

The Six Elephants in the Room:

Six core principles effecting safety that are often unspoken

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Why Are We Here Today?

Client,
Owner,
Manager,
Supervisor,
Worker




Didn't get it?
Irrational?
Over/Under Reacting

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Learning Objectives

- ❖ List six core concepts that effect safety programs
- ❖ Recognize the role of individual risk tolerance in assessing acceptable risk
- ❖ Identify limitations of human performance

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Six Underlying Principles

- 1) Human Limitations (both physical and mental)
- 2) Common sense
- 3) The Role of Chance
- 4) Risk/Hazard
- 5) Risk perception/Tolerance
- 6) Motivation

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1 Human Limitations (both physical and mental)



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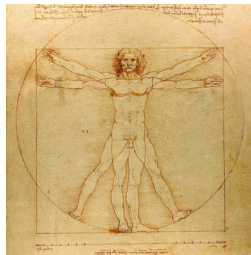
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Physical Limitations: Musculoskeletal

Dimensions

- Height
- Reach

Strength




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Physical Limitations: Sensory



- Eyesight
- Hearing
- Touch
- Smell
- Taste

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Physical Limitations: Psychomotor



- Skills Learning Curve
- Speed Accuracy Tradeoff

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Physical Limitations: Metabolic



- Food
- Water
- Excretion
- Temperature

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Cognitive (Mental) Limitations

- Memory
- Perception
- Bias
- Attention
- Mental Load
- Decision-Making



- Routine / Non-Routine
- Learned / Changed

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Memory biases

Misattribution of memory	Illusory correlation	Reminiscence bump
Availability	Illusory truth	Repetition blindness
Bizarreness effect	Lag effect	Rosy retrospection
Boundary extension	Leveling and sharpening	Saying is believing effect
Childhood amnesia	Levels-of-processing effect	Self-relevance effect
Choice-supportive bias	List-length effect	Serial position effect
Confirmation bias	Memory inhibition	Spacing effect
Conservatism or Regressive bias	Misinformation effect	Spotlight effect
Consistency bias	Modality effect	Stereotype bias
Continued influence effect	Mood-congruent memory	Suffix effect
Context effect	Negativity bias or Negativity effect	Subadditivity effect
Cross-race effect	Next-in-line effect	Tachypsychia
Egocentric bias	Part-list cueing effect	Telescoping effect
Euphoric recall	Peak-end rule	Testing effect
Fading affect bias	Persistence	Tip of the tongue phenomenon
Generation effect	Picture superiority effect	Travis syndrome
Gender differences in eyewitness memory	Placement bias	Verbatim effect
Google effect	Positivity effect	von Restorff effect
Hindsight	Primacy effect	Zeigarnik effect
Humor effect	Processing difficulty effect	
	Recency effect	

https://en.wikipedia.org/wiki/List_of_cognitive_biases

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Biases

Misjudging something

An inclination for or against something

Effect

- Belief formation
- Reasoning
- Decision making
- Human behavior




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Cognitive (Thinking) Biases



Anchoring bias	Framing effect
Apophenia (illusion)	Logical fallacy
Availability heuristic	Prospect theory
Cognitive dissonance	Self-assessment
Confirmation bias	Truthiness
Egocentric bias	
Extension neglect	
False priors	

https://en.wikipedia.org/wiki/List_of_cognitive_biases

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Additional Cognitive (Thinking) Biases

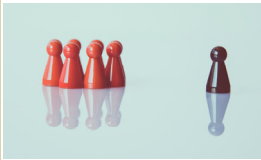
Action	Money illusion	Pro-innovation bias
Additive bias	Moral credential effect	Projection bias
Attribute substitution	Non-adaptive choice switching	Proportionality
Curse of knowledge	Mere exposure effect or familiarity	Recency illusion
Declinism	Omission bias	Systematic bias
Exaggerated expectation	Optimism bias	Risk compensation or Peltzman effect
Form function attribution bias	Ostrich effect	Surrogation
Fundamental pain bias	Outcome bias	Turkey illusion
Hindsight bias	Pessimism bias	Parkinson's law of triviality
Impact bias	Present bias	Unconscious bias or implicit bias
Information bias	Plant blindness	Unit bias
Interoceptive bias or Hungry judge effect	Prevention bias	Weber-Fechner law
	Probability matching	

https://en.wikipedia.org/wiki/List_of_cognitive_biases

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Social Biases



Association fallacy	Assumed similarity bias
Attribution bias	Pygmalion effect
Conformity	Reactance
Ingroup bias	Reactive devaluation
	Social comparison bias
	Shared information bias
	Worse-than-average effect

https://en.wikipedia.org/wiki/List_of_cognitive_biases

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2 Common Sense



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What is Common Sense?

