

# University of Maryland, Baltimore

## Radiation Safety Procedure

Procedure Number: 1.4

Title: Fetal Protection Program

Revision Number: 1

Effective Date: April 1, 2005

Technical Review and Approval:

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

Radiation Safety Committee Approval:

\_\_\_\_\_ Date: \_\_\_\_\_  
Chair, Radiation Safety Committee

## PROCEDURE 1.4, FETAL PROTECTION PROGRAM

### 1.0 Purpose:

This procedure establishes requirements for protection of the embryo/fetus of the declared pregnant worker from the potential adverse effects of exposure to ionizing radiation. This procedure establishes a program sufficient to ensure compliance with COMAR 26.12.01.01 ("Standards for Protection Against Radiation") Section D.208 ("Dose to an Embryo/Fetus").

### 2.0 Scope:

The requirements of this procedure apply to any UMB worker who may be a "declared pregnant worker" while occupationally exposed to radiation resulting from licensed UMB activities.

### 3.0 Procedure:

#### 3.1 *Pregnancy Declaration*

- 3.1.1. UMB's program for protection of the embryo/fetus is initiated by a voluntary declaration of pregnancy by the pregnant woman (declared pregnant woman). Following her voluntary pregnancy declaration, the declared pregnant woman is subject to the enhanced protective and monitoring measures established by this procedure. Any female who is occupationally exposed to radiation resulting from UMB activities may declare her pregnancy and institute the enhanced protective measures by completing and submitting the Pregnant Worker Declaration Form online at the following website, <https://www.ehs2.umaryland.edu/rad/pregnantworker.cfm>.
- 3.1.2. While declaration of pregnancy is not mandatory, UMB encourages all pregnant workers to declare their pregnancy and is committed to a course of non-discrimination in employment matters, consistent with the existing regulatory requirements for protection of the embryo/fetus of the declared pregnant woman.
- 3.1.3. The declared pregnant woman may revoke her pregnancy declaration at any time by notifying the Radiation Safety Officer in writing or via email. Should the declared pregnant worker revoke her declaration, in writing, dose limit restrictions based on this policy shall be terminated.
- 3.1.4. Following receipt of the Pregnant Worker Declaration Form, the RSO or his delegate shall:

- Contact the affected woman's supervisor to arrange for temporary termination of work involving occupational radiation exposure pending completion of the required review and implementation of enhanced protective and monitoring measures.
- Initiate a review of the declared pregnant woman's exposure and work history to determine the dose to the embryo/fetus prior to the pregnancy declaration and assess the need for enhanced protective and monitoring measures. Enhanced protective and monitoring measures, discussed below, are required to ensure compliance with the regulatory dose limits and monitoring requirements.

*Note: In the determination of the Allowable Monthly Exposure Rate, the RSO/Delegate may use appropriate conservative values (e.g., 0.4 rem allowable dose) to ensure that the dose limit is not exceeded). If the dose to the embryo/fetus has exceeded 0.45 rem prior to the declaration of pregnancy, the dose to the embryo/fetus shall be limited to less than 0.05 rem for the remainder of the gestation period. To ensure compliance with this requirement, the declared pregnant woman should be restricted from performing duties involving occupational radiation exposure.*

- Determine the declared pregnant woman's allowable monthly exposure as follows:

**Allowable Average Monthly Exposure Rate** = (Allowable Dose – Dose Prior to Declaration) / Number of months remaining in gestation period

- Provide a copy of NRC Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure," to the affected woman and discuss the pertinent information so that the woman may make an informed decision regarding continued work involving occupational radiation exposure.

### **3.2. Enhanced Protective and Monitoring Measures**

- 3.2.1. EHS shall provide an appropriate dosimeter and instructions for wearing the dosimeter in a manner that provides an estimate of fetal dose. Such dosimeters shall be processed at least once each month. Embryo/fetus dose shall be determined in accordance with the guidance provided in Regulatory Guide 8.36, "Radiation Dose to the Embryo/Fetus."

- 3.2.2. EHS shall coordinate with the affected woman's supervisor(s) to ensure that her monthly exposure rate is controlled in a manner that will limit the dose to the embryo/fetus:
- To a level less than the 0.5 rem over the entire gestation period; and
  - So as to avoid substantial variations (e.g., greater than 30%) above the allowable average monthly exposure rate.
- 3.2.3. Protective measures that should be considered include:
- Provision of additional shielding, including shielded aprons, as appropriate;
  - Restricted time in areas having radiological hazards;
  - Restriction from areas where airborne radioactive materials may be present;
  - If necessary, termination of work involving occupational radiation exposure.
- 3.2.4. EHS shall closely monitor the results of the affected woman's monthly dosimeter analyses and shall coordinate with the affected woman's supervisor(s) to implement more stringent controls as necessary to prevent exceeding the 0.5 rem dose limit and to prevent substantial variations above the allowable monthly exposure rate.
- 3.2.5. Should the dose to the embryo/fetus approach the allowable dose, the RSO shall coordinate with the affected woman's supervisor to terminate work activities involving occupational radiation exposure.
- 3.2.6. Upon completion of the gestation period, EHS shall return the affected woman to a routine monitoring schedule and system of protective measures.

#### **4.0 Records and Reports:**

##### **4.1 Records**

- 4.1.1. Radiation safety records, including records of declarations of pregnancy, pregnant worker evaluations, and work restrictions, will be created and maintained consistent with the requirements of Procedure 1.2, *Radiation Safety Records*.

##### **4.2 Reports**

- 4.2.1. Notifications and reports will be prepared and filed in accordance with Procedure 1.3, *Radiation Safety Reports*.

#### 4.3 Privacy of Health Information

4.3.1 U.S. Nuclear regulatory Commission regulations (10 C.F.R. 20.1208) and Code of Maryland Regulations (26.12.01.01) require UMB to ensure that the dose to an embryo/fetus during the entire pregnancy, due to occupational exposure of a declared pregnant woman does not exceed 0.5 rem (5 mSv). UMB may use and disclose information about the declared pregnant woman as necessary to comply with State and Federal law.

#### **5.0 References:**

COMAR, Part D, Sections 208, 502, 1107

USNRC Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure"

USNRC Regulatory Guide 8.36, "Radiation Dose to the Embryo/Fetus"

USNRC Regulatory Guide 10.8, "Guide for the Preparation of Applications for Medical Use Programs"

UMB Radiation Safety Program