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Safety and Radiation Protection Culture

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IRPA

- International Radiation Protection Association
  - To provide a medium for communication and advancement of radiation protection.
  - Branches of knowledge - science, medicine, engineering, technology and law –
    - to provide for the protection of man and environment from radiation hazards, and
    - to facilitate the safe use of medical, scientific, and industrial radiological practices for the benefit of mankind.

Occupational Health and Radiation Protection

In what occupations are people exposed to radiation?


Radiology


Mining


Construction


Env. Sampling


Dentistry

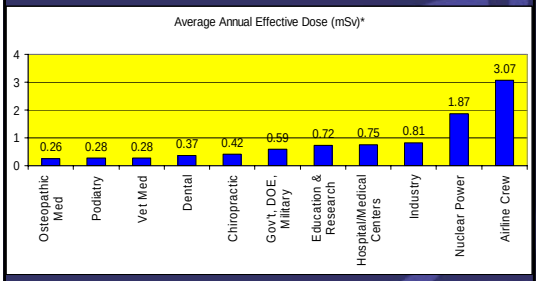

Education & Research


Flight Crew


Nuclear Power


Nuclear Medicine

Occupational Health and Radiation Protection



*2006 data from NCRP Report 160

Radiation Safety Standards

- Early ignorance
- ARRS 1924 "tolerance dose" = 0.7 Sv/y
- Initially thought of as "compliance" doses
- Now based on avoidance of deterministic effects and reduction in probability of stochastic effects
- Justification, optimization, limitation
- Ave incremental risk of death
- No greater than "safe" industries or 10^{-4} per year

Adapted from Los Alamos National Laboratory "Protection Standards", 1995.

Standards and Safety Culture

- Standards
  - Baseline
  - Compliance
  - Minimum acceptable
- Safety Culture
  - Beyond baseline
  - Beyond compliance
  - "Do what is right" mentality, not "Do only what is regulated"

What is Safety Culture

- Culture
  - An organization's values, symbols, rituals and basic assumptions
  - Sets limits and direction of behaviors
  - A common way of thinking that drives a common way of acting
- Safety Culture*
  - Safety issue identification and prompt resolution
  - Leaders' decisions based on safety
  - Personal accountability/questioning attitudes
  - Work is planned to include safe methodologies
  - Continuous learning takes place

*Adapted from the Nuclear Regulatory Commission, 2010.

What is a Radiation Protection (RP) Culture

- Behavior that results from a commitment by employees and leaders to emphasize radiation protection over competing goals*
  - Applies in those work environments where employees, visitors or members of the public can be exposed to radiation

*Adapted from the Nuclear Regulatory Commission, 2010.

RP Culture Framework

Vision – must be compelling; cannot be compliance

Ownership - radiation professionals as stewards

Mentoring – new workers mentored in RP culture behaviors

Collectively - blend innovation and interdependent solutions

Management by exception - one-on-one interventions

Bureaucracies rooted out - rescind policies that reinforce behaviors leading to increased radiation doses

Linked to success – radiation protection culture must be intertwined with business and personal success

RP Culture Practices

Technical competency – RP staff must know every aspect of radiation protection

Organizational pressures - what is the future for the organization; what role will radiation protection play

Talk the talk – and know to whom you're talking

Global safety picture - impact of safe work environment on processes/systems

Safety advocates - find formal and informal leaders who can advance radiation protection

RP Safety Culture Practices

Compliance is a benefit - not the goal

Don't hide truth - if there are problems, admit it and get on with it

Proactive - prepare for the future

Mentor – key leaders who understand that a RP culture is part of the organizational strategy need to mentor new leaders

Build a compelling vision - what do we want to build, where do we want to be

How to achieve an RP SC

Leadership - must articulate, and follow-through on, the changes required to embed safety into the organization

Stories - Shared stories of successful safety problem solving must be acknowledged

Rewards - Individuals must be rewarded for their safety efforts rather than praised for short-term, unsafe gains in productivity

How to achieve an RP SC

Unsafe practices - those who support unsafe practices, such as praising for short-term productivity gains, must be changed or removed from the organization.

Active management - use active management by observing behaviors and actively performing one-on-one intervention for unsafe acts.

How to achieve an RP SC

Embed – ingrain radiation protection in the organization's objectives

Build – incorporate safe practices into all operations and activities

Redact – modify procedures and policies that reinforce unsafe behaviors

Application

Regular conversations with organizational leadership

- What is on their mind
- What is the organization facing
- Talk the talk
  - Talk finances with the CFO (lower cost interventions to keep radiation exposures ALARA; balance administrative, personal protection, engineering)
  - Talk increased productivity with the CEO (How to increase productivity without increasing radiation exposure)
  - Do NOT talk compliance – Boring!!!!!
- Become a strategic business partner

Application

Find safety advocates

- Both informal and formal leaders who advocate for safety
- Use them to spread the message of safety
- Take the time to mentor them in the messages that need to be disseminated
- Build an informal network of these advocates

Application

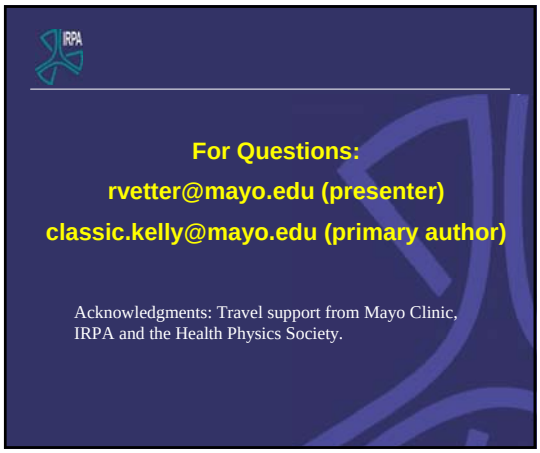
Trust

- Identify existing issues with current radiation protection culture and address them
- Allow employee, visitor, member of the public to report unsafe conditions with no repercussions
- Hold employees accountable for their [safe or unsafe] behaviors
- Promptly address and correct safety issues
- Mutual respect throughout the organization

Closing thoughts

A radiation protection culture:

- Gives visibility to the fundamentals of radiation safety
- Promotes radiation risk awareness
- Shares responsibility among practitioners, operators, management and regulators
- Builds on the radiation protection heritage for the next generation of workers
- Improves the quality and effectiveness of a radiation protection program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