

Ionizing Radiation/Non-Ionizing Radiation

War Related Illness and Injury Study Center

Objectives

- The purpose of this WRIISC group post-deployment exposure education visit is to:
 - Inform Veterans of potential health hazards that may be related to certain conflicts and military activities
 - Increase Veterans' awareness of VA's post-deployment health resources and activities

Presentation Outline

Introduction

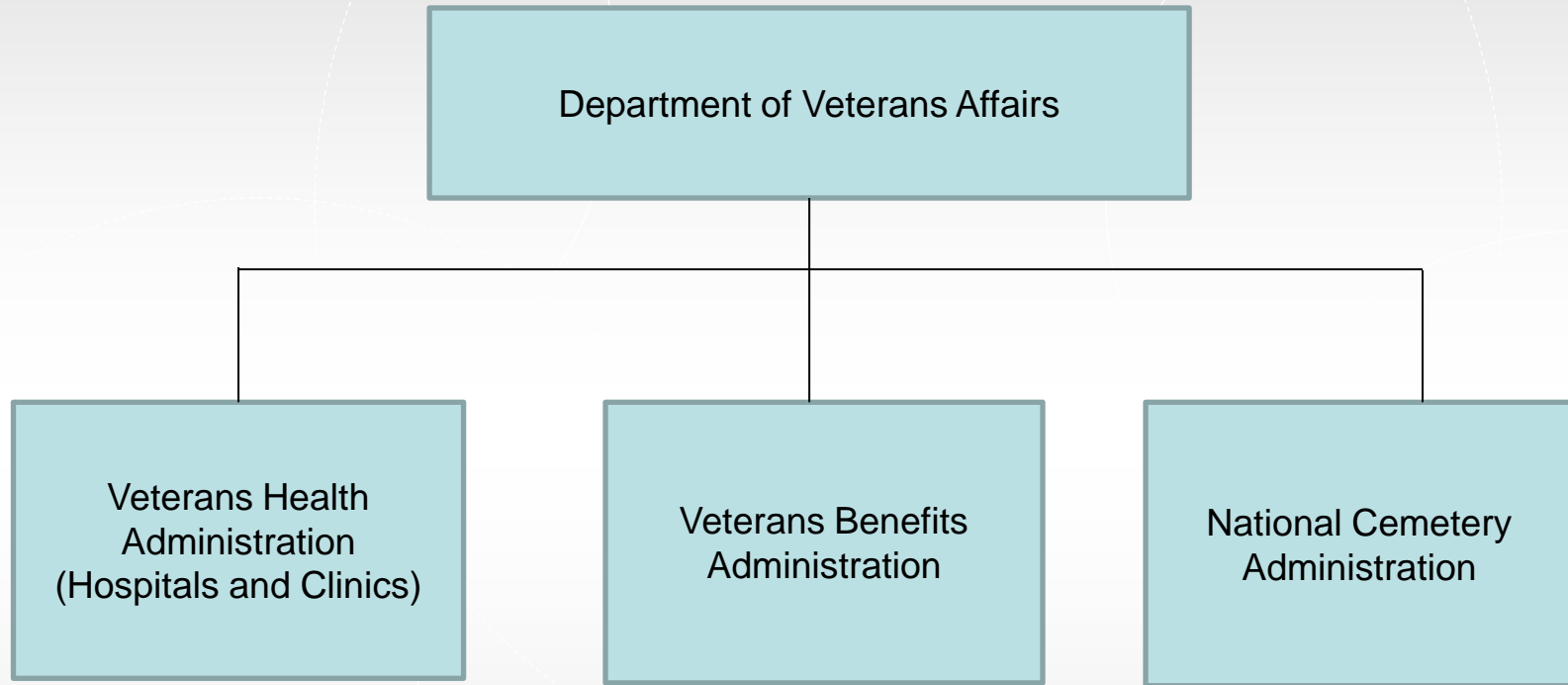
Potential Exposures

Health Effects

VA Health Care

Other VA Resources

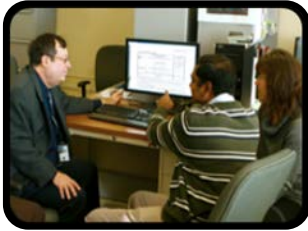
Department of Veterans Affairs



Who are we at WRIISC?



