The Psychology of Radioactive Waste Disposal
An Introduction

15 Minute Presentation  2:45 pm
Monday, February 6, 2012

Midyear Meeting of the Health Physics Society
Dallas, TX

Presented by
Ray Johnson, MS, SE, PE, FHPS, CHP
Director, Radiation Safety Counseling Institute
VP Training Programs, Dade Moeller and Associates
301-990-6006
ray@radiationcounseling.org
What is the greatest challenge for radioactive waste disposal, technical issues or people issues? Why do regulators and the public demand such extraordinary practices for disposal of radioactive wastes? Why does the public seem to mistrust politicians, regulators, industry, and experts regarding such waste disposal? The answer to each of these questions has to do with fears of radiation. These fears arise from images or imagination of unacceptable consequences of exposure to radiation. The subconscious mind of a fearful person will create the most alarming images in order to assure protection of the person. People who are fearful of radiation are not aware of these images which originate in the subconscious mind. They just know instinctively that radiation exposure is bad. Appeals to the conscious mind for rational decisions about safety will not change the fearful person’s feelings because their fears are from their subconscious mind. The imagination of the subconscious mind will win over the rational conscious mind every time. A person with subconscious fears will also seek confirmation and thus will be very open to information about alarming risks as promoted by the media and anti-nuclear activists. Information provided by radiation experts, which is contrary to the expectations of the subconscious mind of a fearful person, may be viewed with great suspicion and discounted. Fearful people will also gravitate towards others expressing the same fears for reinforcement of their fears. People reacting to their subconscious fears may rationalize their perceptions with arguments that make no sense for logical, rational, analysis by the conscious mind and understanding by technical experts. People’s views of radiation risks will not change without a change in their subconscious minds. Marketers and psychologists know how to address the subconscious mind.
The Psychology of Radioactive Waste Disposal - An Introduction

Ray Johnson, MS, SE, PE, FHP, CHP
VP, Dade Moeller
and
Director, Radiation Safety Counseling Institute

Our Conscious Mind
• Functions rationally, thinks, reasons, and makes decisions and choices based on sensory input
• Occupies about 10% of our brain
• Source of knowing and awareness
• Serves as the captain of our ship, the giver of orders
• Can only deal with one thing at a time
• Processes information to make decisions using
  – Thinking or Feeling

Subconscious Mind
• The seat of our emotions / creativity.
  – Makes up 90% of our brain
  – Nervous system / solar plexus
• Takes orders from the conscious mind without judgments
• A multi-tasker
• Functions 24/7 operating the machine we call our body.
  – Regulates our heart, our breathing, the digestion of food, the healing of cells, etc.
• Handles thousands of inputs simultaneously for our health and protection

Subconscious Fears
• Our subconscious is programmed to react instantly to danger – fear response
  – Before we have time to think
• Fears arise from images of danger
• Subconscious mind creates alarming images to assure quick protection
• Actually our subconscious reacts even before our conscious mind is aware of the images

What is Fear?
• Psychologists define fear as a response to a specific stimulus
  – Such as pain or imminent danger
• Since radiation produces no sensation
  – Not a true fear based on imminent danger
  – Radiation fears are based on imagination
  – Manufactured fear based on images of consequences
• Many radiation fears are also based on mythology
  – Something believed which is not technically true
  – Based on false premises and misunderstanding

Greatest Waste Disposal Challenge?
• Technical Issues or People Issues?
• Do we know what to do with rad waste?
• Why do regulators and the public demand such extraordinary precautions?
• Why does the public seem to mistrust us?
• Why, “Not In My Back Yard”?
• Answers – have to do with fears of radiation originating in the subconscious mind
Fears and Imagination

- All fears are based on imagination
- Fears summon powerful predictive forces
- Fear is about what might happen next
  – Not what is happening now
- Example – fear of heights
- If we tell that person, “You do not need to be afraid,” will that help them?
- Radiation fears are based on imagination of unacceptable consequences
  – Cancer and death

Fears of Radiation are Involuntary

- Similar to fear of heights, spiders, snakes.
- Can we talk a person out of their fear of snakes?
  – By saying, “It’s only a harmless garter snake.”
- Can we change a person’s fears of radiation?
  – By saying, “You do not need to be afraid, it’s only like a chest x-ray.”
- If we ask, “Why are you afraid?”
  – They do not know - unconscious mind
  – They will try to rationalize an answer

Fear May Be the Greatest Danger from Radiation

- Fear, anxiety, stress, and worry kill through
  – high blood pressure
  – addictions, drugs
  – heart disease
  – weight loss or gain
  – depression, insomnia
  – suicides, abortions
  – post traumatic stress disorder

Dealing with Fears of Radioactive Wastes

- Experts are wrong to think they can ease fears by simply “getting the facts out”
- While facts are evaluated rationally, fears come from our subconscious gut feelings, not based on logical analysis
- Our gut tells us that though radiation injuries are very unlikely to occur,
  – that is not a an adequate justification for ignoring the risk of possible effects.
- Judgments are commonly made on the basis of anecdotes and speculation

Views on Radioactive Waste

- Historically we have thought
  – If we could present better information,
  – People’s views may be changed
- Is it working?
- Those who believe radiation is bad will seek confirmation,
  – Others with same views
  – Suspicious of what does not support these views

Summary

- Challenge for radioactive waste - fears
  – Radiation fears are based on images in the subconscious mind
  – Automatic response for protection
- Appeals to conscious mind for rational decisions will not change fearful person’s feelings
- Imagination by the subconscious mind will win every time
- Answers to radioactive waste may be a better understanding of people issues and fears