STATEMENT OF PETER CRANE, NRC COUNSEL FOR SPECIAL PROJECTS (RET.)

NRC WEBINAR ON THE LOW DOSE NO-THRESHOLD THEORY (LNT)

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My name is Peter Crane, and I'd like to thank Dave Garmon and Ed Miller for the opportunity to take part in this meeting. To introduce myself, I joined the NRC as a lawyer a bit more than 50 years ago, retired in 1999, and have been deeply involved in radiation protection issues since the early 1980's. In that time, I've taken part in international conferences on the subject in Russia, England, and Germany.

I appreciate the organizers' desire to keep the tone of presentations civil and constructive, without disparagement of individuals or institutions. I will adhere to that as best I can, consistent with being candid about a proposed course of action that raises what I believe are troubling questions, going right to the heart of the NRC's role.

There is a theory now current in some circles that there is no such thing as a non-political issue, and that all kinds of matters previously thought to be above politics – such as childhood vaccination, geographic names, and what actually happened on a given day in American history – are subject to review and revision at the pleasure of the Executive Branch. The May 23, 2025, Executive Order that gave rise to this meeting appears to be an example of that. It declares that "safety models that posit there is no safe threshold of radiation exposure and that harm is directly proportional to the amount of exposure ... lack sound scientific basis and produce irrational results," and directs abandoning scrapping both the LNT and ALARA ("as low as reasonably achievable") principles. No authority for this conclusion is cited.

Two issues are presented here, I think. One is the substantive question of whether the

LNT and ALARA principles are sound, as national and international standards and practices have held since the dawn of the atomic age. The second is institutional: whether it is appropriate for the Executive Branch to be dictating the scientific conclusions of what is supposed to be an independent regulatory agency, and in such a case, whether it is appropriate for the agency to accept such dictation.

On the first point, there is strong recent evidence confirming the scientific validity of the LNT. See, for example, A. Wojcik and F. Zölzer, "The scientific nature of the linear no-threshold (LNT) model used in the system of radiological protection," *Radiat Environ Biophys.* 2024 Sep 2;63(4):483–489. https://pmc.ncbi.nlm.nih.gov/articles/PMC11588861/

The second point goes to the continued viability of the NRC as an institution. It is significant, I think, that the Breakthrough Institute, as pro-nuclear an outfit as there is, has expressed serious reservations about taking steps that would undermine the agency's credibility. For at least half a century, it has been axiomatic that nothing is more vital to the nuclear industry than the existence of a trusted regulator, even if the industry isn't always happy with every action the agency takes. It is so much easier to forfeit public trust than to regain it once it has been lost. It would therefore be a grave mistake, I believe, to sacrifice the NRC's reputation for scientific and technical integrity for the sake of meeting short-term goals. It could, after all, backfire, with devastating results for the nuclear option overall – and this just at a time when even many former opponents of nuclear power are moving toward accepting the need for it in a warming world.

In this regard, it does not help when Commissioners of independent regulatory agencies are removed from office without a cause even being stated. Whether or not it is legally permissible, something the Supreme Court has yet to decide, it is open to the interpretation that these agencies are being reduced to mere servants of the Executive, so that no reliance can be put in their decisions.

I don't mean to picture myself as enthusiastic about everything the NRC has ever done in the area of radiation protection. If its record with respect to reactor safety has been generally excellent, the same cannot be said for its regulation of the use of nuclear materials in medicine. The 1997 deregulation of the use of radioactive iodine has made the United States an outlier in the international radiation protection community. For the purpose, the NRC staff relied on a supposed expert, now deceased, who was a crusader for the pseudo-scientific doctrine of "hormesis." He believed that radioactive iodine was not carcinogenic and that even a major nuclear accident might have *beneficial* effects on human health.

Coincidentally or otherwise, this deregulation occurred at a time when the NRC was under heavy political pressure to deregulate nuclear medicine, coming not from the Executive Branch but from the Congressional committees that controlled the NRC's budget. The effect has been to turn the treatment of thyroid cancer patients with orally administered radioactive iodine 131 from an inpatient to an outpatient procedure in almost every case. This inevitably results in radiation exposure to patients' loved ones and to members of the public. (The NRC staff calculated in 2014 that a released patient with 100 millicuries of I-131 in his or her system could, while riding public transportation, deliver a 100-millirem radiation dose to someone standing nearby in as little as 40 minutes.) The greatest risk is to small children, who are more radiation-sensitive. NRC radiation protection is quite literally sub-Third World. Bangladeshi and Iranian radiation protection authorities do better by their countries' children than the NRC does by ours. I described this situation in a paper given at an International Atomic Energy Association conference in Bonn in 2012; a copy is attached and incorporated by reference.

Fortunately for the NRC, if not for the health and safety of the American people, the agency's failures with respect to nuclear medicine have largely escaped public notice. I

doubt that the same would be true if the Commission were to bow to the Executive Branch on issues of reactor safety, which are of concern to a much larger part of the population. In that case, many would question whether, if the NRC's decisions reflected not its own expert judgment but rather the outcomes prescribed in advance by the Executive Branch, there was a point in its continued existence. Fifty years of experience lead me to believe that there *is* value in the NRC's existence, provided that it is allowed to be the fearless independent regulator that Congress intended, and not a puppet of the Executive Branch or anyone else.

Once again, thank you for the opportunity to make this presentation.

Respectfully submitted,

Peter Crane
6545 27th Avenue, NW
Seattle, WA 98117
peter46crane@gmail.com