We are a 2nd opinion referral center for combat Veterans with difficult to diagnose illnesses



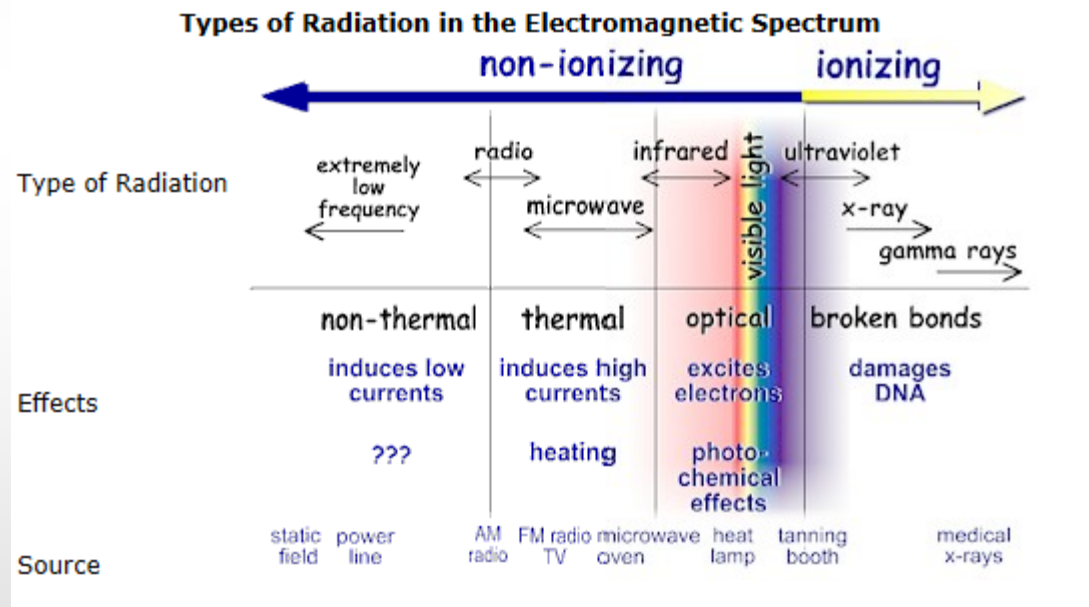
We provide education to Veterans and health care providers on post-deployment health concerns



We conduct clinical research on issues related to post-deployment and Veterans' health

Radiation

- Radiation is energy that comes from a source and travels through space. When this energy passes into the body, either by penetrating skin or being swallowed or inhaled, it may be harmful. Whether the radiation is **ionizing** or **non-ionizing** will influence the health risks.



Radiation

- **Ionizing radiation:** Ionizing radiation is the high-energy radiation that causes most of the concerns about radiation exposure during military service. Ionizing radiation contains enough energy to remove an electron (ionize) from an atom or molecule and to damage DNA in cells.
- Sources of ionizing radiation exposure during military service include:
 - Nuclear weapons detonation
 - Weapons and other military equipment made with depleted uranium
 - Radioactive material
 - Calibration and measurement sources
 - X-rays
- **Non-ionizing radiation:** Non-ionizing radiation is low-energy radiation that includes radiation from sources such as sunlight, microwaves, radio frequencies, radar and sonar.

REF: www.publichealth.va.gov

Radiation

- Health effects of ionizing radiation more concerning since non-ionizing radiation is relatively low-energy radiation that does not have enough energy to ionize atoms or molecules.
- Biggest health effect related to non-ionizing radiation may be thermal health effects at the time of exposure.
- Exposure to large doses of ionizing radiation (i.e., greater than 5 rem per year or 10 rem per lifetime) may be risk factor for some cancers.

