Maximizing Public Engagement in Radiological Monitoring as a Means of Furthering Public Understanding of Ionizing Radiation

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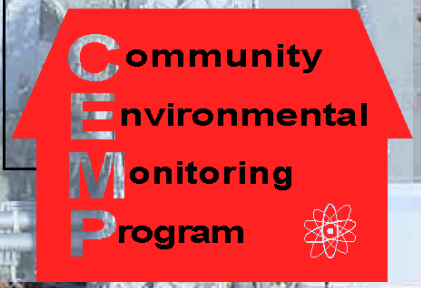


Maximizing Public Engagement…

I. Gap between actual and perceived risk

II. Public stakeholders as "citizen scientists": the Community Environmental Monitoring Program (CEMP)

III. The role of citizen scientists in the context of communicating information about Fukushima

Gap Between Real and Perceived Risk

-March 11, 2011 earthquake and tsunami result in over 19,000 dead and missing…

-Tsunami causes failure of backup power systems at Fukushima Daiichi nuclear power plant, resulting in core and fuel meltdowns and release of radioactivity into environment…

-Japanese government proactively evacuates region around power plants, greatly reducing potential doses to general public…BUT---

Gap Between Real and Perceived Risk

-Media concentrates on aspects of nuclear accident, rather than toll of earthquake and tsunami

-Despite no direct deaths from radioactivity, reports that evacuation of critically ill patients from hospital resulted in multiple deaths (added confusion and distrust related to differences in recommended evacuation zones by other countries)

-Less than 1 week after accident, poison control centers in the United States report adverse reactions caused by citizens ingesting potassium iodide pills.

Gap Between Real and Perceived Risk

14 months after the accident, significant fear persists in a public unlikely to experience any (physical) measureable health effects as a result of the nuclear accident.

dallasnews.com
The Dallas Morning News

11 March 2012

HEADLINE: Health uncertainties torment Japanese in nuclear accident zone

"Yoshiko Ota keeps her windows shut. She never hangs her laundry outdoors. Fearful of birth defects, she warns her daughters: Never have children."

Community Environmental Monitoring Program

- Established in 1981 to address public concern over atomic testing at the Nevada Test Site (NTS)
- Facilitates communication between the Department of Energy, National Nuclear Security Administration (DOE/NNSA) and the communities surrounding the Nevada National Security Site (NNSS), formerly the NTS
- Increases accessibility to and transparency of monitoring data
- Provides hands-on role for the public ("citizen scientists") in the monitoring process.
- Funded through the U.S. Department of Energy National Nuclear Security Administration's Nevada Site Office
- Administered by the Desert Research Institute (DRI) of the Nevada System of Higher Education in the United States

Community Environmental Monitoring Program

http://cemp.dri.edu/

- 29 monitoring stations surrounding and downwind of Nevada National Security Site (160,000 km^2 area)
- All stations measure, collect, and report data on ionizing radiation and weather
- Meteorological instruments on stations help to explain variation in background radiation that is a result of weather events.
- Employs public stakeholders from the local communities to collect and disseminate data

CEMP Station at Duckwater, Nevada

Who are the public stakeholders?

- Most are high school or college science teachers
- Others representative of very diverse backgrounds
- Respected members of community and willing to take on responsibilities for minimal compensation
- Become "lay-experts" in their communities on issues related to ionizing radiation
- Involvement improves public credibility of monitoring data and alleviates "fear factor"
- Participation results in significant cost savings to overall monitoring program

