RISKS ASSOCIATED WITH RADIATION EXPOSURE

Many researchers feel that any exposure to ionizing radiation, no matter how small the dose, increases the risk of developing cancer or of passing on genetic mutations to future offspring.

It is scientifically established that exposure to radiation increases the risk of damage to tissues, cells, DNA and other vital molecules — potentially causing programmed cell death (apoptosis), genetic mutations, cancers, leukemia, birth defects, and reproductive, immune, circulatory, and endocrine system disorders.

The long latency period between exposure to radiation and evidence of cancer or other health effects can make it very difficult to prove the cause. Any exposure to radiation increases a person’s risk.

For these reasons — for your health and your family’s health — try to be aware of your risks, your rights, and your cumulative history of radiation exposure.

PERSONAL PROTECTIVE EQUIPMENT

Clothing:

Today, workers usually wear plastic and/or cloth cover garments. These garments only protect against radioactive dust, not against hot particles or other penetrating radiation.

Respirators:

The nuclear industry and government regulations often allow employees to work in contaminated areas without a respirator. Their theory is that if you don’t wear a respirator, you can work more efficiently and therefore complete a task with a shorter exposure to radiation. Without an appropriate respirator, however, a worker can inhale or swallow large amounts of airborne radioactive gases and vapors, as well as radioactive particles, that can become lodged in the body and can continue to irradiate nearby cells and organs.

Instead of permitting workers to work without respirator protection, even for a shorter period of time, employers should hire more workers — all wearing respirators — to do the work.

NRC regulations say: “The licensee shall advise each respirator user that the user may leave the area at any time for relief from respirator use in the event of equipment malfunction, physical or psychological distress, procedural or communication failure, significant deterioration of operating conditions, or any other conditions that might require such relief.” (Code of Federal Regulations 10CFR, Title 10, Part 20, Section 1703. See also the rest of Subpart H, and Appendix A attached to the last section of Part 20.] See also, NRC Regulatory Guide 8.15, “Acceptable Programs for Respiratory Protection.” Revision 1. Also, NRC’s NUREG/CR-0041 “Manual of Respiratory Protection Against Airborne Radioactive Material,” Revision 1, (ML01010031).

Internet location for NRC documents: http://www.nrc.gov/reading-rm/doc-collections/ then add forms or reg-guides or aef depending on the kind of document.

Internet location for NRC’s NUREG documents: http://www.nrc.gov/reading-rm/adams/web-based.html. Then click on “Begin ADAMS Search” and enter the “ML” number.

FOR FURTHER INFORMATION

If you have questions about your exposure to radiation on the job, you can contact:

U.S. Nuclear Regulatory Commission
Office of Inspector General
Washington, D.C. 20555
Confidential Hotline: 1-800-233-3497

If you have questions about your legal rights to raise worker health and safety issues, you can contact:

Government Accountability Project
• 1612 K Street N.W. – Suite 1100
  Washington, D.C. 20006
  202-408-0034

• West Coast Office
  1511 Third Avenue – Suite 321
  Seattle, WA 98101

If you believe you have been retaliated against for raising worker health and safety concerns, be sure to act quickly. Many whistleblower laws require that you file a complaint within 30 days after the retaliation occurred.

YOUR NUCLEAR WORKPLACE

KNOW YOUR RISKS

KNOW YOUR RIGHTS

Nuclear Information & Resource Service
World Information Service on Energy - Amsterdam

6930 Carroll Avenue, Suite 340
Takoma Park, MD 20912
301-270-6477 • nirsnet@nirs.org
www.nirs.org • www.anticrime.net/wise

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April 2006
As a nuclear worker, you have a right . . .

WORKER PROTECTION

To limit the exposure to radiation, workers may wear protective clothing, gear, and equipment. Details about protective personal equipment and gear are given in the table below. The table is divided into five categories: i) General Personal Protection, ii) Respirator Protection, iii) Protection of Eyes, iv) Protection of Hands, and v) Protection of Head. The table also provides detailed information about the types of protective equipment available and their purposes. For further information, please refer to the NRC Regulatory Guide 8.7 and the Radiation Protection Guide 10.20. The Radiation Protection Guide 10.20 provides complete details about the use of protective personal equipment and gear.

- General Personal Protection
  - Protective clothing
  - Protective gear
  - Protective equipment

- Respirator Protection
  - Respirators
  - Face masks
  - Safety glasses

- Protection of Eyes
  - Eye protection
  - Eye guards
  - Eye shields

- Protection of Hands
  - Gloves
  - Mittens
  - Hand protectors

- Protection of Head
  - Hard hats
  - Safety helmets
  - Safety caps

There are also recommendations for protective clothing and equipment that are appropriate for different radiation levels. These recommendations are based on the NRC Regulatory Guide 8.7 and the Radiation Protection Guide 10.20. Please refer to these guides for further information.

- Protective clothing
  - Overalls
  - Coveralls
  - Aprons

- Protective gear
  - boots
  - shoes
  - socks

- Protective equipment
  - Hearing protectors
  - Hearing plugs
  - Hearing muffs

Worker Protection

- to be issued the proper kind of monitor for the types of radiation to which you may be exposed — alpha, beta, gamma and x-rays
- to be adequately trained in the use of your radiation badge, dosimeter, or computerized detector, and other health physics monitoring equipment
- to know that your personal dosimeter equipment must be calibrated
- to have a complete knowledge of the amounts and kinds of radiation to which you are allowed to be exposed, not only during normal working hours, but also during planned special exposures
- to be taught the best possible techniques for preventing or reducing radiation exposure, including the use of shielding
- to be supplied with clean, undamaged clothing and clothing that may have been contaminated during any work
- to be instructed in the simplest way to remove protective clothing
- to know the radioactivity levels of any equipment or materials you might use
- to check the contents of your individual radiation-monitoring device
- to use radiation-monitoring devices

Radiation can penetrate a worker’s body and enter various body organs, possibly causing cancer or other damage to the worker’s health. Radiation can also be harmful to the skin and internal organs. Some workers may be affected by radiation, while others may be unaffected. The effects of radiation are not always immediately apparent, and the damage may not be apparent for many years. It is important to take all necessary precautions to protect yourself from radiation exposure.