Radiation Risk Scale – A Tool for Communication

Armin Ansari, PhD, CHP
Centers for Disease Control and Prevention, Atlanta, GA, United States of America

Communicating Radiation Risk to the Public

People need to know if a situation involving radiation or radioactive materials is “safe” for them or their families.

The radiation protection community continues to struggle addressing this need.

Concepts and Terminologies Used To Date

- “Below Regulatory Concern”
- “De minimis”
- “Negligible Individual Dose”
- “Not a public health concern”

These efforts have been largely unsuccessful. There is no consensus as to what dose or radiation level constitutes a “public health concern.”

There is no consensus as to the lowest dose threshold for radiation hazard.

Proposed Radiation Risk Scale

More Radiation

Category 5
Category 4
Category 3
Category 2
Category 1

Less Radiation

Radiation Risk Scale

General Description

Category 5: Life hazard (hours to days)
Category 4: Risk of radiation sickness (days to weeks)
Category 3: Increased risk of long term health effects (decades)
Category 2: Above natural background, but no health effects
Category 1: Within normal range of natural background radiation

Features

A) Intended as a communication tool for the public
B) Conveys meaning, provides frame of reference
C) Simple
D) No need for radiation measurements or units
E) Not affected by differences in standards or regulatory limits
F) No need for pre-incident public education; the media can describe the scale as needed.
G) Can be used to promote responsible action during an emergency situation or in its aftermath
H) Best used if accompanied with protective action recommendations or instructions.

Example:
If person is contaminated with fallout, self decontamination can decrease radiation risk from Category 5 to Category 2 or 1.

Example:
After a nuclear detonation, self-directed evacuation can place an individual at Category 4 or 5 whereas staying inside shelter can help maintain a Category 2 or 3 risk until instructed to evacuate.

A Challenging Dichotomy Even If the Experts Agree

<table>
<thead>
<tr>
<th>mSv</th>
<th>Perceived as dangerous</th>
</tr>
</thead>
<tbody>
<tr>
<td>n+4</td>
<td></td>
</tr>
<tr>
<td>n+3</td>
<td></td>
</tr>
<tr>
<td>n+2</td>
<td></td>
</tr>
<tr>
<td>n+1</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>Assumed Consensus Value for “Not a Public Health Concern”</td>
</tr>
<tr>
<td>n-1</td>
<td></td>
</tr>
<tr>
<td>n-2</td>
<td></td>
</tr>
</tbody>
</table>

Example:
If 10 mSv and below are not a public health concern, how about 11 mSv?

Other Examples of Scale in Communicating Hazards

- Hurricanes
- Pandemic flu progression
- White water rafting!
- Earthquakes
- Tornadoes

We can also use a scale to communicate relative hazards of radiation exposure.

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Contact Information

Armin Ansari, PhD, CHP
Radiation Studies Branch, EHHE, NCEH
Centers for Disease Control and Prevention; MS: F58
4770 Buford Highway NE
Atlanta, GA 30341-3717
U.S.A
AAnsari@cdc.gov

E-mail: cdcinfo@cdc.gov   Web: www.cdc.gov

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