.

We can lose credibility fast if we speak in terms that are not commonly understood.

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TIMING IS EVERYTHING

- The chance we have for willing receptors (listeners) is very much related to how early in the process we communicate with them; often, the longer we wait, the less credibility we have and the more fuel there is for 'outrage'.
- **BEFORE** (best), during & after an event

Part 4:

CREATIVE RISK COMMUNICATION

GASOLINE OXYGENATES

- In the early 1990's when governments started requiring cleaner burning fuels, there were a couple of different options: 10% ethanol or 16% methyl tertiary butyl ether (MTBE).
- Both additives resulted in a noticeable difference in the odor characteristics of gasoline (for the first time in decades, gasoline would smell different).
- In one market, prior to the start of using the additives, a company ran ads that said, **"if you can't smell the difference, you are not doing your part to help the environment."** The result was VERY few complaints.

Weekend Exercise That Would Generate Noise Heard Off-Base

- Ad Campaign:
  - "You may hear **the sounds of freedom** this weekend if you live, work or are traveling near the base."
  - How many complaints do you think they got (compared to how many might have been received)?

MAYBE MORE EFFECTIVE…

Part 5:

REAL-WORLD LESSONS:
EXPERIENCE IS OFTEN THE BEST TEACHER

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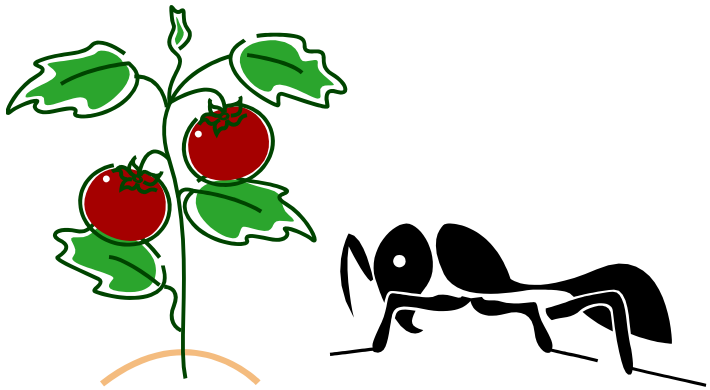
Fire Ants, Vegetable Gardens & ACM

- ACM travelled with smoke from a refinery fire into nearby neighborhoods.
- Approach:
  - Educate without alarming;
  - Be conservative regarding assessing and/or communicating risk(s);
  - Be human (though I would recommend avoiding fire ants!).

Note: this is based on a real scenario that took place right here in Baton Rouge. I have returned to the scene after around 25 years!



