March 20, 1990

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

FROM: Peter Crane

SUBJECT: MEMORANDUM OF MARCH 15, 1990, FROM ERIC BECKJORD REGARDING MY DPO ON POTASSIUM IODIDE

Eric Beckjord's memorandum to you of March 15, 1990, contains several points to which I would like to respond.

1. Dr. Beckjord states that my DPO of June 16, 1989, made two major points, and that the review panel did not address the second point; thus he "conclude[s] on this basis that the DPO is not resolved." I am obviously gratified that he has reached this conclusion, but in all frankness, it comes as no surprise, since no other rational conclusion could conceivably have been reached. Indeed, it was self-evident when the review panel issued its report on December 14, 1989 that it had failed to mention, much less to address, the portion of the DPO dealing with the accuracy of the information provided to the public and the Commission in 1983. I had also pointed out that omission in my comments to you of January 4, 1990. Thus my sense of gratification that Dr. Beckjord has acknowledged the review panel's omission is tempered by regret that three months should needlessly have been lost in coming to grips with the underlying issues -- and this in a process that is designed to put a premium on timeliness.

2. Dr. Beckjord writes of me that I "nevertheless believe... that a cost/benefit analysis is not determinate, and should not be the sole basis for judging this issue." This statement is not inaccurate, but it requires some qualification and explanation.

I do not dismiss the usefulness of cost-benefit analysis generally, nor do I argue that it should play no role whatsoever in considering whether the stockpiling of potassium iodide is sensible and prudent. My point is that when one is talking about health effects, one has to use the cost-benefit approach with a modicum of common sense, and in any case, the collection of valid data about the actual costs and benefits involved must <u>precede</u> the balancing of costs and benefits. It may be tempting, when the costs of a program seem greatly to outweigh its benefits, to think that one need not look too closely at the accuracy of the data on

costs and benefits. But if the data is defective, the cost-benefit balancing may be defective as well.

The approach taken by the staff in 1983 was based solely on the cost of treating a thyroid nodule. (For the moment, let us put to one side the fact that the staff mischaracterized the seriousness of the medical problems caused.) The staff's reasoning went as follows: "If a potassium iodide program costing $20,001 could result in averting one case of thyroid nodules, and that case of thyroid nodules could be treated for a maximum of $20,000, then it is more cost-effective for society to allow the thyroid nodule to develop than to prevent it."

The DPO review group, conscious of the criticisms of the earlier analysis, went back and factored in thyroid malignancies and fatalities. They nevertheless concluded, Dr. Beckjord reports, that the benefit of potassium iodide "still falls short of breaking even by more than a factor of 10." (I might interject that this is quite a difference from the factor of 500 that the Commission was told about in 1983, but that is beside the point for the moment.) But what does it mean to have factored in malignancies and fatalities? I would submit that apart from the $1 million figure assigned to fatalities, the DPO panel made no effort to estimate -- other than in dollar costs of treatment, as before -- the actual costs (i.e., disruption of the quality of life) that thyroid disease brings to patients and their families. Thus the DPO panel was looking essentially through the same lens through which the staff had looked in 1983.

The old maxim, "an ounce of prevention is worth a pound of cure," comes to mind here. It should be self-evident that it is better for individuals to live their lives free from disease than to develop diseases and have to be cured of them. Yet the staff's approach, at least as presented in 1983, seems to treat the two states (disease averted and disease treated) as exactly equivalent, regardless of the discomfort and anxiety (if nothing worse) that illness brings.

It should be obvious that society may wish to spend more to prevent some kinds of illness than it would cost to treat those illnesses if they occur. Let us deal for a moment with a disease most of us are familiar with, polio. Let us suppose that with a vaccination program costing $100 million dollars, society can avert a number of cases of polio that in the aggregate would cost $50 million dollars to treat. Does anyone think that such a program would be regarded as non-cost-effective by a factor of two? Does anyone think that the only elements that would fall in the "benefit" column would be the money saved on braces and doctor bills?

Only if the illness in question were as trivial as the common cold could anyone doubt for a moment that to equate dollars for prevention and dollars for treatment is absurd. It is at this point that the staff briefing of November 22, 1983 becomes so significant. At that briefing, the staff presented so rose-colored a version of the significance of radiation-caused thyroid problems as to bear no relation to reality. Fatalities were not the issue, the Commission was told, the issue was averting an illness that might mean "a few days loss." All of this you will find in the DPO and the attached excerpts from the meeting transcript.

Decisionmakers cannot make intelligent judgments about the costs and benefits of averting a particular health effect if they are provided inaccurate information about the nature of that health effect. Only at such time as the staff gets around to telling the Commission about the consequences of radiation-caused thyroid disease will the Commission be in a position to judge how much it may be worth to society to prevent such disease.

On this point, Dr. Beckjord's memo refers euphemistically to whether the cost-benefit analysis gave due consideration of "thyroid dysfunction effects." Euphemisms can sometimes lead to misunderstanding. The central issue is not thyroid dysfunction, it is thyroid nodules and tumors, benign and malignant, and the fatalities that sometimes result from the latter. Dr. Beckjord goes on to say that he cannot determine from the DPO case documents whether or not the 1983 decision reflected "the best possible medical opinion on the subject." I can assure him that it did not. To establish that, he need look no further than DeGroot's 1977 work, Radiation-Caused Thyroid Carcinoma, available in the National Library of Medicine. But a hundred other sources, readily found in any medical library, would yield the same result. The American Thyroid Association could and doubtless would be happy to contribute to the process of providing the Commission with accurate information in this area. A copy of their letter of November 27, 1989 is attached.

I have no desire to elaborate here on my own experience with thyroid disease. The Commission has ample sources from which to obtain information on the consequences of thyroid disease without needing to rely on my personal testimony, and I would like to keep this issue on a professional, not a personal, basis. I trust that when the staff revisits this issue, it will seek its information on the conequences of thyroid disease from doctors and perhaps also from patients. So far, there seems no indication of input from either group, at least on the issue of what thyroid disease entails for the quality of life. I submit that what the Commission needs now on the potassium iodide issue is more in the way of accurate and appropriately documented information,

including information on the error bands in the state of our knowledge; less in the way of avoidance of hard issues; and a complete end to the substitution of wishful thinking for scientific data. Then and only then will it be possible to have a meaningful balancing of costs and benefits -- and to that sort of cost-benefit analysis I do not object at all.

3. Dr. Beckjord's suggestion is to "revise and broaden the NUREG/CR-1433 analysis," with a view to providing the revised information to the Commission and other Federal and state authorities. This approach may be sound in principle, but it may also be time-consuming. The proposed approach does not answer the question whether the Commission has an obligation to correct the record now for the misinformation provided in the November 1983 briefing. I believe that issue has to be faced. Given that other Federal agencies are apparently interested in revisiting the Federal guidance in this area, and that the Centers for Disease Control will be conducting a new study, I think it would be in the Commission's best interest to have corrected the record before the record is corrected for us.

4. Some weeks ago, you asked me what I would do in your position. I replied with a draft memo from you to the Commissioners, a copy of which is attached. While it does not go as far as I personally would like, I believe that it would solve a number of problems for the Commission if adopted.

Attachments: Letter, American Thyroid Association to
Dr. Alan Roecklein, Nov. 27, 1989

Draft Memorandum, Thompson to Commissioners

cc: Chairman Carr
Commissioner Roberts
Commissioner Rogers
Commissioner Curtiss
Commissioner Remick
The General Counsel
Dr. Eric S. Beckjord