Ionizing Radiation

- Amount of radiation exposure is expressed in a unit called millirem (rem)
- In the U.S., the average amount of ionizing radiation exposure per person is equivalent to approximately 620 mrem per year from all sources.
- Everyone receives some type of chronic exposure to background levels of radiation present in the environment.
- Felt that at very low levels of exposure, the estimate increase in health risk is thought to be very small. There is a great probability of health risks as the exposure level increases.

REF: Environmental Protection Agency:
NCRP Report No. 160, 2009

Research

- VA's Epidemiology Program, a research division of the VA's Office of Public Health, assesses health concerns of Veterans who were potentially exposed to environmental hazards, including radiation, during military service.
- VA is conducting a new study, "Cancer Mortality among Military Participants at U.S. Nuclear Weapons Tests," to assess the risk of cancer among 120,000 Cold War-era Veterans who participated in U.S. atmospheric nuclear weapons tests between 1946 and 1958.
- Published VA studies on Radiation
 - <http://www.publichealth.va.gov/epidemiology/publications.asp>
- U.S. National Institutes of Health's PubMed:
 - <http://www.ncbi.nlm.nih.gov/pubmed/>

REF: www.publichealth.va.gov

Radiation-Risk Activity

- The following groups of Veterans participated in what is called a "radiation-risk activity."
- **"Atomic Veterans,"** an unofficial term that refers to Veterans who:
 - Participated in the occupation of Hiroshima and Nagasaki, Japan between Aug. 6, 1945 and July 1, 1946
 - Were prisoners of war in Japan during World War II
 - Participated in atmospheric nuclear weapons tests conducted primarily in Nevada and the Pacific Ocean between 1945 and 1962
 - See fact sheets from the Nuclear Test Personnel Review office at <http://www.dtra.mil/SpecialFocus/NTPR/NTPRFactSheet.aspx>
 - Veterans who participated in **underground nuclear weapons testing** at:
 - Amchitka Island, Alaska before Jan. 1, 1974
 - One of the following gaseous diffusion plants for at least 250 days before Feb. 1, 1992: Paducah, Kentucky; Portsmouth, Ohio; or K25 in Oak Ridge, Tennessee.

Exposure to Radiation during Military Service

- Veterans who served in any of the following situations or circumstances also may have been exposed to radiation.
 - **Fukushima nuclear accident**
Service members may have been exposed to low doses of radiation in Japan from March 12 to May 11, 2011, following a nuclear accident on March 11, 2011.
 - **Military occupational exposure**
Various military occupations, such as nuclear weapons technicians and dental technicians, usually include routine and safe exposure to radiation.
 - **Depleted uranium**
During an explosion, pieces of depleted uranium used in tank armor and some bullets can scatter and embed in muscle and soft tissue.
 - **LORAN radiation**
U.S. Coast Guard Veterans who worked at LORAN (Long Range Navigation) stations from 1942 to 2010 may have been exposed to X-ray radiation from high voltage vacuum tubes.

REF: www.publichealth.va.gov

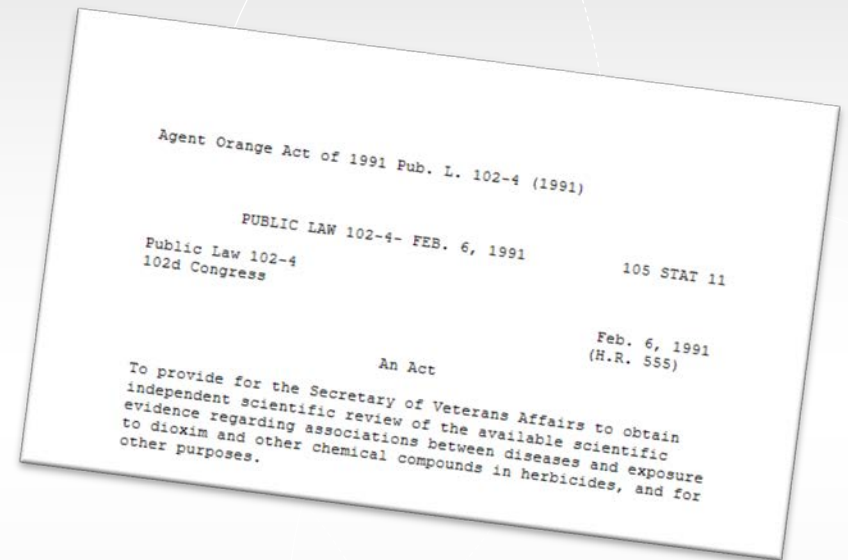
Exposure to Radiation during Military Service

