reac/ts

The Radiation Emergency Assistance Center/Training Site

What is REAC/TS?

- REAC/TS: the Radiation Emergency Assistance Center/Training Site
- Operated for the US Department of Energy as a part of the Oak Ridge Institute for Science and Education (ORISE) by Oak Ridge Associated Universities (ORAU)
- A World Health Organization (WHO) Collaboration Center
- Member of the IAEA Radiation Assistance Network (RANet) and WHO Radiation Emergency Medical Preparedness and Assistance Network (REMPAN)

REAC/TS Full-Time Staff

Al Wiley, M.D., PhD	Director
Doran Christensen, DO	Associate Director
W. M. Hart, RN, MS	Nurse/EMT-P
R. Beauchamp, RN	Nurse/EMT-P
Steve Sugarman, MS, CHP	HP Proj. Mgr, CBL Coordinator
Mark Jenkins, PhD, CSP	HP, Business Mgr.
Becky Murdock, AS	HP Technician
Gordon Livingston	Cytogeneticist
Amanda Hughes	Admin. Assistant
Glenda Gross	Admin. Assistant
Gail Mack-Bramlette	Registrar

Augmentation Staff: Seaton Garret, MD; Ron Goans, MD, PhD; Carol Iddins, MD; Richard Toohey, PhD

REAC/TS Missions – 24/7

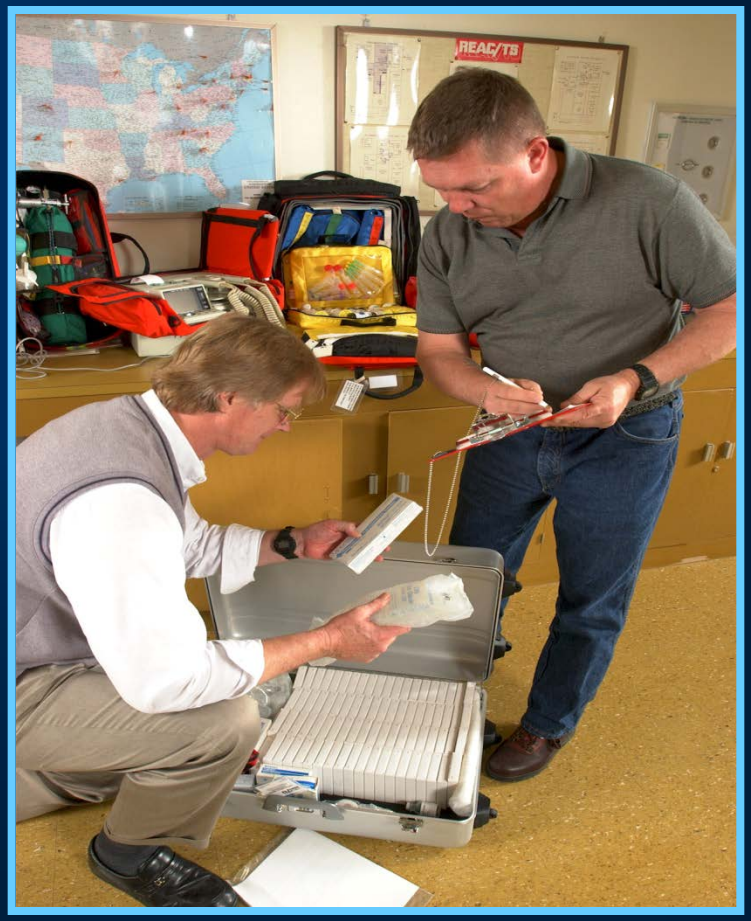
- Radiation Medicine advice and consultation
- Health Physics radiation dose assessments
- Deployable Emergency Response Teams (ERT 1 & 2) for on-scene assistance

Physician
Health Physicist
Nurse/Paramedic

Domestic & International Deployment Capability

CONUS – 4 hours

OCONUS – 6 hours



REAC/TS Missions

Support for US DOE Office of Health, Safety & Security (HS-13)

- Maintain a Radiation Accident Registry for Radiation Medicine research
- Maintain registry of DTPA (diethylene-triamine-pentaacetate or pentatate) and Prussian Blue therapies
- Manage DTPA and Prussian Blue New Drug Application (NDA) status for the U.S. Food and Drug Administration (FDA)

REAC/TS Registries

- The REAC/TS Accident Registry is used to compile information related to individual response and patient management of persons with large acute whole body and local radiation doses. This information is used to refine medical management of radiation injuries and illnesses.
- The REAC/TS DTPA and Prussian Blue registries are used to track the efficacy and potential side effects of these drugs that are used to treat intakes of certain radioactive materials.

