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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

MAY 15 1980

Mrs. Sol L. Swartz  
211 West Water Street  
Middletown, Pennsylvania 17057

Dear Mrs. Swartz:

Thank you for your letter in which you asked whether the NRC takes specific account of the effects of radiation on children.

The effects of radiation doses associated with the release of radioactive materials to the environment have been evaluated for all age groups (i.e., infants (less than 1 year old), children (1 to 11 years old), teenagers (12 to 20 years), and adults). The allowable radiation doses were then chosen so that the most sensitive age group would experience virtually negligible risk. Generally, developing fetuses and young children are the most radiation sensitive individuals in the population. Consequently, a release is regarded as acceptable only if the resulting doses to these age groups are within the allowable standards.

Since your question was asked in the context of the proposed clean-up of the TMI reactor building, it may be helpful to discuss the potential doses that may result if the venting of the reactor building is performed. Based on the recommendations of nationally and internationally recognized experts in the medical and biological sciences, a limit of 500 mrem/yr to the total body and 3000 mrem/yr to the skin is placed on members of the general public. These dose limits apply to all age groups but are based on the most sensitive individuals in a population (infants and children). In addition, and as a measure of additional conservatism, the NRC requires nuclear power plant licensees to operate their plants such that radioactive releases are as low as reasonably achievable, currently defined as 5 mrem/yr total body, or about 1% of the limit.

We calculate that venting of the krypton-85 gas from the TMI-2 containment would result in less than 0.2 mrem to the total body and less than 15 mrem to the skin of an individual who stands for the duration of release at the off-site location with the highest dose potential. This location is expected to be either the shore of Hill Island closest to the plant or at the northern entrance to the plant. The calculated dose is numerically equivalent for all age groups. All other locations would experience lower doses. As the distance from the site increases, the dose decreases very rapidly. For example, the dose at Middletown is estimated to be less than 10% of the maximum calculated dose.

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Thus, even if a child were exposed to the maximum hypothetical dose, he or she would receive less than 0.5% of the maximum dose recommended by the national and international organizations. This exposure represents a virtually negligible risk for any child or individual.

We must emphasize that we share your concern about the safety of your children as well as adult citizens and are continuing to make every effort to ensure that no one is exposed to unsafe levels of radiation from nuclear power facilities.

Sincerely,

A handwritten signature in cursive script that reads "Daniel R. Muller". The signature is written in dark ink and is positioned above the typed name and title.

Daniel R. Muller, Assistant Director  
for Environmental Technology  
Division of Engineering