UNITED STATES
NUCLEAR REGULATORY COMMISSION
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C. IRMAN

December 14, 1979

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CORR

Professor Frank von Hippel
Princeton University
Center for Environmental Studies
The Engineering Quadrangle
Princeton, New Jersey 08540

Dear Dr. von Hippel: Frank

Thank you for your letter of June 11, 1979 with a copy of your recent letter to Science, regarding the distribution of potassium iodide (KI) to the public in a radiological emergency. Because there have been almost weekly changes in the information I could give you, I have delayed our reply until now.

The NRC Staff has been aware for some time that potassium iodide can be an effective defense against excessive thyroid dose due to radioiodine intake. The FDA issued a Federal Register notice (43 FR 58790) in December 1978. This notice has the practical effect, as we see it, of removing certain previous restrictions to the non-prescription distribution of KI in an emergency. In the Federal Register notice, FDA also invited new drug applications for the mass production of KI tablets for over-the-counter distribution in an emergency. Recently, the FDA approved an application for the manufacture of potassium iodide for use during emergencies. These actions by the FDA remove the legal impediments to the provisions for mass distribution and stockpiling of KI by State and Federal agencies.

Some concerns have been expressed by some members of our staff with respect to provisions for the broadcast distribution of KI to the general public. The enclosed staff memoranda on the subject provide some perspective on these concerns. The staff is concerned that potassium iodide is only effective if taken shortly before or after radioiodine intake and protects only the thyroid, whereas other protective actions could provide protection for all organs. In many instances, these other protective actions could be consummated before, and possibly more easily than, the broadcast distribution of KI. Of course, where institutional controls can be maintained for lengthy periods (e.g., in hospitals, prisons or reactor control rooms), KI has a greater potential for use in an emergency.

However, you will note in paragraph 2 of the enclosed August 15, 1979 memorandum for Commissioner Ahearne from Harold Denton that the majority of the NRC staff believe that the use of KI as a thyroid blocking agent is an appropriate part of a complete emergency preparedness program. As part of our program for improving emergency planning activities, we will determine how KI can best be integrated into a total protective action preparedness program. Such a determination will include an evaluation of the effectiveness and reasonableness of KI distribution at large distances where post-accident evacuation might not be feasible and sheltering might not be effective.

I have also enclosed a copy of a recent study by Sandia Laboratories, Examination of Offsite Radiological Emergency Protective Measures For Nuclear Reactor Accidents Involving Core-Melt, which addresses the relative efficacies of evacuation, sheltering and iodine prophylactics as protective measures. As you can see from examination of the study, these protective actions could provide benefits during radiological emergencies.

I am pleased that your letter has prompted the staff to bring these insights to my attention, and I am glad to share them with you.

Sincerely,

John F. Ahearne

Enclosures:
1. Internal Staff Memos
2. Sandia Study