International Emergency Response Capabilities (through DOE NA-46)

- Coordinates United States participation in the World Health Organization's (WHO) Radiation Emergency Medical Preparedness and Assistance Network (REMPAN)
- Assists the International Atomic Energy Agency (IAEA), Vienna, Austria with radiation accident investigation, medical management, after action reports, and international planning for response to radiation emergencies. Member if IAEA RANet.

  - ✓ IAEA Radiation Medicine fellowship program

Int'l Emergency Response & Outreach Continuing Education (not all inclusive)

- Armenia (training)
- Australia (training)
- Brazil (response & training)
- Canada (training)
- Cuba (training)
- Egypt (training)
- England (training)
- Former Soviet Union (response & training)
- Hong Kong (training)
- Jamaica (response)
- Japan (response & training)
- Jordan (training)
- Kazakhstan (response & training)
- Kuwait (training)
- Lithuania (training)
- Malaysia (training)
- Mexico (response & training)
- Panama (response)
- Peru (response)
- Poland (training)
- Romania (training)
- Russia (response & training)
- Singapore (Training)
- South Korea
- Sri Lanka (training)
- Taiwan (training)
- United Arab Emirates (training)
- Venezuela (response & training)

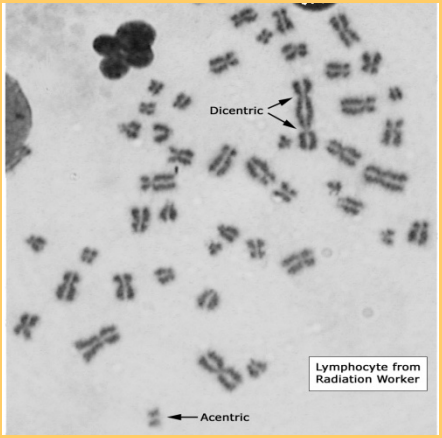
Cytogenetic Biodosimetry

Cytogenetic analysis provides a method to estimate radiation dose to individuals exposed to ionizing radiation when physical dosimetry devices are not available

Cytogenetic Biodosimetry Capability

- "Gold" standard for acute whole body radiation dose assessments
- A national emergency response asset: Utilizes metaphase spreads of lymphocytes to search for chromosome aberrations (dicentrics) specific to radiation exposures