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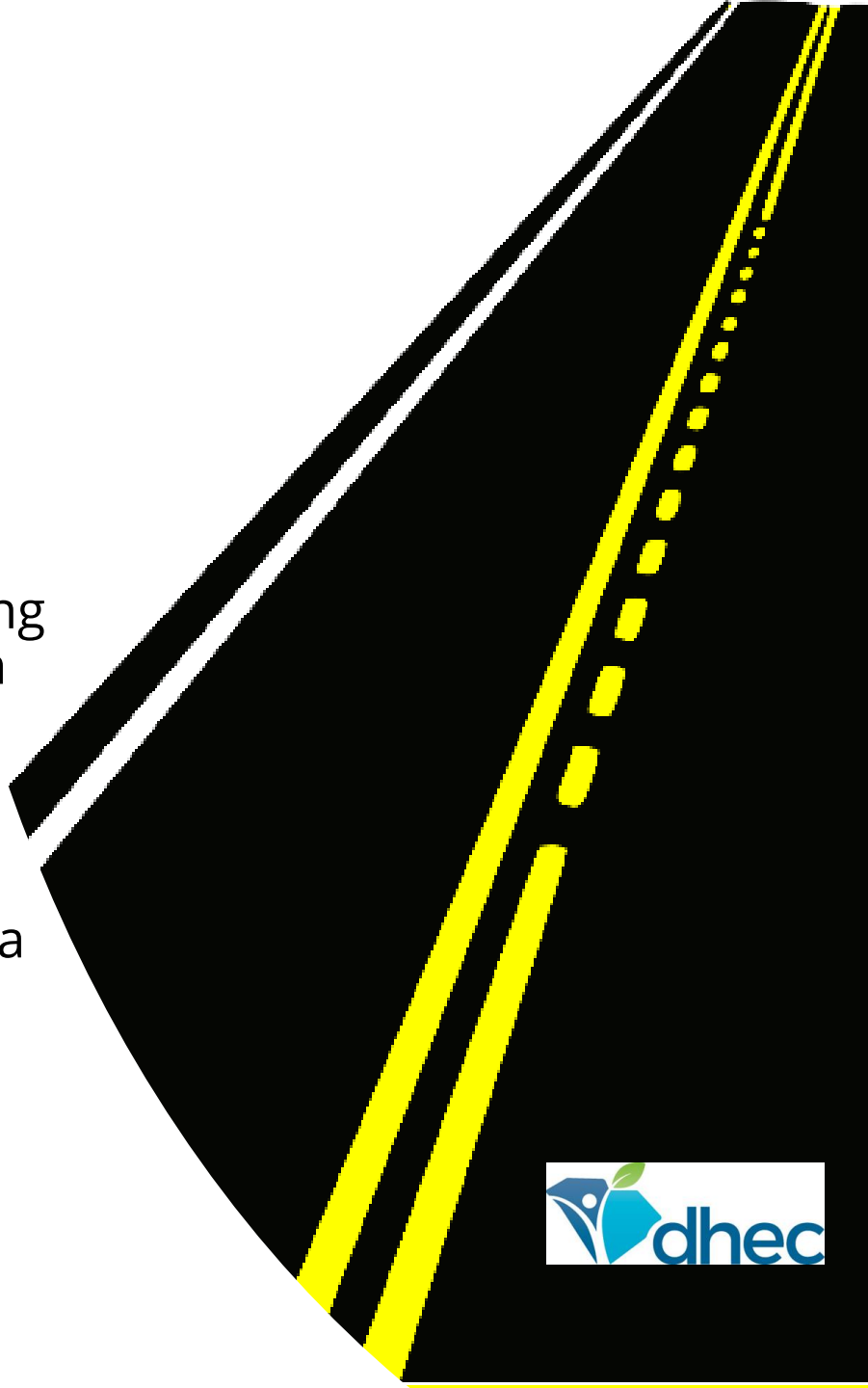
A POUND OF CURE

- After an explosion blew a panel off of a building and gave a maintenance guy quite a ride, community perception was that the facility was a dangerous place to live near….
- But then along came the CAP and interactive communication with the neighbors.
- Over time as trust grew, fear dissipated.

A ROAD LESS TRAVELLED

- Imagine a neighbor driving down the road going to work and entering a cloud of ammonia released from an ammonia storage facility;
- He dies within minutes of driving into the ammonia cloud;
- News outlets tell people in the area to shelter in place;
- What's going through your mind?
- What's going through a non-EHS person's mind?



WHAT IS LEFT BEHIND…

- How clean is clean?
- Low dose, chronic exposure and disease outcomes
- Greater risks with more control vs. lesser risks with no control
- Expectation is often "zero". We cannot even measure "zero".

"In general, exposures that are invisible or undetectable with the senses are feared more; dreaded consequences are magnified, and unfamiliar or new risks are more troublesome than such familiar, though much higher, risks as cigarette smoking, drinking alcoholic beverages, driving too fast, or engaging in hazardous recreational activities."

Source 1, page 27.]

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NEVER UNDERESTIMATE THE POWER OF A CRISIS.

Example of Poor RC: Critique of a Chemical Spill Response

- Learn from current events…in one example:
  - Focus was on what they didn't know, rather than what they did.
  - There was no evidence that there had been any plan OR partnerships developed prior to the spill.
  - Lack of a plan lead to no organized use of the media to put out reliable, consistent messaging.
  - Severe lack of planning and bad messaging resulted in mixed message and increased fear.

Part 6:

IN CLOSING…

- Listen. Sometimes **listening**, without trying to formulate what you will say when a person stops talking, to a concern and perspective is the most valuable risk communication tool….after all, we all have an innate desire to be heard.
- Show empathy if it is genuine.
- It is OK to answer a question with, **"I don't know, let me get an answer back to you."**
- Sometimes, you have to agree to disagree and **accept defeat** in your attempts to communicate.
- Use social media tools to your advantage.

