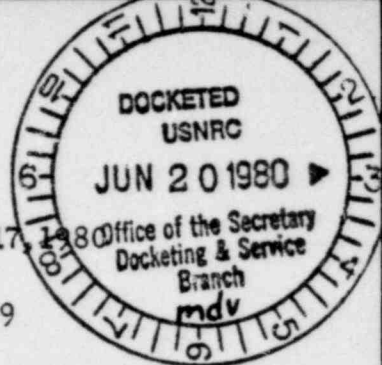


DOCKET NUMBER
PROPOSED RULE

PR-20 (48)
(45 FR 18023)

Samuel J. Chiik, Secty. of the Commission
Docketing and Service Branch
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

June 17, 1980



RE: Release No. 80-59
March 21, 1980

Comments on NRC changes considered
to Radiation Protection Standards Part 20
of NRC Regulation for protection require-
ments.

Dear Sir:

In response to referenced release and NRC's staff inviting interested persons
to submit comments in areas of:

- (1) radiological protection principles, with emphasis on the use of
terms understandable to the layman;
- (2) Standards for individual occupational exposure, including special
provisions to limit collective population doses and exposure of children,
fertile women and other susceptible groups;
- (3) Standards for exposure of the general public, including licensee actions
in case of an emergency or over-exposure and environmental monitoring
for routine or accident conditions;

(1) Suggested terms understandable to the layman -

A radioactive particle ingested is like an X-ray machine ticking away. Radiation
is a charge of energy that either passes by a cell, or damages the cell, or kills
the cell. Damaged or mutated cells cause cancer, genetic defects or other
diseases, depending on which body cells are mutated and/or damaged. Radiation
assaulted cells accelerate the aging process of the human body.

(2) and (3) Requesting interested persons to comment on exposure standards when
the adequacy of current limits is being considered does not make much sense.

However, the fundamental assumption that the NRC is laboring under ~~it~~ when
trying to write standards for radiation protection, that is, basing occupational or

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Acknowledged by card. 6/20/80. mdv.

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public exposure as additional to a "natural" background radiation is INCORRECT. There is no such thing as a "natural" background radiation as defined by the U. S. Environmental Protection Agency. The only natural background radiation occurred before man started digging up copper, coal, etc. Each activity man has engaged in adding radiation to the environment must be classified as technologically enhanced natural radiation, and the radiation sources in the environment from plutonium from satellite crashes (Russian and U.S.) or bomb tests, must be classified as man-made radiation. To claim an established natural radiation measurement long after man's activity has been adding to the natural background radiation is simply deceiving either oneself, or the general public. The technologically enhanced natural radiation together with the man-made radiation, added to the natural (cosmic, geologic) radiation, should be referred to as ENVIRONMENTAL radiation.

For the Nuclear Regulatory Commission to attempt to set radiation protection standards based on U. S. Environmental Protection Agency study "Natural Radiation Exposure in the U. S." ORP/SID 72-1, by Donald T. Oakley, even assuming there were a natural radiation exposure, would be incorrect. Enclosed is a copy of my criticisms of D. Oakley's thesis, addressed to Chmn. James Hendrie, US NRC, April 25, 1979. EPA's natural radiation exposure figures were hopelessly outdated even at the time of the writing of this standard in 1972, coming to conclusions using studies done in the 1950's and 1960's. And even these 1950 and 1960 studies were calculations, assumptions, and population distributions to estimate an average dose of natural radiation.

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The 1950 and 1960 studies do not reflect the large amounts of additional man-enhanced and man-made radiation that is added to the environment on a daily basis from nuclear power generating facilities, USSR and U.S. crashed satellites, and the proliferation of nuclear materials throughout the environment from commercial, medical and defense research sources, uranium mill tailings blowing about and being washed into water sheds, coal mining and phosphate mining. While earth-generated natural radiation was decreasing with the passage of time (e. g. OKLO natural fission reactor), since man has started playing around with the atom, the amount of man-made radiation in the environment has probably increased the environmental radiation more in the past 40 years than all of man's activities that introduced man-enhanced radiation through mining, etc., did in the past 400,000.

A ~~good~~ glaring example of the inadequacy of the "Natural Background Radiation Exposure in the U.S." is the decision by the U.S. NRC to release the 57,000 curies of Krypton 85 at Three Mile Island. The NRC based its decision on the estimated exposure of the people surrounding the TMI reactor received from the accident at Unit 2 on March 28, 1979 and the estimated exposure averaged out over the population in that area. You did not tell the people of that area, or any other geographic area of the U.S. and/or world that the Krypton 85 levels in the air have been rising steadily since 1962, when they were 5 picocuries per cubic meter, until 1975, when the Krypton 85 levels have tripled to more than 15 picocuries per cubic meter. So it is for cesium, plutonium, etc., added to

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EPA's "natural" background radiation. The radiation is cumulative, and with the case of plutonium, will be part of the "natural" background radiation for 1/4 million years.

