



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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AUGUST 1 5 1980

Mrs. Reginald Young
6530 Cherokee Street
Philadelphia, Pennsylvania 19119

Dear Mrs. Young:

Your mailgram to Mr. Collins about the release of radiation from the Three Mile Island nuclear station 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 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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Regarding your comments about the possibility of an explosion at Three Mile Island, there was no possibility of a nuclear explosion such as that which happens in a bomb. Because of the physical conditions that exist in a light water nuclear reactor, such a (bomb-type) reaction will not occur to initiate an accident or following an accident (such as TMI-2) where core damage occurs.

For a few days after the accident, there was some concern that a hydrogen bubble in the reactor vessel might react explosively with the oxygen thought to be slowly accumulating in the bubble. There was concern that such a chemical explosion might break the reactor vessel or breach the containment building and possibly allow the escape of large amounts of radioactive materials. However, after extensive investigation and consultation with outside experts, NRC concluded that such an explosion could not occur because essentially no oxygen could have accumulated in the bubble under the existing conditions.

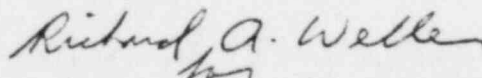
Regarding your concern about potential contamination of food supplies, the radioactive materials that were released were primarily radioactive gases. The radioactivity was almost entirely from xenon, which is a chemically inactive gas. As the gases leaked out, the winds diluted them. To determine whether food grown in the area was contaminated, the Department of Energy measured the amounts of radioactivity present in the samples of soil, water, air, and vegetation.

Based on these samples and on other information, it was concluded that the principal isotopes in the escaped gases were xenon-133 and xenon-135. Although radioactive iodine was found in samples of some milk, the concentration was less than 1% of the concentration permitted by NRC regulations. Other food samples were tested by the U.S. Food and Drug Administration, and none of the 377 food samples tested contained reactor-produced radioactivity.

A Department of Energy publication entitled "Living with Radiation" is available from the National Technical Information Service, Springfield, Virginia 22161 at a cost of \$7.00 (order no. ERDA 76/89). It contains a list of books on the subject.

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,



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