

How to Help a Person Frightened by Radiation

A Technical Presentation

**Health Physics Society Midyear Meeting
Austin, Texas**

Presented

Wednesday, Feb 3, 2016 2:45 pm

by

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How to Help a Person Frightened by Radiation

A 15 Minute Technical Paper Presentation for the
HPS Midyear Meeting, Austin, TX February 3, 2016

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The word radiation is often associated with something dark, sinister, and frightening, and something to be avoided. Fears of radiation arise as an automatic function of our subconscious mind which is programmed to be constantly on the alert for dangers. Because of media repetition of the words “deadly radiation” for over 60 years, most everyone now has an instinctive fear of radiation similar to fears of heights, snakes, spiders, immersion, and loud noises. People may not know the consequences of radiation exposure, but instinctively feel for safety it should be avoided (better to be safe than sorry). Because fears of radiation are so common, in our work as specialists in radiation safety, we will encounter frightened persons and want to be helpful. What can we do?

Because of our understanding and acceptance of radiation we may want to tell the frightened person, “It’s OK, you do not have to be afraid.” While this may seem helpful, most frightened persons will tell you it is not, for several reasons. 1) Telling a fearful person not be afraid is discounting or making them wrong for their fears (psychologists know that fear is just a feeling and all feelings are OK). 2) Fears arise from subconscious processes that do not hear qualifiers. Thus, the subconscious does not hear the word “not.” Instead the subconscious hears “be afraid.” 3) Telling a person not to be afraid is inviting them to make a conscious decision (that it is OK) when the fear decision comes from subconscious processes that are not in the person’s awareness. Psychologists call this confronting the subconscious and it is usually not helpful.

Perhaps the first step in helping a frightened person is to affirm, “It’s OK to be afraid.” You may find this response difficult if you believe the person’s fears are not justified. Once a person hears their fears are OK, they may be ready to consider the question, “How fearful is appropriate for the circumstances?” This question will invite the frightened person to begin a conscious process for evaluating the basis of their fears (if they want to). The subconscious images supporting fears can be replaced by new images and information which a person accepts consciously. The best way for people to accept new information is for them to discover it themselves (not by us telling them our answers).

The best thing we can do is to serve as a resource for a frightened person to gain new insights on the safety of radiation. There are two possible ways to do this. 1) Have the person perform their own measurements of radiation. I do this by having them measure the signal from radioactive antiques and compare those measurements with the signal from sources of their concern (such as nuclear gauges or industrial x-ray). Invariably, they discover that my antiques give readings 10, 100, or 1,000 times greater than their radiation sources. The other option that may be helpful is to invite the frightened person to go through the same steps that you would use to make decisions on radiation safety. These steps from “cause to effect” include characterizing the source, determining its location, exposure rate, duration, and occupancy time, and how much radiation energy is deposited in the body and where. This information can then be evaluated by reference to studies on actual exposures and observed effects.



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- BS - Civil Engineering, University of Vermont (1961)
- MS - Sanitary Engineering, Massachusetts Institute of Technology (MIT) (1963)
- PSE - Professional Sanitary Engineer Degree, MIT and Harvard University (1963)
- PE - Licensed Professional Engineer, Vermont (1965 - present)
- PhD Studies, Radio and Nuclear Chemistry, Rensselaer Polytechnic Institute (1966-1972)
- Greater Washington Institute for Transactional Analysis - Counseling (1977-1980)
- CHP - Certified Health Physicist, American Board of Health Physics (1983-present)
- Johns Hopkins Fellow, Organizational Systems and Communications (1984-1985)
- FHPS - Fellow of the Health Physics Society and Past President (2000)
- DAAHP - Diplomate and Past President, American Academy of Health Physics (2015)
- Commissioned Stephen Minister - Counselor, United Methodist Church (2003-present)

