Gilbert W. Beebe Symposium: The Science and Response to a Nuclear Reactor Accident
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Population Monitoring after a Radiation Emergency: The Early Response

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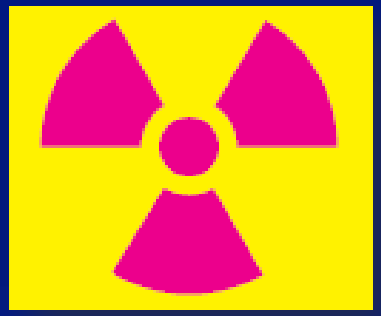
Disclaimer

The findings and conclusions in this presentation are those of the author and do not necessarily represent the official position of the Centers for Disease Control and Prevention/the Agency for Toxic Substances and Disease Registry.

Examples of Radiological Incidents

- **Transportation accidents**
- **Nuclear power plant accidents**
- **Spent fuel storage leaks/spills**
- **Space vehicle accidents**
- **Gas explosion/fire at any licensed facility**
- **Acts of terrorism:**
  - Radiological Dispersal Device (RDD) – Non -explosive
  - RDD – Explosive (“dirty bomb”)
  - Radiation Exposure Device – hidden source



Radiation Incidents

Impact on People

- Fatality
- Injury
- Exposure to radiation
- Contamination with radioactive material
- Anxiety
- Displacement

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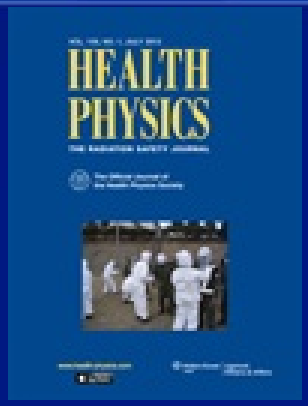
Population Monitoring

Examples

- Hiroshima/Nagasaki (1945)
- TMI (1979)
- Chernoyl (1986)
- Goiânia (1987)
- Tokai-mura (1999)
- London (2006)
- Fukushima (2011)

SCREENING OF RESIDENTS FOLLOWING THE TOKYO ELECTRIC FUKUSHIMA DAIICHI NUCLEAR POWER PLANT ACCIDENT

Hisayoshi Kondo,* Jiro Shimada,† Choichiro Tase,† Takako Tominaga,‡ Hideo Tatsuzaki,‡ Makoto Akashi,‡ Koichi Tanigawa,§ Yasumasa Iwasaki,§ Tatsuo Ono,* Masayuki Ichihara,* Yoshitaka Kohayagawa,* and Yuichi Koido*



July 2013 Issue

- 72,660 people screened at 142 sites (March 11-21)
  - Peaked at 14,000 per day
- 244,281 people screened (3/12/11 – 2/10/12)
- 901 cases, between 13-100 kcpm
- 110 cases, > 100 kcpm
- All cleaned by removal of clothing and wiping. Showering was not needed.