Prior life experience.

Bias:

- Like me.

Expectation:


- Experience expected to be positive.



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3 The Role of Chance



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Outcome = Choice + Chance

Duke, A. (2018). *Thinking in bets : making smarter decisions when you don't have all the facts.* Portfolio/Penguin.

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Outcome = Choice + Chance

- We have biases
- For Us
 - Bad Outcome: Bad Luck
 - Good Outcome: Good Choices
- For Others
 - Bad Outcome: Bad Choices
 - Good Outcome: Good Luck

	Good Luck	Bad Luck
Good Choices	+	-
Bad Choices	+	-

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4 Risk/Hazard

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[illegible]

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[illegible]

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Risk Perception / Tolerance



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Risk Tolerance

- ❖ Effected by Benefit
 - What do we get out of it?
- ❖ Effected by Bias
 - How we perceive things differently than they are
- ❖ Effected by Values
 - How acceptability varies by situation

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Benefits vs Risk of Loss

Gain / Lose

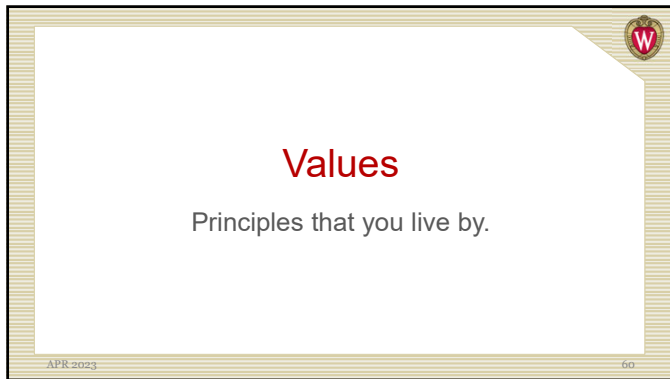
Prudent Avoidance?
Implement Controls?



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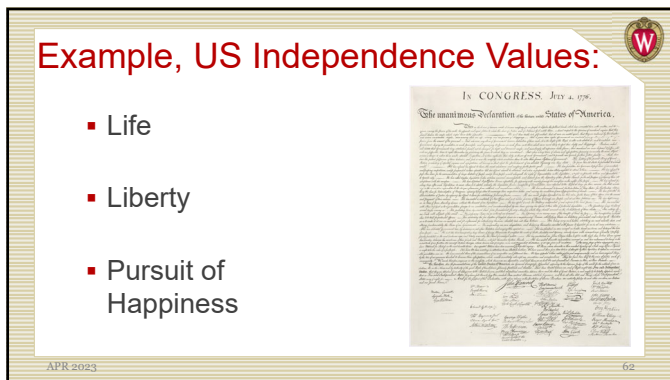


Values

Principles that you live by.

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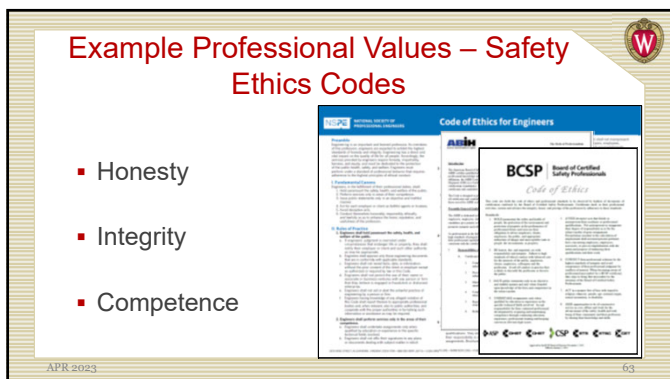


Example, US Independence Values:

- Life
- Liberty
- Pursuit of Happiness

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Example Professional Values – Safety Ethics Codes

- Honesty
- Integrity
- Competence

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Societal Values



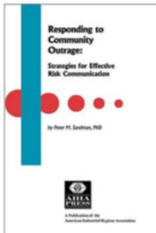
- Freedom/Independence
- Honesty
- Justice
- Equity
- Respect
- Democracy
- Human Rights
- Protecting Vulnerable People
 - Children
 - Elderly
 - Vulnerable Groups

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Risk Communication

Sandman, Peter, *Responding to Community Outrage: Strategies for Effective Risk Communication*, AIHA Press, 1993



Available at:
<http://psandman.com/media/RespondingtoCommunityOutrage.pdf>

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(perceived) Risk = Hazard (risk) * Outrage

Peter M. Sandman

Developed for environmental risk communication

- ✓ If people are outraged because they do not understand the hazard, educate them about the hazard.
- ✓ If they are outraged and DO understand the hazard, you must address the outrage.
- ✓ 'Educating the public' is not sufficient to deal with public outrage.

