



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

AUG 14 1980

Ms. Joyce M. Beyer
Board of Health
Borough Hall
Hillsdale, New Jersey 07642

Dear Ms. Beyer:

Your letter to Governor Thornburgh, a copy of which was sent to Mr. Denton, about the release of radioactive gas from TMI and the health effects of radiation was referred to me for response.

Metropolitan Edison Company submitted to NRC a "Safety Analysis and Environmental Report" (November 13, 1979) in which it evaluated alternative methods for the disposal of the krypton gases, such as purging and cryogenic processing, and selective absorption. NRC also evaluated alternative methods for disposal of the krypton gas to determine what effect decontamination would have on workers, on the public health and safety, and on the environment. Based on its evaluation, NRC issued an environmental assessment (NUREG-0662 and two addenda) for public comment on March 26, 1980, and received approximately 800 comments. These comments were considered in the staff's preparation of the "Final Environmental Assessment for Decontamination of the Three Mile Island Unit 2 Reactor Building Atmosphere" (NUREG-0662), vols. 1 and 2, copies of which are enclosed for your information.

From this process have emerged the following NRC staff conclusions:

- The potential physical health impact on the public of using any of the proposed strategies for removing the krypton-85 is negligible.
- The potential psychological impact is likely to grow the longer it takes to reach a decision, get started, and complete the process.
- The purging method is the quickest and the safest for the workers on Three Mile Island to accomplish.
- Overall, no significant environmental impact would result from use of any of the alternatives discussed in the assessment.

On June 12, 1980, the Commission issued an Order for Temporary Modification of License, authorizing controlled purging of the krypton-85 from the reactor building atmosphere. In a separate Memorandum and Order, also issued on June 12, 1980, the Commission discussed rationale for its decision. Actual venting operations began on June 28, 1980, and were completed on July 11, 1980. The health doses resulting from the purge were well within those predicted in section 7.1 of volume 1 of NRC's final environmental assessment. Copies of both Commission issuances are also enclosed.

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In response to your concern about the health effects of radiation, for more than four decades, the effect of radiation on men and animals has been thoroughly studied. Numerous major biological research programs (including studies of genetic effects) have been completed and others are in progress, all of which have been well documented. While the relationship between ionizing radiation dose and adverse biological effects among humans is not precisely known for all levels of radiation, the principal uncertainty exists at very low dose levels where natural sources of radiation and the variations in these sources are comparable to other doses. The most important biological effects that radiation can cause are cancer, hereditary diseases, miscarriages, and abnormalities that may occur to a fetus. These effects are identical to those that occur among humans from other causes. It is this last point in combination with other complicating factors--such as magnitude and variations (1) in normal incidence of diseases, (2) in doses from natural radiation sources, (3) in radiation doses from man-made sources other than the nuclear industry, and (4) in exposures to nonnuclear cancer-producing agents--that is responsible for much of the uncertainty in the dose-risk relationship at low dose levels.

In lieu of precise knowledge of the relationship between low-level radiation and biological effects, radiation experts assume that ionizing radiation has an effect on the human body that remains directly proportional to the dose, even at very low levels, and that there is therefore no threshold below which radiation can be ignored. They therefore assume that any dose of radiation, no matter how low, may be harmful.

Several federal agencies, principally the Environmental Protection Agency, the Occupational Safety and Health Administration, and the Nuclear Regulatory Commission, are responsible for regulating exposures from radiation or radioactive material. In all cases, the staffs of these agencies set regulations to limit radiation exposures to those well below nationally and internationally accepted levels of radiation protection.

I appreciate your concerns and assure you that every effort is being made to ensure the continued protection of the health and safety of the public, not only at Three Mile Island, but also at all nuclear power plants.

Sincerely,

Richard A. Weller
for

Bernard J. Snyder, Program Director
Three Mile Island Program Office
Office of Nuclear Reactor Regulation

- Enclosures:
1. NUREG-0662, vols. 1 & 2
 2. Order for Temporary Modification of License of June 12, 1980
 3. Memorandum and Order of June 12, 1980