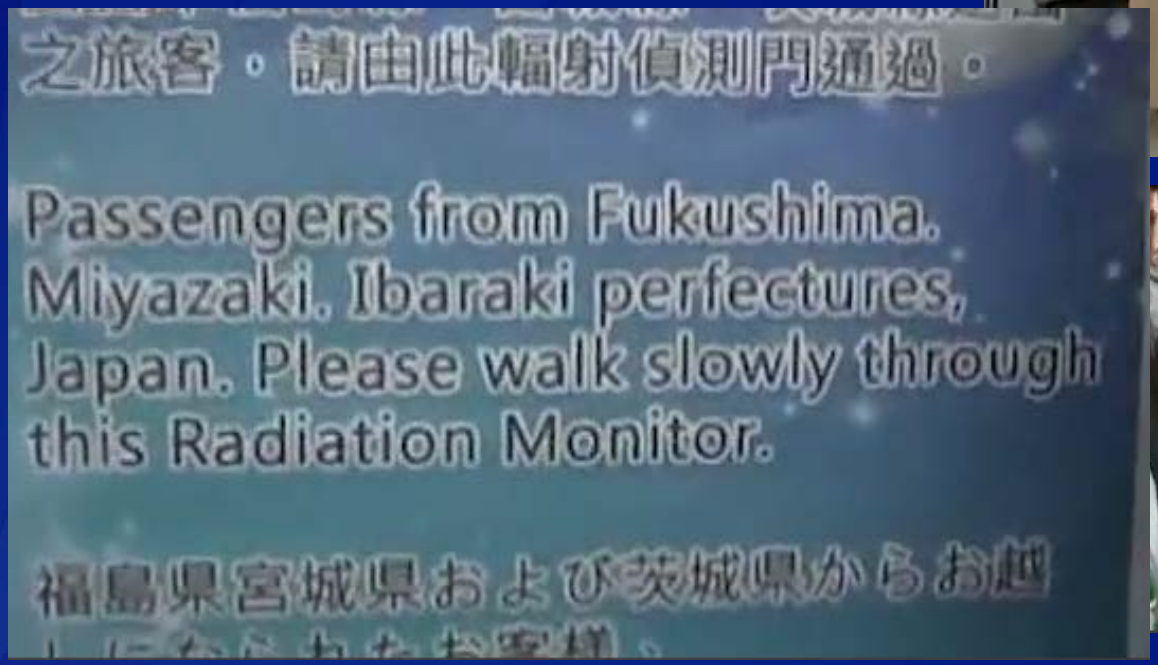
Public Shelters & Reception Centers

Japan 2011

Radiation detected on airline passengers from Japan

Higher-than-normal levels of radiation are found on clothing of passengers from Japan arriving in South Taiwan, but the levels don't appear to be dangerous passengers do not appear to be ill, reports say.

March 17, 2011 | By Rong-Gong Lin II | Los Angeles Times

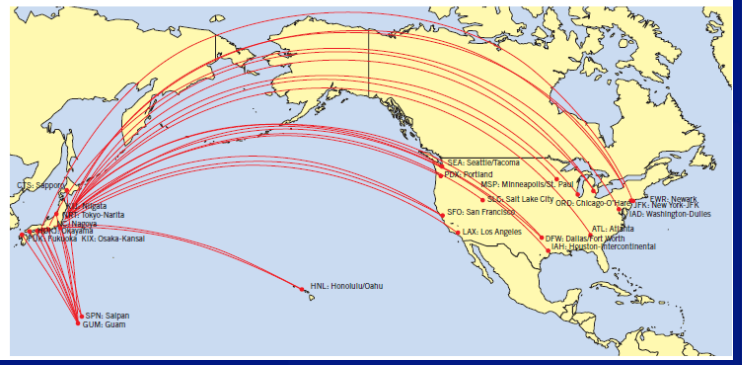


US Screening of International Travelers for Radioactive Contamination After the Japanese Nuclear Plant Disaster in March 2011

Todd Wilson, MS; Arthur Chang, MD; Andre Berro, MPH; Aaron Still, MS; Clive Brown, MD; Andrew Demma, MS; Jeffrey Nemhauser, MD; Colleen Martin, MSPH; Ad
Frieda Fisher-Tyler, MHS; Lee Smith, MS; Onalee Grady-Erickson;
Francisco Alvarado-Ramy, MD; Gary Brunette, MD; Armin Ansari, PhD;
David McAdam, MA; Nina Marano, DVM

Disaster Med Public Health Prep. 6(3):291-6

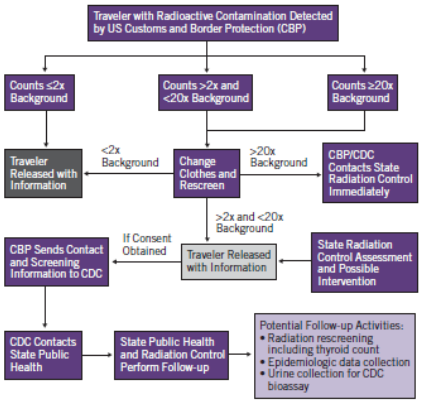
Scheduled Commercial Direct Flight Routes From Japan to the United States in March 2011.