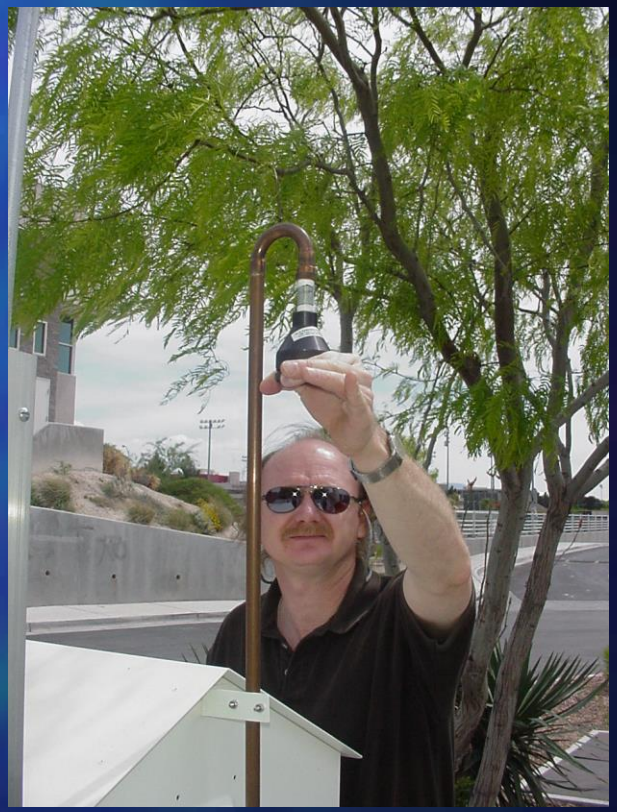
Who are the public stakeholders?

CEMP Actions and Response Timeline to Accident at Fukushima

- March 14: First public inquiry to CEMP (email)
- March 15: Special CEMP web page developed
- http://www.cemp.dri.edu/japan.html
  - Information on Japan accident
  - Links to several federal agencies and professional societies
- March 15: Notification to public participants
- March 17: Nevada Governor's office includes CEMP in press release citing assets monitoring radioactivity

CEMP Actions and Response Timeline to Accident at Fukushima

- March 16-17: First detection of I-131 by UNLV (1.7E-05 pCi/L)*
- March 17-18: First detection of Cs-137 by UNLV
- March 21: CEMP collects samples from local stations and implements special sampling at Las Vegas and Henderson (activated charcoal cartridges).
- March 25: CEMP reports detection of I-131 and Xe-133 in Las Vegas special sample, later would include Cs-134, Cs-137, and Te-132.



CEMP Actions and Response Timeline to Accident at Fukushima

- March 25: Interview with AP Nevada, released March 26 and global within 12 hours
- Media inquiries from all local TV affiliates (ABC, NBC, CBS, Fox, and Univision) and newspapers
- Additional inquiries from national media CNN, Wall Street Journal, USA Today, Forbes, and AP Radio, among others

March 23-25: Maximum activity levels for I-131=1.1E-03 pCi/L; maximum activity levels for Cs-137=9.3E-05 pCi/L.

CEMP Web Site Traffic

- Web site increased to greater than 100 times normal
- Leveled off at ten times previous rate
- 34,227 unique visitors for period March 7 – April 25
- 104 countries represented:
  - 1. United States 31,644
  - 2. Canada 805
  - 3. United Kingdom 196
  - 4. Germany 148
  - 5. Japan 117
  - 6. Australia 84
  - 7. Italy 81
  - 8. France 80
  - 9. China 65

Direct traffic	30%
Referring sites	60%
Search Engines	10%

Referring sites:

Forbes Blog	14%
Yahoo News	11%

Direct Contacts

- Hundreds of email and phone inquiries (web site, station displays and brochures, community representatives)---answered every inquiry individually
- Inquiries from general public, media, scientists
- Nature of inquiries:
  - Informational---What have you detected? How much? What are millisieverts, rems, Roentgens? Who else is monitoring? Why is the US recommending a different exclusion zone than Japan around Fukushima? How do you know the radiation you are detecting isn't from the NNSS, or another more local source, or natural?
  - Fear-based---Do I need to cancel my trip to Vegas? Do I need any medical intervention (Potassium Iodide tablets)? How much radiation is safe, or dangerous? Is it ok for me to let my children drink milk?

Information relayed to community participants

Conclusions

-Providing public stakeholders with a hands-on role can convey benefits both to public stakeholders and entities responsible for conducting studies or activities that are viewed with distrust by the public.

-Direct participation by public stakeholders can impart a sense of ownership to those involved as well as to the general community.

-The direct participation of public stakeholders in positions of trust can increase public confidence in analytical results, or other information disseminated by groups with low public trust.

-A larger role for public stakeholders also helps to engender increased accountability on the part of those conducting highly scrutinized activities.

-Educating and training public stakeholders creates a network of informal communicators who live and work in the communities alongside those residents who have concerns about past, ongoing, or future activities.