In Sept. 1979 the Dept. of Energy conducted aerial radiation surveys in areas surrounding nuclear sites in Tonawanda, N.Y., Cleveland, Ohio, and West Valley, N.Y., all properties once used under contracts with the former Atomic Energy Commission or the Manhattan Project. IF the Dept. of Energy is only now doing aerial surveys to determine the extent of a known radioactive contamination, then it is clear that there is no way anyone can determine from a study based on 1950 and 1960 aerial surveys what the "natural" background radiation is. Since the Clecon Metals, Inc. and Harshaw atomic energy program in Cleveland, Ashland Oil Co., Seaway Industrial Park and former Linde Uranium Refinery properties in Tonawanda did not show up in the ARMS of ORP/SID 72-1, Oakley, how many more sites of actual contamination are still undiscovered and therefore not a part EPA's theoretical "natural" background radiation assessment?

Even given the EPA-Oakley "Natural Background Radiation Exposures in the U.S." of 1972 were correct for 1972, there is no way the U.S. NRC can say that there is a safe or socially acceptable additional occupation or public exposure level when the National Academy of Sciences committee claims it does NOT know, in 1980, years after use of nuclear materials, and their proliferation throughout the environment, what the effects of

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"natural" radiation are!! And this august body of "experts", while admitting they know little of the effects of background radiation, still claim that it is the biggest source of exposure to mankind!!!??!! This body of "experts" make such an unfounded statement, while at the same time saying their risk estimates are based on incomplete data and "may well change as new information becomes available". It is interesting that the "experts" setting the radiation exposure levels remain anonymous. When it is "discovered" in the future that their expertise was at fault, they will be no where to say "I'm sorry" to those who already are suffering from the cancers induced through work in defense research labs such as Lawrence Livermore with its increased cases of skin cancer, or at the naval shipyards working on nuclear submarines, or the thousands of people working ~~with~~ with nuclear materials at commercial establishments. The public is exposed to continuing additional man-made radiation, yet the "experts" at the National Academy of Sciences stated (UPI May 6/79) that while cancer and birth defects are the main adverse effect from radiation exposure, not enough is known to determine whether low doses are detrimental. Very simply, if not enough is known to determine whether low doses are detrimental, THAN NOT ENOUGH IS KNOWN TO DETERMINE WHETHER LOW DOSES ARE NOT DETRIMENTAL. So while the "experts" continue to estimate the additional radiation that they will permit the public to be exposed to, the public has NO assurance that they are being protected, regardless of any regulations promulgated by U.S. Environmental Protection Agency, and/or U.S. Nuclear Regulatory Commission, and/or the National Academy of Sciences.

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Then we have such "experts" in the field as Dr. Cyril L. Comar (now deceased) former Chairman of National Academy of Sciences, who produced a report on basic risk estimates widely used in the U.S. If the National Academy of Sciences doesn't NOW know the effects of low level radiation, WHAT did Comar contribute as Chairman of the NAS?? Were his risk estimates of the biological effects of radiation and nuclear fallout merely a vehicle of underestimation to promote nuclear power proliferation? Are any of the public aware of Comar's risk estimates or were his risk estimates made available to the public? Who will assume responsibility when it is found that Comar's estimates were incorrect? Did he have a conflict of interests in working both for the U.S. government in assessing risks and also working for the Electric Power Research Institute, a promotor of nuclear power?

In addition to the "experts" at the National Academy of Sciences not knowing the effects of low level radiation (or claiming not to), we have the "experts" at the American Cancer Society. Although the ACS has been collecting millions, if not billions of dollars over the years from the public to "wipe out cancer in your lifetime", and although the American Cancer Society has actively promoted chemo and radiation therapy for cancer victims, while denouncing any other treatment, they are only NOW starting to research the effects of low level radiation (or so they claim) Attached: "Rays Make Human Cells Malignant in Laboratory," N.Y. Times March 28, 1980. If they could not evaluate the risks of low levels of radiation in the past, how could these "experts" have the knowledge to force radiation therapy on cancer patients, knowing this therapy increases chances 26 times of generating a cancer in a secondary site??