- Collaboration with state and local public health and rad control authorities, and U.S. Customs and Border Protection

- Approx. 543,000 travelers arriving directly from Japan at 25 US airports screened between 3/17 – 4/30/2011

Centers for Disease Control and Prevention (CDC) Radiological Screening Program Algorithm for Travelers Returning to the United States From Japan After the Fukushima Daiichi Incident.



Population Monitoring

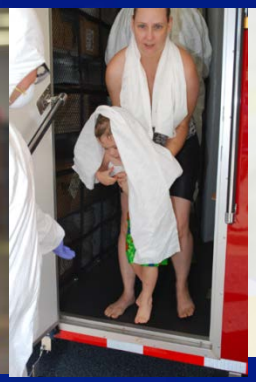
- Community Effort
- An integrated process
- Requires extensive planning
- Needs to be scalable and flexible
  - Prioritized needs of people at the time and location
  - Availability of resources

Population Monitoring: Early response

Evaluate potentially-affected population for:

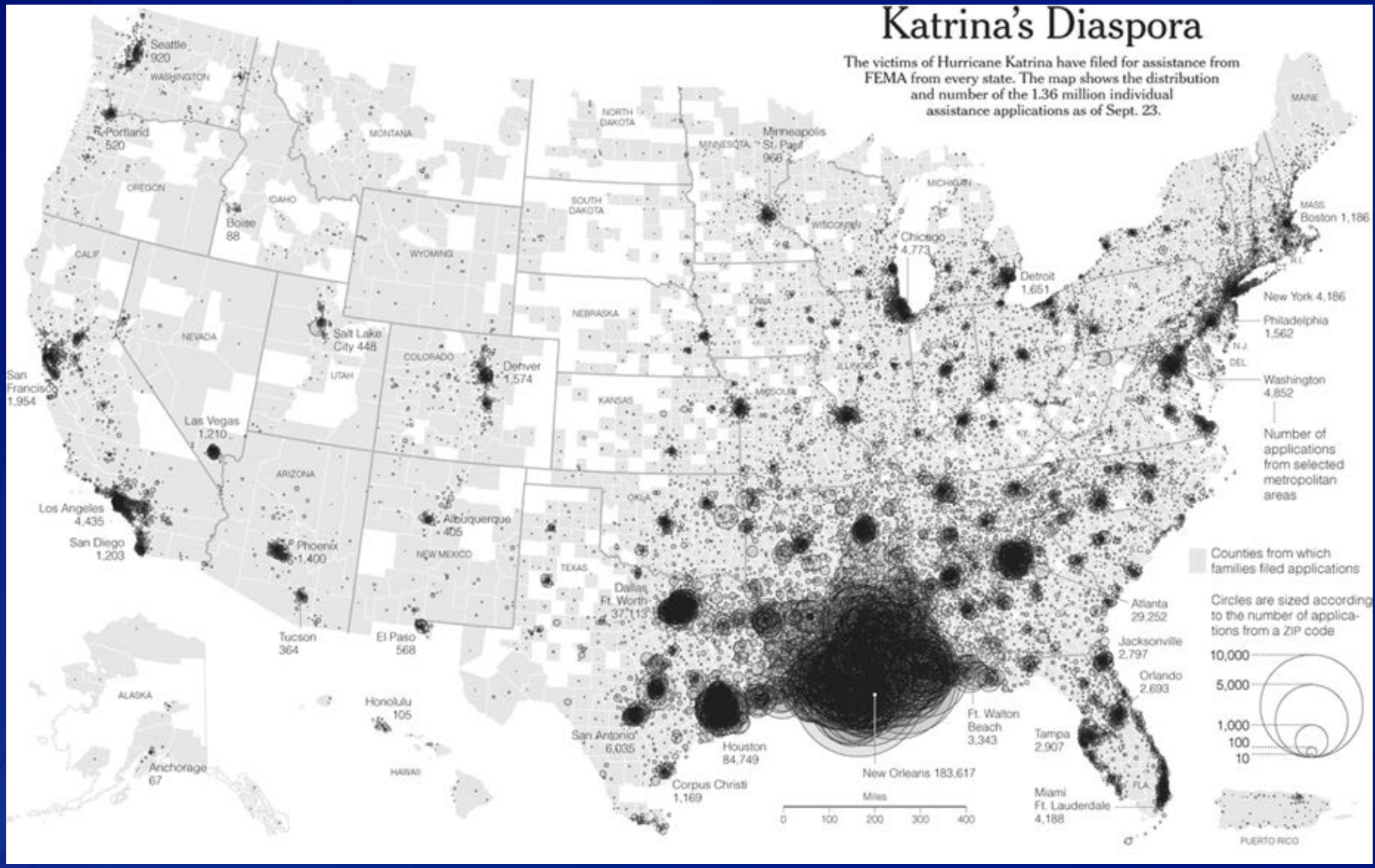
- **Urgent medical attention**
- **External Contamination**
- **Internal contamination**