- Veterans who served in any of the following situations or circumstances also may have been exposed to radiation.
 - **McMurdo Station, Antarctica nuclear power plant**
The U.S. Navy operated a small nuclear plant at the McMurdo Station, Antarctica, from 1964 to 1973. The nuclear plant was decommissioned after a leak was discovered.
 - **Nasopharyngeal (nose and throat) radium irradiation treatments**
Certain pilots, submariners, divers, and others were given this treatment during service in 1940 to the mid-1960s to prevent ear damage from pressure changes.
 - **Radiation therapy**
Ionizing radiation can be used for the treatment or diagnosis of disease, most commonly cancer.

REF: www.publichealth.va.gov

Public Law 102-4

- Public Law 102-4
(Agent Orange Act of 1991)
 - Provides the foundation to allow VA to obtain independent scientific review of evidence regarding associations between diseases and exposures. Established presumption of **exposure & service connection** for diseases.
 - Institute of Medicine reviews the research and makes scientific recommendations to VA.



What are presumptions and why do we have them?

- Lack of reliable exposure data and specific causal evidence
- Two-step presumption:

If you were there

- You were exposed



If you were exposed and develop one of the conditions

- It is related to the exposure

Diseases Associated with Ionizing Radiation Exposure

- Veterans may be eligible for disability compensation and health care benefits for any disease that VA recognizes as related to ionizing radiation exposure during service. Surviving spouses, dependent children and dependent parents of Veterans who died as the result of diseases related to radiation exposure during service may be eligible for survivors' benefits.
- For Veterans who participated in a radiation-risk activity during service (including "Atomic Veterans"), VA assumes that certain cancers are related to their exposure. These are called "presumptive diseases."
 - Cancers of the bile ducts, bone, brain, breast, colon, esophagus, gall bladder, liver (primary site, but not if cirrhosis or hepatitis B is indicated), lung (including bronchiolo-alveolar cancer), pancreas, pharynx, ovary, salivary gland, small intestine, stomach, thyroid, urinary tract (kidney/renal, pelvis, urinary bladder, and urethra)
 - Leukemia (except chronic lymphocytic leukemia)
 - Lymphomas (except Hodgkin's disease)
 - Multiple myeloma (cancer of plasma cells)
- Atomic Veterans do not have to prove a connection between these diseases and their service to be eligible for disability compensation.

Diseases Associated with Ionizing Radiation Exposure

- If a Veteran who was exposed to ionizing radiation during military service (including "Atomic Veterans") develops one of the diseases listed below and meets other requirements, disability compensation may be provided **on a case-by-case basis**.
 - All cancers
 - Non-malignant thyroid nodular disease
 - Parathyroid adenoma
 - Posterior subcapsular cataracts
 - Tumors of the brain and central nervous system
- Eligibility depends on how much radiation the Veteran received and other factors, such as the period of time between exposure to radiation and the development of the disease.

REF: www.publichealth.va.gov

Health Effects

- People respond to environmental exposures differently.
- The risk of developing health effects related to an environmental exposure depends on many factors including:
 - Chemicals to which you were exposed
 - When you were exposed (as a fetus, child, adult)
 - How much exposure you received
 - How long you were exposed
 - Your genes
 - Any other exposures to environmental or occupational hazards you may have encountered during your lifetime
 - Lifestyle choices (diet, tobacco or alcohol use, physical activity level)
 - Illnesses you may have from other causes
 - Medications taken during your lifetime

REF: www.atsdr.cdc.gov

How Does VA Confirm Radiation Exposure during Service?

- Veterans' military records contain records of radiation exposure or accounts describing duty-related exposure.
- Veterans and their survivors do not need to contact the Department of Defense (DoD) to confirm radiation exposure activity before applying for VA compensation benefits. VA will request this information from DoD when a Veteran or a Veteran's survivor applies for disability compensation or survivors' benefits for health problems associated with the exposure.