Experience

- 2010 - pres. Director, Radiation Safety Counseling Institute. Workshops, training, and counseling for individuals, companies, universities, or government agencies with concerns or questions about radiation and x-ray safety. Specialist in helping people understand radiation, what is safe, risk communication, worker counseling, psychology of radiation safety, and dealing with fears of radiation and nuclear terrorism for homeland security.
- 2007 - pres. VP, Training Programs and consultant to Dade Moeller Radiation Safety Academy, training and consulting in x-ray and radiation safety, safety program audits, radiation instruments, NORM, and regulatory requirements.
- 1984 - 2007 Director, Radiation Safety Academy. Providing x-ray and radiation safety training, audits, and consulting to industry (nuclear gauges and x-ray), universities, research facilities, and professional organizations.
- 1988 - 2006 Manager and Contractor to National Institutes of Health (NIH) for radiation safety audits of 3,500 research laboratories and 2,500 instrument calibrations a year, along with environmental monitoring, hot lab and analytic lab operations, and inspections of three accelerators and over 100 x-ray machines.
- 1990 - 2005 President of Key Technology, Inc. a manufacturer and primary laboratory for radon analyses with over 1,500,000 measurements since 1985. Primary instructor at Rutgers University for radon, radon measurements, radiation risks, radiation instruments, and radon risk communication courses (1990-1998).
- 1986 - 1988 Laboratory Director, RSO, Inc. Directed analytical programs and Quality Assurance for samples from NIH, Aberdeen Proving Ground, radiopharmaceutical companies, and the nuclear industry.
- 1970 - 1985 EPA program manager and Chief, Radiation Surveillance Branch, EPA, Office of Radiation Programs. Directed studies of radiation exposures from all sources of radiation in the US, coordinated 7 Federal agencies for nuclear fallout events, QA officer 8 years. Head of US delegations to I.A.E.A and N.E.A. on radioactive waste disposal. ANSI N-13 delegate (1975-1985). Retired as PHS Commissioned Officer (0-6) in 1985 with 29 years of service.
- 1963 - 1970 U.S.P.H.S. Directed development of radiation monitoring techniques at DOE National Labs, nuclear plants, and shipyards in the US and Chalk River Nuclear Laboratory in Canada. Conducted doctoral research.

Health Physics and Professional Activities

Health Physics Society (HPS) plenary member 1966; President-elect, President, Past President (1998-2001), Fellow (2000), Treasurer (1995-1998); Secretary (1992-1995); Executive Cmte. (1992-2001), Chair, Finance Cmte. (1996-1998); Head of U.S. delegation to IRPA X (2000). RSO Section Founder and Secretary/Treasurer (1997-2000); Co-founder and President, Radon Section (1995-1996). Co-Chair Local Arrangements Cmte. Annual Meeting in DC (1991); Summer School Co-Chair (2004); Chair, President's Emeritus, Cmte (2006); Chair, Awards Cmte (2002); Chair, History Cmte (2005-2012); Historian (2012-Pres.) Continuing Education Cmte. (2005-2012). Chair, Professional Development School Cmte (2014-Pres.), Academic Dean for HPS Professional Development School on Radiation Risk Communication (2010) and Radiation Instruments School (2014). PEP, CEL and Journal Reviewer. AAHP Instructor; Treasurer, AAHP (2009 - 2012). AAHP President-elect, President, Past President (2012-2015). Baltimore-Washington Chapter: President (1990-1991) and Honorary Life Member; Newsletter Editor (1983-2005); Public Info. Chair (1983-1989), Science Teacher Workshop Leader (1995 - Pres.). New England Chapter HPS, Newsletter Editor, Board of Directors, Education Chair (1968-1972). President, American Association of Radon Scientists and Technologists (1995-1998) and Honorary Life Member, Charter Member; Board of Directors; Newsletter Editor (1990-1993). Founder and first President, National Radon Safety Board (NRSB) (1997-1999). Member of American Industrial Hygiene Association (1997-Pres.) (Secretary, Vice Chair, Chair, Ionizing Radiation Committee, 2009-2012), Conference of Radiation Control Program Directors (1997-Pres.), Taught 3,500 RSO students since 1985. Studied H.P. communication styles and presented Myers-Briggs seminars to over 4,000 H.P.s since 1984. Over 35 professional society awards. Licensed Professional Engineer since 1965. Certified Health Physicist since 1983.