Include Service animals and pets!



Would my community be impacted?

Affected Communities after Hurricane Katrina



Data from FEMA, published in The New York Times, October 2, 2005

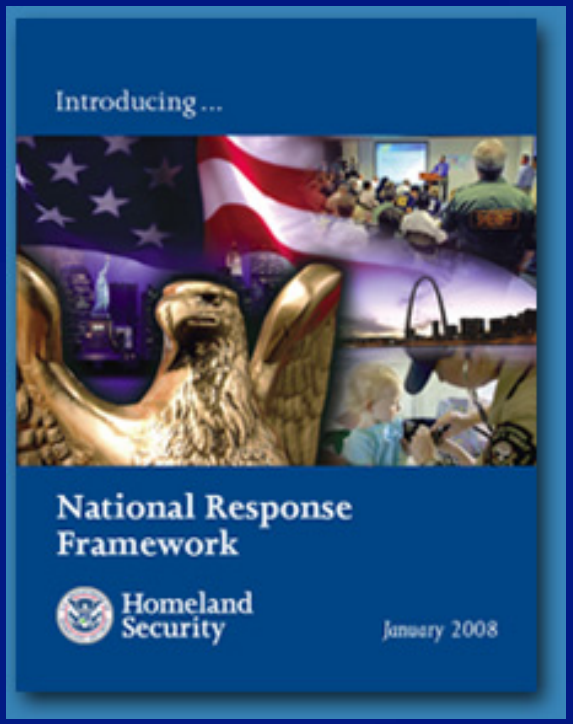
Local Response

- **Plan to receive a large population**
  - **Potential for contamination**
  - **Potential for injuries**
  - **Some may need immediate medical care**
  - **Most may need shelter/temporary housing**
  - **All would be stressed**

National Response Framework
Nuclear/Radiological Incident Annex

Decontamination/Population Monitoring are:

"the responsibility of State, local, and tribal governments."



www.fema.gov/emergency/nrf/

Community Reception Center (CRC)

The place to conduct “population monitoring”

Community Reception Centers (CRC)

Local response strategy for conducting population monitoring

- Multi-agency effort
- Staffed by local/state agencies and organized volunteers
- Opened 24-48 hours post incident
- Located outside hot zone
- Comparable to Points of Dispensing Sites (PODs)

Community Reception Centers (CRC)