REF: www.publichealth.va.gov

How Does VA Confirm Radiation Exposure during Service?

- **VA confirms exposure:**
 - VA asks DoD's Defense Threat Reduction Agency (DTRA) to confirm Atomic Veteran participation in U.S. atmospheric nuclear tests from 1945 to 1962, and the occupation forces of Hiroshima and Nagasaki, Japan, through a program called the Nuclear Test Personnel Review. VA also asks DTRA to provide the actual or estimated radiation dose received by a Veteran when necessary.
 - VA uses the DTRA report on LORAN radiation exposures to confirm the radiation dose assessment for Veterans who worked at LORAN (Long Range Navigation) stations.
 - For Veterans exposed to radiation at Fukushima, the DoD's Operation Tomodachi Registry provides individual dose information.

REF: www.publichealth.va.gov

Ionizing Radiation Registry

Why does VA have registries?

How and where do Veterans get on the registries?

What does a Veteran get from a health registry exam?

Can a Veteran repeat the registry examination?

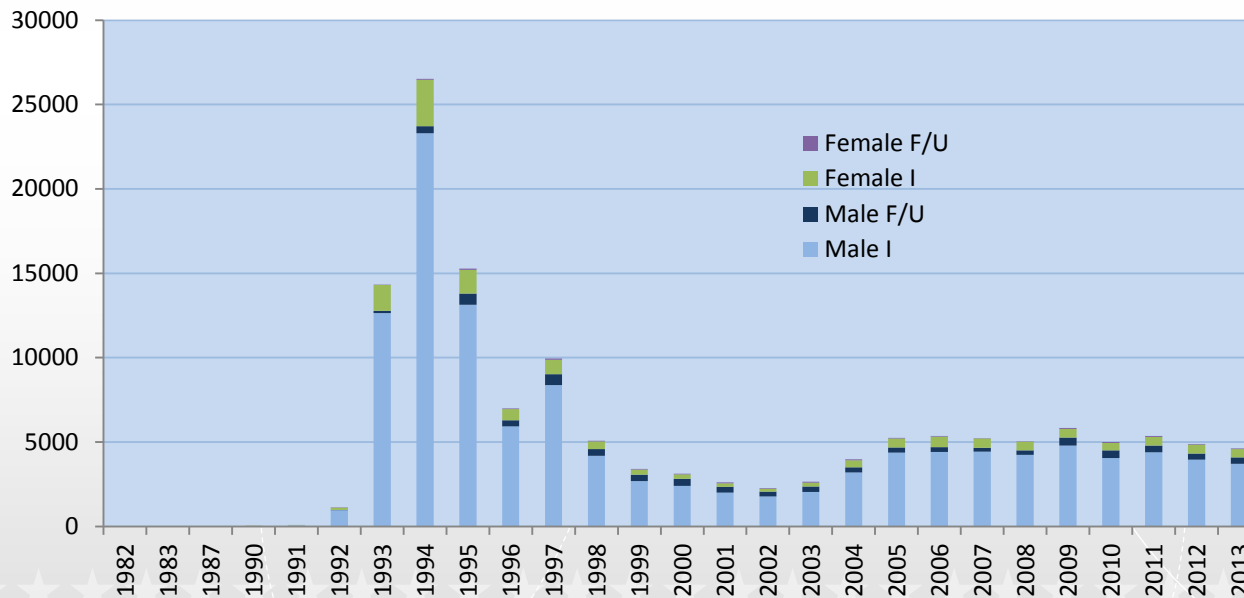
Can Veteran family members receive health registry exams?

