

CORNELL UNIVERSITY,
DIVISION OF BIOLOGICAL SCIENCES,
Ithaca, N.Y., April 1, 1968.

Mr. RICHARD A. CARPENTER,
Senior Specialist, Science Policy Research Division, Legislative Reference Service, Library of Congress, Washington, D.C.

DEAR MR. CARPENTER: In reply to your letter of March 20, I shall try to answer your questions.

1. I enclose a xerox copy of a question and answer giving the figure 130 curies per day. This is from the magazine "Scientist and Citizen" published by the Committee for Environmental Information, 5144 Delmar Boulevard, St. Louis, Missouri 63108. The Committee includes a number of prominent scientists and has a National Science Advisory Board of which I am proud to be a member. We try very carefully to screen out anything that might be successfully challenged, and nobody has challenged that statement.

Furthermore, calculations from independent data lead to the same figure for a boiling water reactor of that size. Also from independent sources we can estimate that the radioactivity put into the atmosphere would consist of about 20 curies of tritium with most of the remainder being ⁸⁵Krypton. I'm sure you know that, although the modern definition of a curie is 37 billion disintegrations per second, this corresponds closely to the activity of a gram of radium. In terms of biological hazard, of course, radium is the most dangerous with tritium being much more dangerous than Krypton.

I sent back the transcript of the hearing and can't recall just what was said about England discharging high-level radioactive wastes to the sea. As I recall, Chairman Miller asked if that were not the case and I replied that I had heard such a report. A cursory search of my files shows that a 1958 statement from the British Windscale reactor reports that they were releasing into the Irish Sea "several hundred millicuries of alpha-emitters a day." This is extremely vague but one can guess that it refers to ⁹⁰Strontium which is indeed a "high-level radioactive waste." Also, presumably, this antedates the accident at Windscale which released to the atmosphere large quantities of ¹³¹Iodine—perhaps the potentially most dangerous reactor accident that has occurred to date (although the accident in the Fermi reactor, 30 miles from Detroit, on October 5, 1966 is said to have released "some radioactivity" to the atmosphere—I have been unable to learn how much of what was released). I really don't know anything about England's disposal of radioactive wastes; it's difficult enough to learn anything about what's happening in this country.

2. I stated that I was not overly happy with my calculations of the oxygen balance in the atmosphere but I'll outline my procedure since you asked. If you want to pursue it further I'll be happy to send the detailed equations of the combustion formulas assumed.