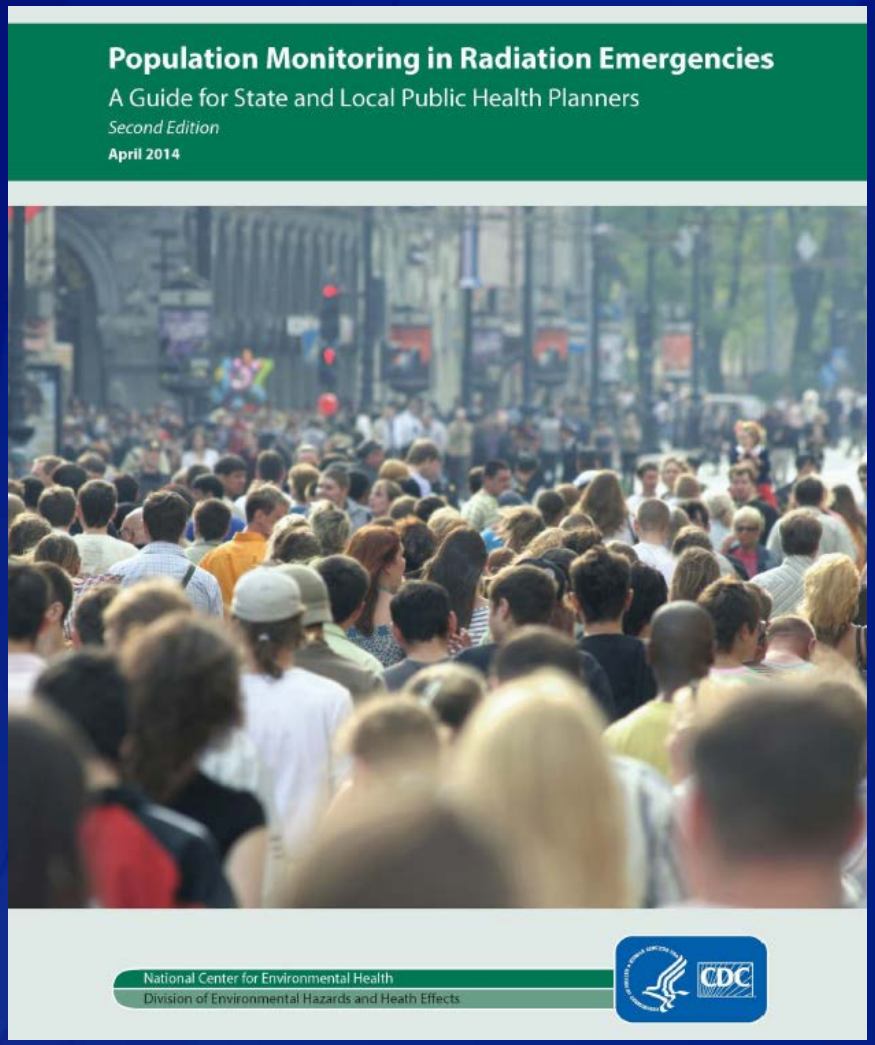
- Services include:
  - Contamination screening
  - Decontamination
  - Limited medical care
- Main purpose is to prioritize people for further care
  - Ease burden on hospitals
  - Manage scarce medical resources