Show, Elenore, "Risk Communication: Notes from a class taught by Dr. Peter M. Sandman," posted <https://www.psandman.com/articles/risk.htm> accessed 3/1/2023

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Sandman 12 Components of Outrage

- Bias (some)
 - Familiar vs. not familiar
 - Not memorable vs. memorable
 - Not dreaded vs. dreaded
 - Chronic vs. catastrophic
 - Knowable vs. unknowable
 - Trustworthy sources vs. untrustworthy sources
 - Responsive process vs. unresponsive process
- Values (some)
 - Fair vs. unfair
 - Morally irrelevant vs. morally relevant
 - Voluntary vs. coerced
 - Natural vs. industrial
 - Individually controlled vs. controlled by others

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6 Motivation

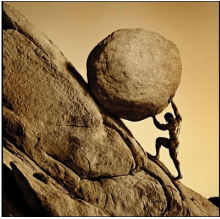


Image: Sisyphus by Gerard Van der Leun, [flickr](#), some rights reserved.

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Motivation – They need to want to do it.

Identify and address the underlying source.

- Different risk tolerance?
- Social interference?
- Physical environment?

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Motivation Factors

- Basic Physical Needs
 - Food/Water
 - Shelter
 - Safety
- Social Needs
 - Community and belonging
- Achievement
 - Accomplish Goals

- Extrinsic (External) Motivation
 - Rewards
 - Recognition
 - Praise
- Intrinsic (Internal) Motivation
 - Personal satisfaction

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Maslow Hierarchy of Needs

LIFE PURPOSE:
Creativity, Personal Purpose

RECOGNIZE VALUE:
Respect, Achievement

BELONGING:
Social / Group

BASIC NEEDS:
Income, Safety, Security

Thrive

Growth

Survival

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Motivation for Safety

Pay to be safe?

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Motivation for Safety


Threaten
Job?

Survival




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Training - Motivation?

- ❖ Hazard / Risk
- ❖ Risk Tolerance
 - Benefits (Value/Life Purpose)
 - Biases
 - Values
- ❖ Outcome:
 - Choice and Chance
- ❖ Expectations
 - Human Limitations
 - Past Life Experiences



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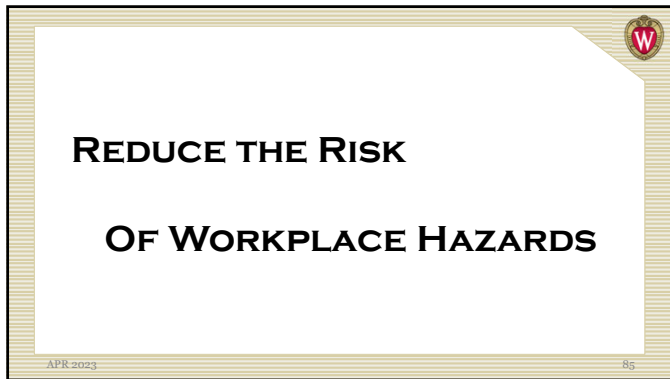


Six Underlying Principles

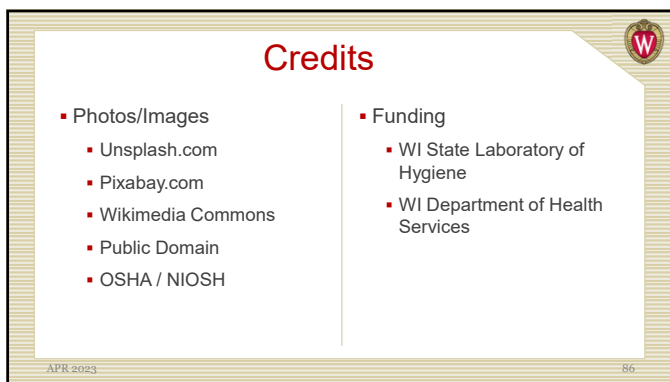
- ❖ Human Limitations (both physical and mental)
- ❖ Common sense – Personal Experience
- ❖ The Role of Chance – Choice+Chance
- ❖ Risk/Hazard
- ❖ Risk perception/Tolerance - Outrage
- ❖ Motivation

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