

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of)	
)	
PUBLIC SERVICE COMPANY OF)	Docket Nos. 50-443
NEW HAMPSHIRE, <u>et al.</u>)	50-444
)	
(Seabrook Station, Units)	
1 and 2))	

NECNP Comments on the Perkins Record

Pursuant to the May 30, 1978 order of the consolidated Appeal Board, the New England Coalition on Nuclear Pollution (NECNP or the Coalition) submits the following comments on the Perkins record^{1/} as it relates to the problem of the release of radon to the environment from uranium milling operations. These comments reflect an analysis of the Perkins record provided to the Coalition by Dr. Marvin Resnikoff of the State University of New York at Buffalo. Dr. Resnikoff is a high energy physicist and has assisted the Coalition as one of its science advisors on other matters relating to nuclear power.

NECNP does not request the Appeal Board to hold a further hearing on the Perkins record in the context of the licensing proceedings for the Seabrook Nuclear Power Plant. NECNP is considering whether to consolidate with Ecology Action of Oswego, the intervenor in the Sterling^{2/} case, which is at present working out an arrangement with the Staff of the

1/ In the Matter of Duke Power Company (Perkins Nuclear Station, Units 1, 2 and 3) Docket No. STN 50-488, 50-489, 50-490.

2/ In the Matter of Rochester Gas & Light Company (Sterling Power Project Unit No. 1) Docket No. STN 50-485.

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Nuclear Regulatory Commission to review the radon issue in a proceeding which includes several other plants. Whether this will be a hearing or will simply require preparation and submission of depositions and/or affidavits has not been decided. NECNP proposes to request the Appeal Board for the Sterling proceedings, at an appropriate time and if consolidation with other cases is to be allowed, to join with Ecology Action of Oswego.

NECNP does have a number of comments to make about the Perkins record, which is deficient in several important respects. To begin with, it is important to state that the deficiencies would have been far more egregious had Dr. Jordan been absent from the Licensing Board. His questions provide virtually the only probing of some of the most critical issues raised by the radon question. The ability of the Perkins record to serve as the "lead case" on this issue is directly due to his efforts.

The major deficiency in the record, which should be corrected by the receipt of additional evidence, is the lack of testimony from a qualified health physicist on the health effects of radon releases at low doses and low dose rates. Dr. Kepford had no expert witnesses on this subject and the pieces of evidence which he attempted to put in the record were disregarded. The Staff made no effort to bring forward witnesses qualified to testify in this area. Consequently, the Perkins record represents only the opinions of witnesses hired to give the utility's side of the story and the echoes of the NRC Staff. It reflects none of the evidence

of significant health impacts due to radiation releases at low doses/low dose rates which is being accumulated by well-respected physicians and scientists.

The result is an unbalanced and biased record, which unfairly characterizes the low dose effects work of a number of physicians and scientists. For example, references were made during the cross examination of Witness Hamilton (Tr. 2272 and 73) to the work of Drs. Mancuso, Stewart and Kneale on low dose effects in workers at Hanford, Washington, but the witness was not fully informed about the studies, and there was no adequate opportunity, indeed no opportunity at all, for refutation of his statements. Refutation is necessary because the issue is of such great importance, and also to counter the clear refusal of Hamilton and the other utility and Staff witnesses to give any credibility to the growing number of studies of significant low dose/low dose rate effects. See, for example, the attempt to discount the work of Bross with the work of Dr. Alice Stewart. (tr. 2643 et seq.) There is no foundation for Witness Hamilton's broadside against Bross or his other comments on the work of scientists and physicians referred to by Dr. Kepford in his cross examination.

NECNP would recommend supplementing the record with testimony on the subject of low dose/dose rate effects from K.Z. Morgan, Thomas Mancuso, Alice Stewart or Arthur Tamplin. A full record on this subject is important because, as acknowledged by the NRC Staff, the Commission at present has

no position on radon and its health effects, although it hopes to develop one through the generic environmental impact statement process. (tr. 2490)

The more specific question of whether the health effects due to radon exposure are conservative because the linear hypothesis used to predict them is an extrapolation from high dose/high dose rate results and because repair mechanisms exist at low dose rates should also be explored. Hamilton states (tr. 2271) that he knows of no study which reaches the opposite conclusions, although there are several, notably the work of Dr. Thomas Mancuso on employees at the atomic facility in Hanford, Washington.

A major thesis of Staff and Applicant testimony is that radon emissions will be insignificant compared to the blanket of background radiation humankind has been living under since we came out of the sea, and consequently need not be of concern.

To begin with, the emissions are only insignificant when they are considered for one plant and one year of operation. (tr. 2277) If all radon emissions attributed to all nuclear plants for their entire license periods are considered, as Dr. Robert Pohl has done, the radon emitted will amount to 3% of background, a significant contribution. It is this total which ought to be assessed, since a number of nuclear plants will be operating with 30 or 40 year license periods. Each one will require substantial quantities of uranium which will release radon during the mining and milling operations. The assessment should not be left for the generic environmental impact statement. The Commission directed individual Appeal

and Licensing Boards to carry out the evaluation and resolution of the radon question, and in particular "to receive new evidence on radon releases and on health effects resulting from radon releases". 43 Federal Register at 15615-16. As Dr. Jordan correctly pointed out, limiting the calculation to one Perkins unit for one year of operation does not provide any realistic idea of either the quantity or impact of the radon to be released. (tr. 2277) No proceeding has yet been concerned with the cumulative amount of radon which will be produced. Before the impact represented by individual reactors can be correctly stated, the overall contribution of radon from mining and milling ought to be calculated.