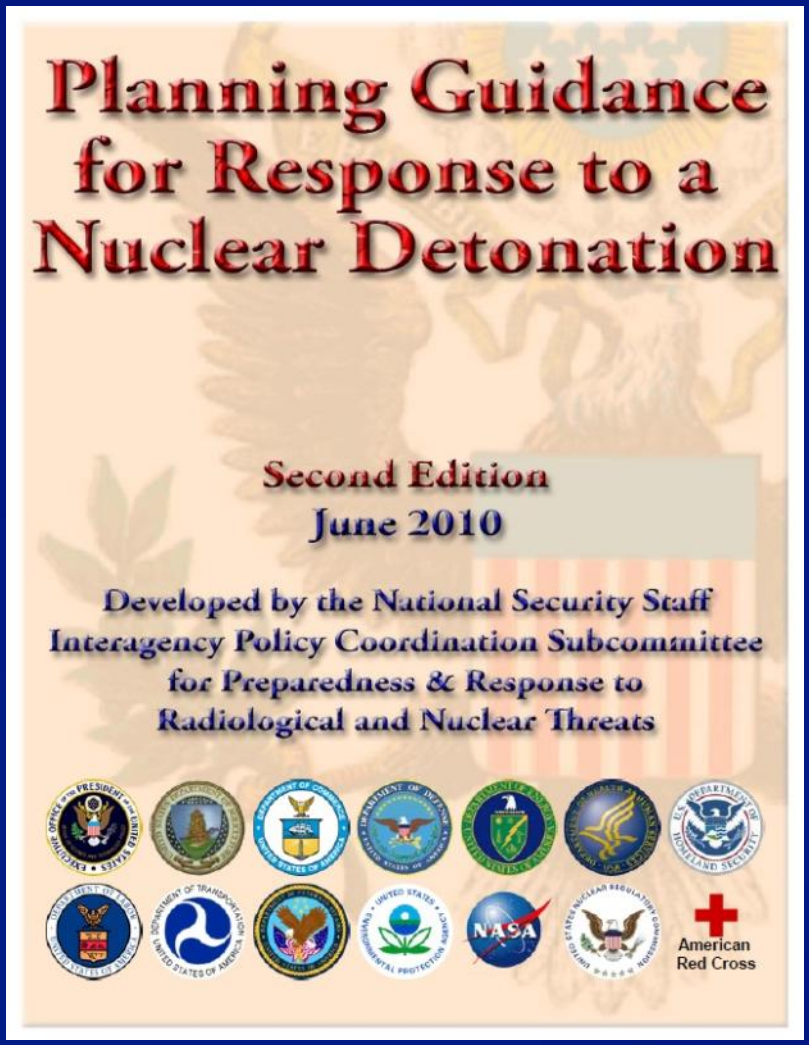
The Virtual Community Reception Center (vCRC)

- **Web-based training**
- **Animated exploration area**
- **Interactive flow diagram**
- **Embedded video segments**
- **Supporting resources**
  - Job Action Sheets
  - Forms
  - customizable for jurisdiction