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Again, even assuming that there is a "natural" background radiation exposure on which to base additional exposure, there is no way of monitoring unplanned releases or accidents, although the U.S. Environmental Protection Agency has told the public for years that it has the ability to monitor environmental radiation. New York State has also for years been telling the public that they are monitoring the fallout from the Chinese bomb testing, Cosmos crash in Canada, the accident at Three Mile Island, not to mention the routine releases from nuclear generating stations and other facilities. This monitoring system does NOT exist. New York State has only NOW had a bill introduced (11100 Radiologic Emergency Preparedness Act (REPA)) that would start a fund to pay for localized evacuation plans and "for monitoring systems". Even if such a monitoring system were instituted today, the NRC, itself, ~~XXX~~ in it's

Determination In the matter of whether the accident at the TMI nuclear station Unit 2, on March~~x~~ 28, 1979, constitutes an Extra-Ordinary Nuclear Occurrence as defined by Section 11(j) of the Atomic Energy Act and 10 CFR Part 140 of the Commission's regulations state in

2. Legal or Policy Issues

There will always be a significant margin of error in measurements of radiation offsite and in calculations with estimate offsite exposures or contamination levels.

So the U.S. NRC is seeking changes to radiation protections standards based on a non-existent figure of "natural" background radiation, while the adequacy of numerical dose limits for exposure to radiation are being considered in other forums, while there is no constant monitoring system in operation in the U.S., and even

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if such a system existed, "there will always be a significant margin of error¹ in measurements, and while the natural radiation of the earth should be declining, the environmental radiation is increasing by leaps and bounds through production of man-made radioactive materials, and proliferated by technologically enhanced activities. Each new radioactive spill, unplanned or planned release, (TMI 57,000 curies of Krypton 85) or unplanned (TMI March 28, 1979 accident) venting, atmospheric bomb testing by the nations of the world, French bunker testing in Polynesia, the 2000 lbs. of plutonium missing from the Appollo, Penna. plant, the nuclear submarine reactor buried off Maryland, the accident at the Chalk River, Canada, CANDU in 1952, the disposing of radioactive wastes by N.L. Industries into Patroon Creek, and so into the Hudson River, the dumping of nuclear wastes into the oceans, the loss of the nuclear attack submarine Scorpion in 1968, etc. etc., all add to the environmental radiation. As a result, NRC standards for occupational and public exposure should be consistently revised DOWN.

The NRC is attempting to build a radiation standard based on a fundamentally incorrect assumption that there is such a relative constant as a "natural" background radiation. An analogy is like trying to ~~fund~~ fund social programs based on an "average" American. Given that births and deaths are a constant of equal number, births and deaths per year, you could say the "average" American is 38 years old today, and fund programs based on that age group. Yet even as this "average" American is put down on paper, it is incorrect - as the average age has increased. So it is with environmental radiation, at

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any given time. The environmental radiation is rising due principally to man's activities. Even as you estimate a background radiation, in the real world it is going up daily. And this ever-increasing assault on humans is in addition to the unknown and/or synergistic effects of chemicals, microwave and electromagnetic pollution, as well as such personal assumptions of radiation exposure as medical uses and radiation from cigarettes that introduce lead 210, polonium 210, decay products of Radon 226, into the human body, and cigarette radiation that is introduced, at least in part, by tobacco farming with phosphate fertilizers.

The medical research "experts" blame the doubling of birth defects in some New York State counties on "background" radiation from rocks. If a truly natural background radiation can be expected to double the birth defects, in a geographic area that is supposed to have an estimated "natural" background radiation of only 150 millirem per year, what does the future hold for the children living in Colorado in homes built with radioactive tailings, or the Navajo children playing on uranium mining slag heaps and drinking the water from the runoff, or the people of Utah and Nevada exposed for years to Defense Department nuclear weapons testing, or the millions of people exposed to the routine releases of nuclear power plants??

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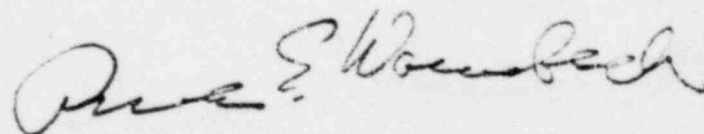
SUMMARY

There is no such thing as "natural" background radiation as defined by the U.S. Environmental Protection Agency, and on which the U.S. Nuclear Regulatory Commission bases its radiation protection standards. Natural radiation is only one component of an ENVIRONMENTAL radiation that also includes man-enhanced radiation and man-made radiation. Since your fundamental premise is incorrect, any comments on additional radiation exposure with the intent of truly protecting the public or workers, would add to the misconception and so, would also be incorrect.

RECOMMENDATION:

Any socially or technically "permissible dose" of additive radiation exposure must be based on environmental radiation levels, and since environmental radiation is increasing steadily due to man's activities, the only measurement of a particular geographic area must be done in the field and additional permissible doses based on this environmental^a measurement rather than the figures based on calculations, estimates, and models of an outdated thesis.

Wishing you sunny skies,



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