

# **Employee Training**

## **Instructions Concerning Pregnant Worker**

### **I. Sensitivity of Fetus to Radiation**

A number of studies have suggested that the embryo/fetus may be more sensitive to ionizing radiation than an adult, especially during the first three months of gestation. The National Council on Radiation Protection and Measurements (NCRP) has recommended (NCRP No. 54 & 93) that special precautions be taken to limit exposure when an occupationally exposed woman could be pregnant. The maximum permissible dose to the fetus from occupational exposure of the expectant mother should not exceed: 500 mrem during the entire gestation period without substantial variation, i.e. 50 mrem/month. This is approximately one-tenth of the occupational dose limit.

### **II. What to do if You Become Pregnant and are Exposed to Ionizing Radiation in Your Work**

When you learn you are pregnant, you may wish to but are not required to inform your supervisor and Radiation Safety Officer. Once contacted, the Radiation Safety Officer will review radiation protection and the facilities policy regarding pregnant radiation workers with you. This process is termed a declaration of your pregnancy. There is no reason to become alarmed.

### **III. If You Have Questions or Want Additional Information**

The Nuclear Regulatory Guide 8.13 ("Instruction Concerning Prenatal Radiation Exposures") <http://www.nrc.gov/reading-rm/doc-collections/reg-guides/occupational-health/active/8-13/08-013.pdf> will be made available to you for informational purposes, if you request.

The radiation safety officer is available for discussion regarding levels of exposure from sources of ionizing radiation in the work environment and the risks to the developing embryo/fetus as a result of prenatal exposure. You will be asked to acknowledge in writing that the radiation safety officer gave you instruction.

#### **References:**

- (1) U.S. Nuclear Regulatory Commission, 1996, *INSTRUCTION CONCERNING RISKS FROM OCCUPATIONAL RADIATION EXPOSURE*, Regulatory Guide 8.29, February 1996. <http://www.nrc.gov/reading-rm/doc-collections/reg-guides/occupational-health/active/8-29/08-029.pdf>
- (2) National Council on Radiation Protection and Measurements, *IONIZING RADIATION EXPOSURE OF THE POPULATION OF THE UNITED STATES*, NCRP Report No. 93, September 1987.
- (3) National Research Council, *HEALTH EFFECTS OF EXPOSURE TO LOW LEVELS OF IONIZING RADIATION*, Report of the Committee on the Biological Effects of Ionizing Radiation (BEIR V), National Academy Press, Washington, D.C.

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- (4) B.L. Cohen and I.S. Lee, *CATALOG OF RISKS EXTENDED AND UPDATED*, Health Physics, Vol. 61, September 1991.
- (5) U.S. Nuclear Regulatory Commission, 1994, *INSTRUCTION CONCERNING PRENATAL RADIATION EXPOSURE*, Regulatory Guide 8.13, October 1994  
<http://www.nrc.gov/reading-rm/doc-collections/reg-guides/occupational-health/active/8-13/08-013.pdf>

**IV. Facility Policy**

- A. A facility can adopt a conservative policy of restricting the dose of ionizing radiation to the fetus during the entire period of gestation to no more than 500 mrem during the entire gestation period without substantial variation
- B. If you work in an area where the anticipated dose is less than 500 mrem during the entire gestation period without substantial variation, you are able to continue to work in this area with no restrictions. Your work assignments will be under the direction of your supervisor. However, the radiation safety officer may make certain recommendations regarding your work assignments to further reduce the dose to the fetus.
- C. If a situation is identified in which the anticipated dose to the fetus over the gestation period would be more than 500 mrem, the following three alternatives listed below are possible:
1. You may be assigned to another area involving less exposure to ionizing radiation.
  2. You may continue to work in the area with certain restrictions to limit exposure of the fetus to less than 500 mrem (based on recommendations made by the radiation safety officer). In nearly all cases, the work environment will require slight modifications to ensure that the dose to the fetus does not exceed 500 mrem during the entire gestation period without substantial variation.
  3. You may, at your option and with the full awareness of a slight increased risk for the unborn child, decide to continue working in this area. It is likely, under these circumstances, that the fetus could receive a dose of more than 500 mrem. If you choose this option, you must sign a statement acknowledging your willingness to work in the area where the dose to the fetus might exceed 500 mrem. You are not encouraged to select this option.
- D. If you are unwilling to accept the increased risk to your unborn child due to your current level of radiation exposure, you may request reassignment to an area involving less exposure to ionizing radiation. The facility should make a good faith effort to accommodate your request in accordance with the general policy for reassignments. If it is not possible or practicable to grant your request, after a good faith effort has been made, then you may be laid-off or placed on a leave of absence in accordance with the facilities general policies.