www.emergency.cdc.gov/radiation/crc/vcrc

Population Monitoring Guidance

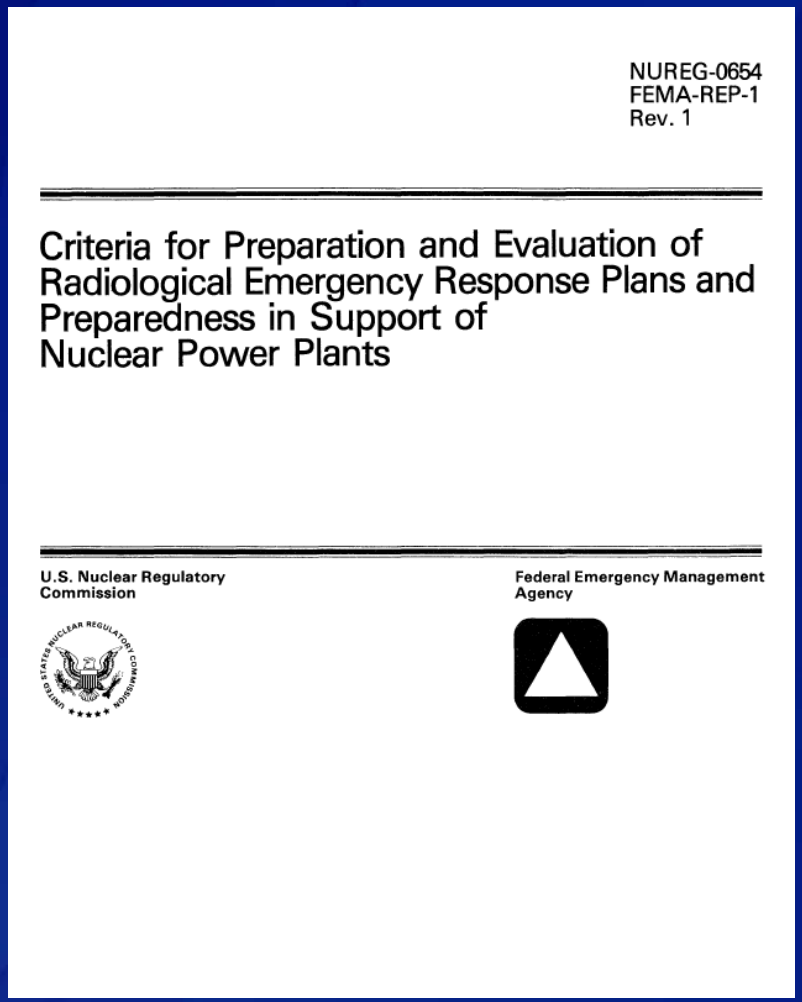




http://emergency.cdc.gov/radiation/pdf/population-monitoring-guide.pdf

http://www.remm.nlm.gov/PlanningGuidanceNuclearDetonation.pdf

Guidance Specifically for Nuclear Power Plants Off-site Response

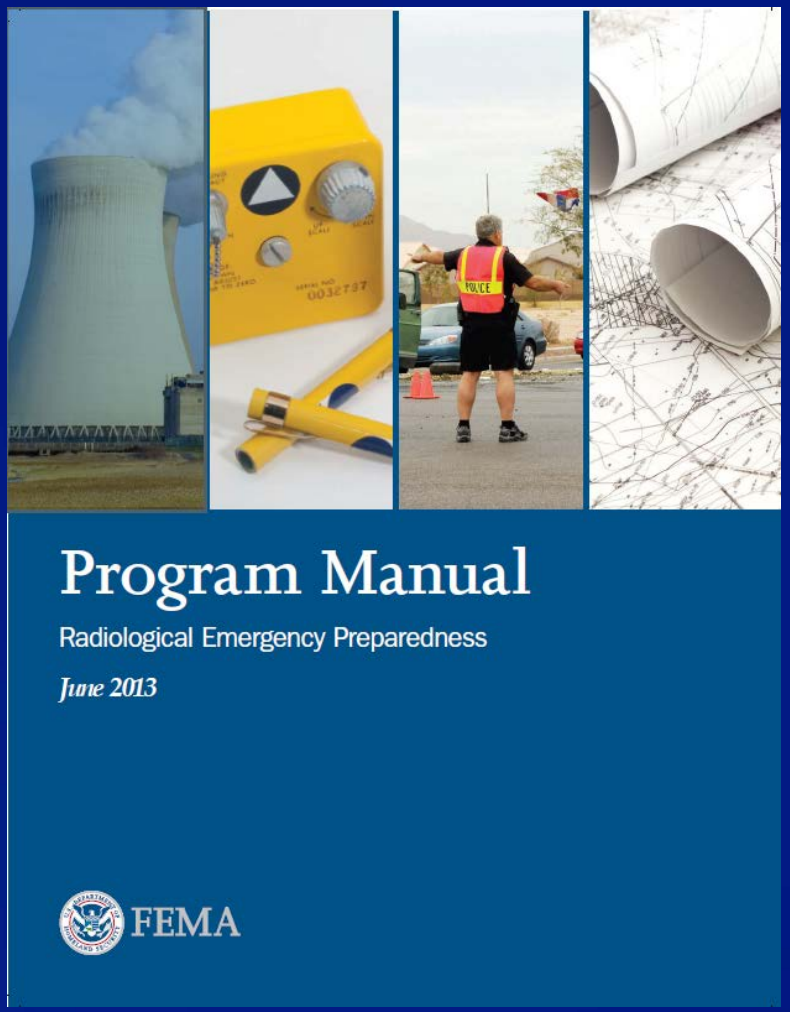


NUREG-0654
FEMA-REP-1
Rev. 1

Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

U.S. Nuclear Regulatory Commission

Federal Emergency Management Agency



www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0654/

www.fema.gov/media-library/assets/documents/32780

Thank you

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