Publications

Authored over 600 book chapters, articles, professional papers, training manuals, technical reports, and presentations on radiation safety. Author of monthly column, "Insights in Communication" HPS Newsletter 1984 - 1989, 1994 -2001, and 2012- 2013.

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Automatic Associations with Radiation

- Often associated with something
 - Dark, sinister, and frightening
 - Imaginary consequences to be avoided
- Radiation fears arise from automatic function of our subconscious mind
 - Programmed to be alert for all dangers
- Now programmed by media repetition of “Deadly Radiation” for instinctive fear
 - Like heights, snakes, spiders, immersion, etc.

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Instinctive Fear of Radiation is Now Common

- People may not know consequences
 - But imagine terrible things
- Feelings are to avoid radiation for safety
 - Better to be safe than sorry (precautionary principle)
- Because of prevalent fears of radiation
 - All HPs will encounter frightened people and want to be helpful
- What can we do to help ?

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We May Want to Say, Its OK

- Because of our technical understanding and acceptance of radiation, we may be tempted to say, “Its OK, you do not have to be afraid.”
- A frightened person will tell you, “This is not helpful !” How Come?
- Three reasons
 - 1. Telling a person not to be afraid is discounting their fear, making them wrong
 - Fears are just a feeling and all feelings are OK

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More Reasons

2. Fears arise from subconscious processes that do not hear qualifiers
 - They do not hear, “NOT”
 - They hear, “Be afraid”
3. Telling a person not to be afraid is inviting them to make a conscious decision that it is OK, when their fear arises subconsciously
 - out of their awareness
 - Confronting the subconscious is not helpful

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First Step – to be Helpful

- Affirm, “Its OK to be afraid of radiation”
- You may find this response difficult - if you believe the person’s fears are not justified
- Once a person hears that their fears are OK
 - They may be ready to consider “How fearful is appropriate for the situation ?”
- This question will invite a conscious evaluation of their fears (if they want to)

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How to Help a Frightened Person

Conscious Evaluation

- Subconscious images may be replaced by new images and information when accepted by conscious processes
- Best way is to have people discover the new information by themselves
 - Not telling them the answers
- Provide your knowledge and experience as a resource for them to gain new insights on safety of radiation

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One Suggestion

- Have them do their own measurements
- Start by measuring radioactive antiques
- Then measure sources of concern at their facility
- They may discover that antiques give readings - 10X, 100X, 1000X greater
- If they get 0.5 mR / hr, ask how this compares to public dose limits and occupancy time

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Second Suggestion

- If they are willing – have them go through the steps from cause to effect, which you would follow yourself to answer the question, “Is it safe?”

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How to Answer “Is it Safe”

1. What are properties of radiation
 - α , β , γ , x-ray ?
 - Form and quantity ?
2. Where is it located - Inverse square law ?
3. How is it contained - Shielding ?
4. How will it move in the environment ?
5. What are the exposure conditions – mR / hr ?
6. What is the duration of the exposure – hr ?
7. How much energy is deposited in our body - mrem ?
8. What are the health risks at 1 death / 1,000 person – rem ?
“It is actually very difficult to seriously harm someone with radiation.”

Summary

- How can we help a frightened person?
- People are programmed subconsciously by media repetition of “Deadly Radiation”
 - To instinctively fear radiation
- Thus, reaction to radiation is automatic
 - It cannot be avoided, like fear of snakes, etc
- May not be helpful to say, “Its OK, you do not have to be afraid”

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Summary

- Three reasons:
 1. Discounts fear as not OK
 2. The subconscious does not hear “NOT”
 3. Subconscious fear is out of awareness
- Affirm, “Its OK to be afraid of radiation”
- Invite evaluation of “How fearful is needed”
- Help people discover their own answers
- Have them do their own measurements
- Have them review steps for, “Is it safe?”

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How to Help a Frightened Person

Questions ?



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