Secondly, the argument that the additional radon emanating from a mill tailings pile provides a negligible contribution to natural background implies that natural background radiation causes no health effects and therefore, that additional small contributions to it will not be inimical to human health. (Hamilton direct testimony post tr. 2265) Neither of these assumptions is correct. Evidence indicates that background radiation, as it has been augmented by human activities, already causes damage to human health. Even small increments may well increase that damage.

The NRC is not licensing background radiation. Thus the risks of radon releases from uranium milling should be compared, not to background, but to the risks of generating electricity by other means.

NECNP views as irresponsible the argument that releases

of radon from uranium milling are inconsequential because they are small compared to background. Background radiation levels are not static. Every release due to human activities adds to the pre-existing level. The amount of radon from milling may be small, but the level of background radiation will continue to rise, with resulting impacts on human health.

The Staff appears to be moving in the direction of a standard which would limit emissions from mill tailings piles to twice background levels. (tr. 2402, 2452) The record contains no discussion, evidence or testimony on the development or rationale for such a standard. Additional testimony is required, if this is indeed to be the NRC's criteria for mill tailings emissions. In particular, the record should reflect how and at what time the measurement of background will be made, how the twice background level standard was determined to be appropriate and how it will be met and enforced. The Staff has acknowledged that, at present, there is no way of meeting a twice background standard, and that the NRC lacks the authority and the regulatory scheme to enforce it. (tr. 2452) The Staff alludes to government ownership of tailings pile sites, but provides no plans or information on such a program or the perpetual maintenance which would seem to be required. (tr. 2454)

A second major deficiency in the Perkins record concerns the length of time for which calculations of radon effects must be made. Radon will be emitted from a mill tailings pile essentially forever. However, the Staff has estimated the emissions for only 1,000 years at one point and 10,000 years

Neither of these figures bears any relationship to the life of radon. Relying on a period of 1,000 or 10,000 years overestimates the health effects due to coal and underestimates those due to nuclear energy. Calculations which represent the full life of a uranium mill tailings pile, as compared to the full life of a coal ash pile, will show greater health effects from milling of uranium than for production and use of coal.

Witness Goldman appears to have this issue confused. In his direct testimony he testifies that a coal fly ash pile could contain a uranium concentration of 0.7%, an amount greater than is found in most uranium ore. This may represent the uranium concentration in one particular coal flyash pile but it is not an average concentration as is clear from Dr. Jordan's cross examination at tr. 2335-2339. As a general matter, the uranium in a coal flyash pile is less than that in a mill tailings pile, and although radon is released from both, it is a numbers game to assert that the impacts of the radon released from the flyash pile are more severe than the impacts of radon emitted by mill tailings.

The heart of the Staff and Applicant argument that a 1,000 year cut-off period is appropriate is the rationalization that it is impossible to determine what world conditions will be beyond that time. The record is full of speculations, from persons totally unqualified to make them, that a new Ice Age is upon us, that cancer will be cured, that world population level will fall and so on.

Such speculations do not excuse the Staff from considering

the full toxicity period for radon and (calculating the total health effects. Any party can speculate on what may happen in the future. NECNP's guesses will have no more or less validity than anyone else's. (We would venture to say, however, that any Intervenor witness who prophesized that the glaciers are coming would be promptly and thoroughly discounted). The one thing which is known and certain is that radon will continue to be produced from mill tailings piles beyond 1,000 years and even beyond 10,000 years. Because the NRC is making decisions today concerning the licensing of nuclear plants, it is making decisions which will cause radon to be present in the human environment for the nearly infinite future. As a consequence, it is for the NRC to decide now whether the health risks to human populations, both present and future, are justified. No one else, now or in the future, can make that decision. No one can undo what will be done as a result of milling uranium this year, next year or ten years from now.

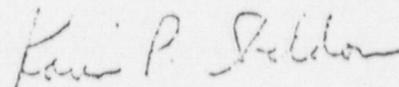
The NRC's decisions involve ethical and moral as well as technical elements. Is it morally right to commit tomorrow's human populations to the costs of nuclear power when none of the benefits extend to them? NECNP thinks not. Yet the record is devoid of testimony from philosophers or representatives of the clergy on this important question. NECNP would recommend reopening the record for the introduction of such evidence.

There is no justification for counting to 1,000 years when the Staff knows that in year 1,001 radon will be produced. The only rationale is an attempt to make nuclear energy appear

to be less harmful than coal generated energy. This may be true for a certain time period, but not for the full life of the radon to be produced in uranium milling.

In addition to its general concerns, NECNP has the following additional comment on the Perkins record. The Staff argues that the mill tailings piles will be permanently covered with earth, which will reduce or eliminate radon releases in the environment. This is wishful thinking. There are no regulations which require covering mill tailings piles. (See tr. 2334) Even if such regulations were passed, it is unlikely that they would be applicable or effective in Agreement States. The cost of covering and maintaining mill tailings piles may raise the price of natural uranium, and thus the cost of nuclear power, perhaps to an unacceptable level. Finally, the NRC has no long term experience with covered tailings piles on which to base predictions of their success in minimizing radon releases. It is another case of the NRC believing that technology and the future will take care of everything.

Respectfully submitted:



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DATED: August 28, 1978