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- E. Individuals who are pregnant are not prohibited from working in or frequenting radiation areas. These individuals may also operate sources of ionizing radiation (diagnostic x-ray equipment, cobalt-60 teletherapy units, and linear accelerators) and handle radioactive materials such as those that are present in Nuclear Medicine.
- F. During your pregnancy, you are expected to perform your assigned duties as a radiation worker, unless certain restrictions are placed upon you by the radiation safety officer.
- G. During your pregnancy, you are encouraged to monitor your radiation exposure via the dosimeter readings, which are made available to radiation workers. Contact the radiation safety officer if any unusual readings occur.
- H. As noted above your verbal and written "Declaration" of your pregnancy is optional and once made it can be rescinded by you and you alone. If you choose to rescind your declaration this facility is not required to restrict your fetal exposure to 500 mrem, but you will return to the normal adult exposure limits.

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**Radiation Safety Officer****Date:** \_\_\_\_\_

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**Administrator****Date:** \_\_\_\_\_

## PREGNANT WORKER INSTRUCTIONS

## V. Documentation

## Section I

To: Department Supervisor  
Radiation Safety Officer

The purpose of this communication is to voluntarily inform you of my pregnancy. My estimated date of conception is \_\_\_\_\_ (month/year).

Name: \_\_\_\_\_

Employee Number: \_\_\_\_\_

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

## Section II

The Radiation Safety Officer or their delegate has reviewed the following topics with me and /or I have read the following items. I understand the information provided. I realize that if I have further questions I may contact the Radiation Safety Officer who may refer me to a consulting radiological physicist for further information.

**Exposure reduction through time, distance, and shielding**

**Radiation risks as they pertain to my job**

**My exposure history**

**NRC Regulatory Guide Instruction Concerning Prenatal Radiation Exposure**

\_\_\_\_\_  
Employee

\_\_\_\_\_  
Date

\_\_\_\_\_  
Radiation Safety Officer

\_\_\_\_\_  
Date

**GENERAL GUIDELINES FOR THE PREGNANT WORKER**

| <b>Occupation</b> | <b>Restrictions</b>   | <b>Allowed Tasks</b>   |
|-------------------|---|--|
| Diagnostic X-Ray  | - No restrictions   | - General radiography<br>- Portable radiography<br>- Fluoroscopy<br>- Special Procedures             |
| Laboratory        | - Iodination of proteins  | - RIA<br>- In-vitro laboratory tests   |
| Nursing           | - Care of patients undergoing treatment of thyroid carcinoma with I-131<br>- Care of patients undergoing treatment with brachytherapy sources | - Care of patients following Nuclear Medicine diagnostic procedures<br>- Diagnostic x-ray procedures |
| Radiation Therapy | - Handling of brachytherapy sources<br>- P-32 Therapy   | - External beam treatments<br>- Simulations  |
| Nuclear Medicine  | - Treatment of thyroid carcinoma with I-131   | - Preparation of radiopharmaceuticals<br>- Injection of patients<br>- Imaging<br>- QA procedures     |
| PET               |   | - Preparation of radiopharmaceuticals<br>- Injection of patients<br>- Imaging<br>- QA procedures     |