



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON D. C. 20555

MAR 15 1990

MEMORANDUM FOR: Hugh L. Thompson, Jr.  
Deputy Executive Director for Nuclear Materials Safety,  
Safeguards & Operations Support

FROM: Eric S. Beckjord, Director  
Office of Nuclear Regulatory Research

SUBJECT: POTASSIUM IODIDE DPO OF PETER CRANE

Pursuant to your March 7 letter, I have reviewed the DPO and related correspondence, and I met with Mr. Crane on March 13, 1990.

In summary there are two main points in the DPO as follows:

1. NUREG/CR-1433 presents an analysis of the costs and benefits of stockpiling potassium iodide for treatment to prevent uptake of radioactive iodine in the event of a nuclear accident with a large release. The analysis is flawed.
2. On November 22, 1983 the staff briefed the Commission on Commission paper SECY-83-362 (Emergency Planning - Predistribution/Stockpiling of Potassium Iodide for the General Public), and on NUREG/CR-1433, which was the basis for the Commission paper. The presentation emphasized thyroid therapy following an exposure, but did not make clear that 4% of the nodules resulting from an accident would be fatal.

Mr. Crane believes that the NUREG/CR-1433 should be withdrawn, that the Commission's record should be updated and revised, and that Federal agencies, states, localities, and the public should likewise be advised of the updated and revised information.

The review of the DPO prepared by the panel consisting of Messrs. Speis, Congel, Roeklein, and Soffer addressed the first point, and speaks for itself. In summary it evaluated stockpiling rather than predistribution, utilized the insights of NUREG-1150 for accident releases, included the effect of hypothyroidism, and considered benign thyroid nodules, cancerous nodules, and fatalities, and the current cost of potassium iodide. It considered the available information from the Soviets on Chernobyl. In the revised analysis the benefit of potassium iodide is substantially increased from the NUREG/CR-1433 basis, but it still falls short of breaking even by more than a factor of 10. The panel is strongly convinced that potassium iodide has limited efficacy as a public protection measure, because it addresses one organ through one pathway, and because its effectiveness depends on its use before or within a few hours of exposure. The panel recommends that existing Federal guidance should not be changed. In effect the panel updated the NUREG/CR-1433 analysis, and concluded that the new information should be transmitted to other Federal agencies and states.

Thus it appears to me that the panel has addressed Mr. Crane's first point. He nevertheless believes that a cost/benefit analysis is not determinate, and should not be the sole basis for judging this issue. With respect to his view on thyroid cost/benefit analysis, there are two important aspects on which I make further comment below.

The panel did not address Mr. Crane's second point, and I conclude on this basis that the DPO is not resolved.

My suggestion to resolve the issue is to revise and broaden the NUREG/CR-1433 analysis, along the lines that the panel did on the basis of new information. The revised analysis could then be presented to the Commission and issued to other Federal and state authorities. Based on this revised analysis, the Commission could then decide whether or not to revisit the policy question. If the Commission should decide to do, it would be necessary to coordinate with all the Federal agencies that participated in developing current the policy. This action would address Mr. Crane's concerns.

The two aspects that relate to Mr. Crane's view on cost/benefit analysis noted above are (1) due consideration of thyroid dysfunction health effects, and (2) the role of cost/benefit analysis in decision making. With regard to thyroid dysfunction, it will be important in any future consideration of the issue to gather in the best possible medical opinion on the subject. I am not able to judge from the DPO case documents that such opinion was a part of the 1983 decision; nor am I able to judge that it was not. There are a number of ways to read the 1983 transcript attached to Mr. Crane's DPO. Part of the testimony compares potassium iodide as a means of averting an illness to cost-ineffective auto insurance. On the other hand, the transcript also makes it clear that the Commissioners were aware of the views of other Government agencies on the subject.

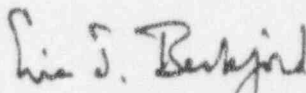
The second aspect, the role of cost/benefit analysis in decision making is also important. I do not mean to suggest that cost/benefit should be followed blindly. When properly used with due regard for important considerations, cost/benefit analysis is a powerful tool, especially helpful in establishing priorities for needs, and commitment of resources. Mr. Crane argues that potassium iodide stockpiling is a good idea, and should therefore be adopted, regardless of cost/benefit. The problem as I see it is that, without any reference to or inference for this case, the idea that may be good for one person may be valueless to another. It is therefore essential to analyze health and safety proposals in a disciplined way to examine the conclusions broadly, i.e., from many points of view, and scientifically, in order to assure that resources are used wisely. Careful cost/benefit analyses have proven their usefulness in many health and safety decisions. In short, I am not sympathetic to the idea of dismissing cost/benefit considerations in the agency's decision making.

Hugh L. Thompson, Jr.

3

MAR 15 1990

With regard to revising the thyroid analysis, the only problem is the availability of experienced people to do the required work; people who are now committed to other Commission priorities. If you wish, I will see what can be done and on what schedule.



Eric S. Beckford, Director  
Office of Nuclear Regulatory Research

cc: James M. Taylor, EDO  
Peter G. Crane, OGC