MOST IMPORTANT LESSONS LEARNED

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PLANNING IS EVERYTHING

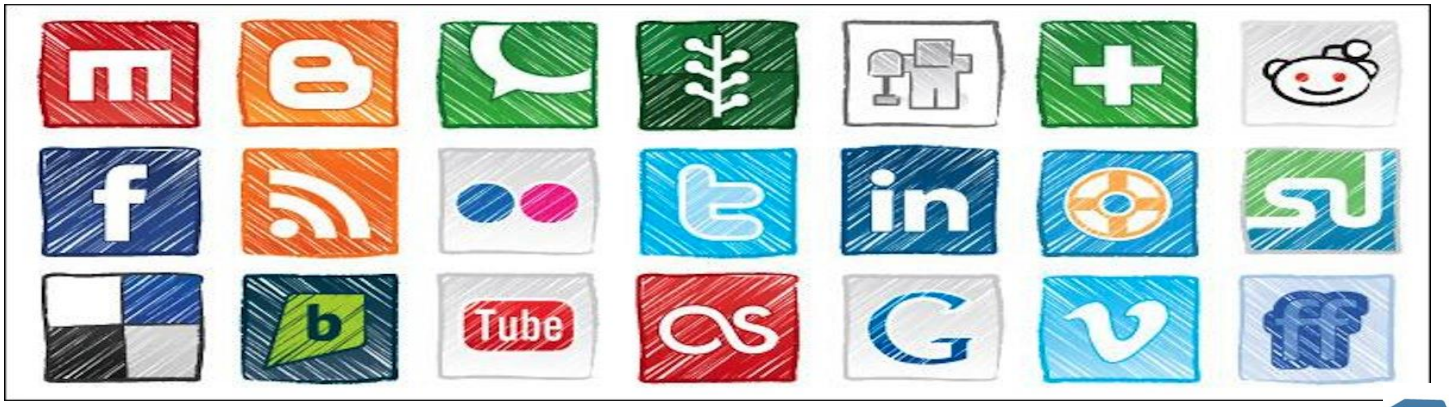
Abe Lincoln once said, “If you give me 8 hours to chop down a tree, I will spend the first 6 hours sharpening my axe.”

BALANCING ACT:

- In our world today where most anyone with a cell phone has instant access to the Internet (which contains both accurate and inaccurate information), balancing the rapid release of information with the liability of getting it wrong is a real challenge.
- Remember that it is difficult, if not impossible to 'un-ring' the bell.

BEWARE AND BE AWARE OF SOCIAL MEDIA

- Misinformation spreads like wildfire, while the truth becomes more and more difficult to get out to those who believe the misinformation.



“I know no safe depository of the ultimate powers of society but the people themselves; if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it away from them but to inform their discretion.”

- Thomas Jefferson

RISK COMMUNICATION IS ALL ABOUT EMPOWERMENT!

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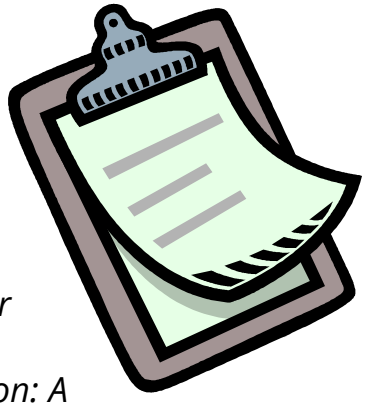
REFERENCES:



- Source 1: Robson, Mark G., and William A. Toscano, eds. *Risk Assessment for Environmental Health*. San Francisco: John Wiley & Sons, 2007. Print.
- Source 2: Lundgren, Regina W., and Andrea H. McMakin. *Risk Communication: A Handbook for Communicating Environmental, Safety and Health Risks*. Hoboken, NJ: Wiley-IEEE, 2009. Print.
- Source 3: *Analysis of Risk Communication Strategies and Approaches with At-Risk Populations to Enhance Emergency Preparedness, Response and Recovery: Final Report*, DHHS, December 2008. [http://www.bt.cdc.gov/coca/pdf/ANALYSIS%20OF%20RISK%20COMMUNICATION%20STRATEGIES.pdf]
- Source 4: "Crisis & Emergency Risk Communication (CERC)." *Crisis & Emergency Risk Communication (CERC)*. CDC, 2002. Web. 04 Apr. 2013. [www.emergency.cdc.gov/cerc]
- Source 5: "Risk Communication." *WHO*. N.p., n.d. Web. 04 Apr. 2013.World Health Organization: www.who.int/foodsafety/micro/riskcommunication/en/
- Source 6: "Principles and Practices Overview of Issues and Guiding Principles." *ATSDR*, 1994. Web. 04 Apr. 2013. [www.atsdr.cdc.gov/risk/riskprimer/vision.html]
- Source 7: *Responding to Community Outrage: Strategies for Effective Risk Communication* by Peter M. Sandman, Ph.D. AIHA Press 1993.
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- *Source 9: Science and Judgment in Risk Assessment*. Washington, D.C.: National Academy, 1994. Print.

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THE JOURNEY IS THE DESTINATION.

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