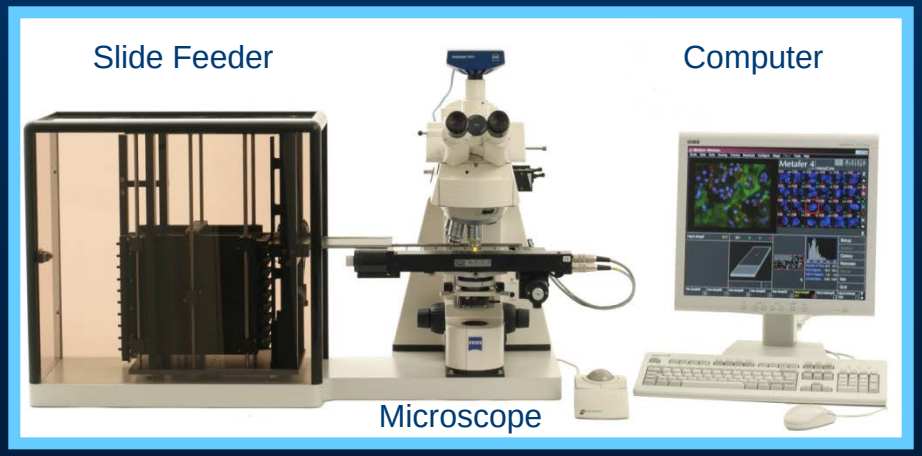
Old



Labor Intensive

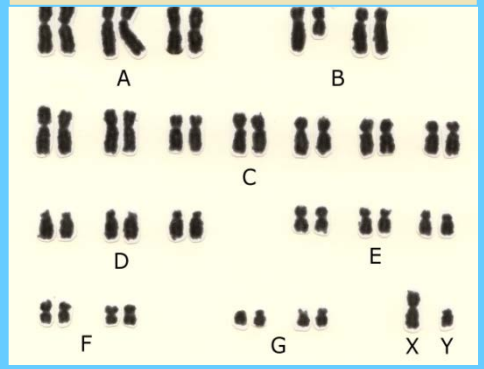
New

Automated Cytogenetics Workstation



Output

Karyotype



Dicentric Chromosome

REAC/TS Continuing Education Missions

- *Continuing Radiation Medicine and Health Physics courses

The REAC/TS hallmark is integration of health physics and medicine

* Courses are accepted for continuing education credits by the ACCME and ABHP

Courses from REAC/TS

- Radiation Emergency Medicine (REM)
- Advanced Radiation Medicine (ARM)
- Health Physics in Radiation Emergencies (HP)
- Pre-hospital Radiation Emergency Preparedness (PREP)
- Other courses are specially arranged for presentation at REAC/TS or other venues

Typical Course Content

- Basic Health Physics
- Basic Radiation Biology
- Pre-Hospital Response
- Acute Radiation Syndrome
- Local Radiation Injury
- Basic Radiation Instrumentation
- Treatment for Internal Contamination
- Rapid Dose Magnitude Estimation
- Hospital Management of Radiation Accident Victims
- Case Reviews
- Public Health Considerations
- Basic Criticality and Case Study
- Delayed Radiation Effects
- Radiation Biodosimetry Applications

subject to change

Typical Year
(REAC/TS Educational Opportunities)

- 8 REM 3.5 day courses
- 2 ARM 4.5 day courses
- 3 HP 4.5 day courses
- 2 Pre-hospital 1.5 day courses
- 3 specially designed courses provided locally (3.5–4.5 days)
- 3 offsite courses for DOE facilities (1-2 days)
- 10 offsite courses for private entities
- Multiple invited presentations/lectures
- Multiple international courses

International Courses

- REAC/TS, through NA-46 (Vince McClelland) will provide educational opportunities dealing with the medical management of radiation incidents
- Instruction staff will consist of experienced physicians, health physicists and nurses
- Course content will contain both lecture material and hands-on demonstrations with class participation

No Financial Interest

REAC/TS staff have no financial interest in the products, equipment, and pharmaceuticals that we discuss -

You will be asked to sign a form by which you acknowledge that we have informed you of no financial interest

On the critique, you will be asked if the REAC/TS program has been free of such bias

The faculty will discuss off-label uses of pharmaceuticals

Pre-Course Assessment

1. Mr. W's history reveals he recently handled an unshielded radiography source. Which test should be ordered to aid in evaluating his condition?

   (a) thyroid scan
   (b) whole body counting
   (c) analysis of nasal swabs
   (d) CBC, differential and platelet count

Pre-Course Assessment

2. Which of the following would be evident within minutes after an acute, local, high dose, penetrating radiation exposure?

(a) severe pain in the area

(b) sensation of burning

(c) blister formation in the involved area

(d) no obvious abnormality

Pre-Course Assessment

3. One of the earliest symptoms of a 2 Gy acute <u>whole body</u> exposure of penetrating radiation is:

(a) infection
(b) bleeding
(c) vomiting
(d) epilation (hair loss)

Pre-Course Assessment

4. Although all these effects are possible after an acute, high dose radiation exposure, the basic underlying pathology in a total or partial body exposure is:

(a) loss of electrolytes

(b) sloughing of the GI epithelium

(c) loss of immature and rapidly dividing cells

(d) decrease in hemoglobin

Pre-Course Assessment

5. Which of the following tests should be ordered for the internally contaminated patient to assess the effectiveness of chelation therapy?

(a) chromosome analysis
(b) hematological studies
(c) assays of body excreta
(d) analysis of wound swabs & swipes

Questions?