Ionizing Radiation Registry

- Eligibility for Ionizing Radiation Registry health exam:
 - On-site participation in a test involving the atmospheric detonation of a nuclear device, whether or not the testing nation was the United States
 - Participation in the occupation of Hiroshima or Nagasaki from August 6, 1945 through July 1, 1946
 - Internment as a prisoner of war in Japan during World War II
 - Receipt of nasopharyngeal (NP)—nose and throat—radium irradiation treatments while in the active military, naval, or air service
 - Involved in the following "radiation-risk activities":
 - Service at Department of Energy gaseous diffusion plants at Paducah, KY, Portsmouth, OH, or the K25 area at Oak Ridge, TN, for at least 250 days before February 1, 1992 under certain conditions
 - Proximity to "Longshot," "Milrow," or "Cannikin" underground nuclear tests at Amchitka Island, AK, before January 1, 1974

Ionizing Radiation Registry (26, 712 Veterans as of 1/21/14)

- Free, no-enrollment required
- **Not a compensation examination**, Does not confirm exposure
- Provides an opportunity to discuss health concerns with a VA provider with knowledge of military specific exposures
- An outreach tool to connect Veterans with available resources



REF: VA Office of Public Health

VA Health Care Resources

- Ionizing Radiation Review Newsletter
 - Sign up for free at:
<http://www.easmailcall.aac.va.gov/>
 - Ionizing Radiation Review Newsletter PDF available at
<http://www.publichealth.va.gov/exposures/radiation/publications/index.asp>
- Registry
 - Ionizing Radiation Registry
<http://www.publichealth.va.gov/exposures/radiation/registry.asp>
- VA Environmental Health Coordinators
 - <http://www.publichealth.va.gov/exposures/coordinators.asp>

VA Health Care Resources

- My HealtheVet
 - <https://www.myhealth.va.gov/index.html>
 - Access Secure Messaging through Premium account
 - Access to many parts of your VA medical record
- Family support at Vet Centers
 - http://www.va.gov/directory/guide/vetcenter_flsh.asp
- Caregiver support services:
 - <http://www.caregiver.va.gov/>
 - 1-855-260-3274
- Crisis Care Hotline
 - 1-800-273-8255 press 1

VA Benefits Administration

- Compensation and Pension Program
- VA Benefits Process:

Complete:

- VA Form 21-526 or
- VA Form 21-4138

Compensation
and Pension
Examination

Follow up with
all VBA
requests

Appeal
Process

REF: www.benefits.va.gov

Compensation Disability Benefits - FAQs

- Monthly payment rates are based on the Veteran's combined rating for his or her service-connected disabilities. These ratings are based on the severity of the disabilities.
- VA requires:
 - a medical diagnosis of a disease which VA recognizes as being associated with Ionizing Radiation Exposure
 - competent evidence that Veteran was exposed to Ionizing Radiation during military service and
 - competent medical evidence that the disease began within the deadline (if any) and radiation dose received supports disease development

Compensation Disability Benefits

Available Resources to Assist with Applications

- VA Web site (www.benefits.va.gov)
- File electronically at www.ebenefits.va.gov
- Veterans Benefits Administration Counselors
- Veteran Service Organization Counselors
- Vet Centers
- https://www.ebenefits.va.gov/ebenefits-portal/ebenefits.portal?nfpb=true&nfxr=false&_pageLabel=VsoSearch

Important Contact Information

Veterans Benefits Administration:

1-800-827-1000 ext. 110

www.benefits.va.gov

DC Ionizing Radiation Registry

Ms. Ruby Rauf:

(202) 745-8419

Washington, D.C. VAMC Appointment Line:

(202) 745-8577

Washington D.C. WRIISC:

1-888-722-8340

- Call us to arrange a one-on-one exposure consultation.

What Now?

- We cannot change exposures that occurred in the past.
- However, there are strategies you can take to help optimize your overall health:
 - Talk to your doctor if you have health concerns
 - Try to prevent future potential exposures
 - Engage in healthy lifestyle choices
 - Regular check-ups
 - Health screenings
 - If you smoke, quit
 - If you drink alcohol, drink in moderation
 - Regular exercise
 - Well-balanced diet
 - Manage stress
 - Good sleep
 - Social supports



Our Contact Information:

War Related Illness and Injury Study Center (WRIISC)

Email: wriisc.dc@va.gov

Phone: 1-800-722-8340

Website: www.warrelatedillness.va.gov

Questions?



Presented by the **VA War Related Illness and Injury Study Center (WRIISC)**