



Safety and Risk Management

Prenatal Radiation Exposure Information

Regulatory Position

The Commonwealth of Virginia and Nuclear Regulatory Commission (NRC) regulations and Virginia Commonwealth University's license to possess and use radioactive material require that radiation workers receive instruction in the health protection problems associated with exposure to radiation and/or radioactive material, in precautions or procedures to minimize exposure, and the purposes and functions of protective devices employed. They also require licensees to "ensure that the dose to an embryo/fetus during the entire pregnancy, due to the occupational exposure of a declared pregnant woman, does not exceed 0.5 rem (5 mSv). Furthermore, the licensee must "make efforts to avoid substantial variation above a uniform monthly exposure rate to a declared pregnant woman."

A declared pregnant woman is defined in the regulations as a woman who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant.

Background

Exposure to any level of radiation is assumed to carry with it a certain risk. In the absence of scientific certainty regarding the relationship between low dose exposure and health effects, and as a conservative assumption for radiation protection purposes, the scientific community generally assumes that any exposure to ionizing radiation may cause undesirable biological effects and that the likelihood of these effects increases as dose increases. At the occupational dose limit for the whole body of 5 rem (50 mSv) per year, the risk is believed to be very low.

The magnitude of risk of childhood cancer following in utero exposure is uncertain in that both negative and positive studies have been reported. The data from these studies "are consistent with a lifetime cancer risk resulting from exposure during gestation which is two to three times that for an adult" (NRC Report No. 116, Ref. 2). The NRC has reviewed the available scientific literature and has concluded that the 0.5 rem (5 mSv) limit specified in 10 CFR 20.1208 provides an adequate margin of protection for the embryo/fetus. This dose limit reflects the desire to limit the total lifetime risk of leukemia and other cancers associated with radiation exposure during pregnancy.

In order for a pregnant worker to take advantage of the lower exposure limit and dose monitoring provisions specified in 10 CFR Part 20, the woman must declare her pregnancy in writing to the licensee.



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The lower dose limits for pregnant women apply only if you have declared your pregnancy in writing. The United States Supreme Court has ruled (in *United Automobile Workers International Union v. Johnson Controls, Inc.*, 1991) that “Decisions about the welfare of future children must be left to the parents who conceive, bear, support, and raise them rather than to the employers who hire those parents” (Reference 7 in Regulatory Guide 8.13). Thus, the lower limits apply only if you choose to declare your pregnancy in writing.

The NRC has published Regulatory Guide 8.13, “Instruction Concerning Prenatal Radiation Exposure”. Within the guide is additional regulatory information and questions and answers concerning prenatal radiation exposure. Radiation Safety is available to answer questions and provide guidance to any worker or supervisor who may be affected by a declaration of pregnancy or who may have to take some action in response to such a declaration.

Additional Information Regarding Internal Radiation Hazards

The previous information has been directed primarily toward a discussion of radiation doses received from sources outside the body. Workers should also be aware that there is a risk of radioactive material entering the body in workplaces where unsealed radioactive material is used. Nuclear Medicine and laboratories may use radioactive material in an unsealed form. A list of the commonly used materials and safety precautions for each is beyond the scope of this document, but certain general precautions might include the following:

- Do not eat, drink, smoke, or apply cosmetics when using radioactive material.
- Do not pipette solutions by mouth.
- Use disposable gloves when handling radioactive material.
- Wash hands after working around radioactive material.
- Wear lab coats or other protective clothing when handling unsealed radioactive material.

Remember that the employer is required to have demonstrated safe procedures and practices in place before a regulatory agency issues a license to use radioactive material. Employees are urged to follow established procedures and consult with the Radiation Safety Officer whenever problems or questions arise.

Instructions for Voluntary Declaration of Pregnancy

If you plan to become pregnant or are pregnant, you may

- 1) decide to keep your pregnancy confidential;
- 2) inform your supervisor and/or VCU’s Radiation Safety Section; or
- 3) inform VCU’s Radiation Safety Section and formally declare your pregnancy.

By informing your supervisor and VCU’s Radiation Safety Section, you are provided maximum protection for the developing embryo/fetus. Please review Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure" for additional information.



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If you choose to declare your pregnancy, regulations require that you do so in writing. The declaration may be completed at any time during the pregnancy. The form for voluntary declaration of pregnancy can be found [here](#).

Please complete the Voluntary Declaration of Pregnancy form, obtain the appropriate signatures, and return it to VCU's Radiation Safety Section. By signing the form, you state that you have been advised of the potential health risks to the embryo/fetus associated with radiation exposure and have been advised of the Commonwealth of Virginia and NRC requirements to limit the dose to the embryo/fetus to 500 mrem (5 mSv) for the entire gestation period. Before signing and returning the form, you should have any questions concerning this information answered to your satisfaction.

In most cases, you can continue in your present job with no change and still meet the dose limit for the embryo/fetus. Any necessary modifications of your duties will be discussed with you, the Radiation Safety Officer, and your departmental supervisor.

Note: When a declaration of pregnancy is submitted, the participant's previous dose records, if available, are reviewed to determine if a monthly fetal badge is necessary. The maximum dose one can receive during a declared pregnancy is 500 mrem. If it is determined that the participant has not received more than 100 mrem in the previous year, it is very unlikely that they will exceed the 500 mrem limit for the duration of the pregnancy and therefore, a fetal badge will not be assigned. In these cases, the participant's collar badge will be monitored continuously throughout the duration of the pregnancy. If there is a notable change in their typical dose, a fetal badge will be reconsidered and issued if deemed necessary. Regardless, the participant is asked to continue to observe established ALARA practices for time, distance, and shielding.

Withdrawal of Voluntary Declaration of Pregnancy

You may revoke your voluntary declaration of pregnancy, even if you are still pregnant. The choice is entirely yours, and the lower dose limit for the embryo/fetus no longer applies. If you decide to withdraw your voluntary declaration of pregnancy, please complete the withdrawal form found in the forms section.

Reference: [NRC Regulatory Guide 8.13, Instruction Concerning Prenatal Radiation Exposure](#)