

July 25, 1989

MEMORANDUM FOR:

Themis Speis
Len Soffer
Frank Congel
Alan Roecklein

FROM:

Peter Crane *Peter Crane*

SUBJECT:

MEETING OF JULY 24, 1989

I appreciated the opportunity to meet with you and discuss the issues involved in my differing professional opinion on the stockpiling of potassium iodide. For the sake of clarity, I thought it might be useful for me to summarize my views in the aftermath of that meeting.

1. The assumptions as to the likelihood of an accident such as to cause a thyroid nodule need reexamination. As described by the staff in 1983, the figure of \$10,000,000 cost per thyroid nodule prevented seems to say that accidents would result in no more than two and a half thyroid nodules per year. (The preliminary calculation circulated by Len Soffer at the meeting already indicates that this figure is low.)

2. The Commission, in its briefing of November 22, 1983, was not given to understand that approximately four percent of the nodules resulting from an accident will prove fatal. Such fatalities may be delayed in their onset, and thyroid cancer is generally slow in its progress, but they are fatalities nonetheless. (The slowness of an illness is not always a recommendation. I'm told that one of my kindergarten classmates, given X-ray treatment for tonsils or adenoids at about the same time I was, has had four operations for metastatic thyroid cancer that has spread to his head.) The Commission and the public should be aware of what the stakes are, not misled with facetious comparisons to events which do not take place in the United States, such as elephant stampedes.

3. Even non-fatal cancers are well worth preventing, if prevention is practicable. Thyroid cancer involves a lot more unpleasantness than the "few days' loss" that the staff described to the Commission in the November 1983 briefing. I'm not asking that the staff elaborate on the hardship to children of worrying about a parent who disappears to the hospital periodically, but if the staff does a fair job of representing what thyroid cancer involves for the patient -- the periodic scans, the exhaustion that results from the withdrawal of thyroid hormone, the amount of time lost from work, the need to be placed in isolation for treatment as an inpatient, the amount of radiation received from therapeutic

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and diagnostic doses, the need to avoid one's family when there are still levels of radiiodine in the body -- then the reader can use his or her own imagination and values to take account of these non-monetary impacts on the family.

4. In its assessment of dollar costs of radiation-caused nodules (including the 40% of nodules which will prove malignant), the staff's figure of \$20,000 is extremely and unreasonably low, when one figures in the time lost from work for periodic scans, the cost of scans, and the cost of treatment, not to mention the environmental cost of radiiodine dumped into sewage systems. (As discussed further in item 9 below, the staff acknowledged in 1984 that the \$20,000 figure for "a nodule" was low by a factor of 5.) Because I am a patient at NIH and do not pay for my medical treatment, I cannot offer an estimate of the full costs involved, but the American Thyroid Association or such experts as Dr. Jacob Robbins of NIH might be able to offer an estimate.

5. I believe that the staff's estimates of the likelihood that thyroids will be ablated in an accident (and thus rendered at no risk from nodules or cancer) are wishful thinking in the extreme. First of all, it takes a lot of iodine to ablate a thyroid, as I know from personal experience of receiving ablating doses. Secondly, even those persons whose thyroids were theoretically ablated by the iodine received in an accident would need medical followup on a regular basis.

6. I see innumerable problems with predistribution of potassium iodide. This differing professional opinion is directed solely to the merits of stockpiling.

7. Even if the outcome of the staff's analysis is that the use of potassium iodide is not justifiable on a cost-benefit basis, the Commission and the public should be aware that by the same test, much if not all of what the NRC requires in the area of emergency planning would not be justifiable. Rather, such measures are required because the Commission made a policy decision that it was prudent and responsible to have emergency planning measures in place. Both the ACRS and OPE raised the objection, when the potassium iodide issue came up five years ago, that other emergency planning requirements would also fail the cost-benefit test, but that objection was never answered, to my knowledge. When the NRC says that a particular emergency planning measure, such as potassium iodide, is not cost-effective, it is implicitly suggesting that those emergency planning measures which are required do meet the test of cost-effectiveness. The Commission, the public, and the states -- which must decide for themselves whether to stockpile potassium iodide -- should be aware that this is not the case.

8. I understand from Dr. Robbins of NIH that the international thyroid community is eagerly awaiting the results of studies on adverse side effects of the millions of doses of potassium iodide administered in Poland after Chernobyl. These studies might well affect the judgment of whether potassium iodide is desirable.

9. I believe that when the costs and benefits of potassium iodide are recalculated along the lines indicated above, the disparity between costs and benefits will be much smaller than the staff represented to the Commission at the 1983 briefing. (In effect, the Commission was being told that the benefit was virtually zero.) But even if costs are still found to exceed benefits in some measure, that does not mean that it would not be desirable to stockpile potassium iodide, simply as a matter of prudence. For example, earlier this summer the NRC issued a notice to all employees warning them to buy sun block and use it to prevent skin cancer. As far as I know, this was not based on any cost-benefit analysis of the cost of sun block compared to the risks of skin cancer, or the number of days lost if one develops skin cancer. Rather, this was based on a common-sense judgment that if it is easy and cheap to prevent a certain kind of cancer, it makes sense to do so. I think the NRC owes the public the same kind of common-sense approach with regard to radiation from nuclear accidents that it provides to its employees with regard to radiation from the sun.

10. Even if the NRC's bottom line remains the same -- that potassium iodide is not desirable -- the scientific and policy basis for that judgment should be valid. As I have described in my differing professional opinion of June 16, the staff acknowledged five years ago that the \$20,000 figure was in error by a factor of 5, but did not change the underlying document because changing it would not have altered the ultimate conclusion that potassium iodide was not worthwhile. I disagree with that approach. I believe that it is essential not only that the bottom line be correct, but that the pathway to that bottom line be correct. We have no way of knowing the extent to which states and other federal agencies relied on elements in that pathway rather than simply on the bottom line. To the extent that the NRC has disseminated incorrect information in the past, either in public documents or in public briefings, I think we have an obligation to correct the record, and to do so loudly and clearly.

: Hugh Thompson