

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARDS

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In the Matters of

METROPOLITAN EDISON COMPANY et al.  
(Three Mile Island Nuclear Station,  
Unit No. 2)  
PHILADELPHIA ELECTRIC COMPANY et al.  
(Peach Bottom Atomic Power Station,  
Units 2 and 3)

Docket No. 50-320

Docket Nos. 50-277  
50-278

and

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|-------------|--------|-----|--------|
| Docket Nos. | 50-338 | STN | 50-432 |
|             | 50-339 | STN | 50-484 |
|             | 50-354 | STN | 50-485 |
|             | 50-355 | STN | 50-491 |
|             | 50-389 | STN | 50-492 |
|             | 50-400 | STN | 50-493 |
|             | 50-401 | STN | 50-518 |
|             | 50-402 | STN | 50-519 |
|             | 50-403 | STN | 50-520 |
|             | 50-443 | STN | 50-521 |
|             | 50-444 | STN | 50-546 |
|             | 50-482 | STN | 50-547 |
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|             | 50-553 |     |        |
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IN RESPONSE TO THE DE MINIMUS THEORY AND ALAB-509

In ALAB-509, the Atomic Safety and Licensing Appeal Board ("Appeal Board") requires that the intervenors in the Three Mile Island, Unit 2 ("TMI-2")

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and Peach Bottom, ("PB")<sup>1</sup> licensing proceedings must address a certain theory of the Perkins licensing board, known as the "de minimus theory."<sup>1a</sup> The same theory was earlier proposed by the TMI-2 licensing board. See para. 124-127, 129(K), and 130 of the TMI-2 Initial Decision, dated December 19, 1977. Dr. Kepford, in his capacity as representative of the TMI-2 Intervenor, has already criticized this theory repeatedly, testified in opposition to the theory, and addressed the theory previously in briefs. At least seven documents filed by the TMI-2 Intervenor previously indicate that the positions taken by the staff, applicant, and licensing board with regard to the radon issue reflect a relentless, single-minded bias towards disregarding the significant and substantial releases of radon-222 to the environment, releases which are directly attributable to the continued operation of commercial nuclear reactors. All previous material on this subject filed by the TMI-2 Intervenor or presented orally should hereby be considered incorporated by reference into this response to the de minimus theory and ALAB-509. The purpose of this incorporation by reference is two-fold. First, the TMI-2 Intervenor and the PB Intervenor wish to take advantage of the wealth of information in opposition to the de minimus theory which previously has been advanced by the TMI-2 Intervenor. Second, it would be redundant and costly for these Intervenor to reproduce all such previous arguments below. It is time for the Appeal Board to do its homework

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<sup>1</sup> The Intervenor in Peach Bottom, Units 2 and 3, adopt those portions of this response to ALAB-509 which apply to the PB proceeding. Furthermore, all defects attributed to the Perkins proceeding which also apply to the TMI-2 and/or PB proceedings shall be deemed to have been identified with respect to such other proceedings as well.

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"Based on the record available to this Board, we find that the best mechanism available to characterize the significance of the radon releases associated with the mining and milling of the nuclear fuel for the Perkins facility is to compare such releases with those associated with natural background. The increase in background associated with Perkins is so small compared with background and so small in comparison with the fluctuations in background, as to be completely

and get around to reading the information on this subject previously submitted by the TMI-2 Intervenors. The TMI-2 Intervenors have already assumed much greater a burden than the law imposes in repeatedly bringing these arguments to the NRC's attention. It is scandalous that the Appeal Board did not, in response to these prior filings, inter the de minimus theory long ago. Evidently the prior filings have not yet been read by the Appeal Board. Alternatively, we can only conclude that the Appeal Board, as well as the TMI-2 and Perkins licensing boards and the Staff, are engaged in a conscious and continuing, determined and deliberate conspiracy to violate NEPA and to ignore, wantonly and willfully, the basic requirement of the Atomic Energy Act, as amended, and the Energy Reorganization Act of 1974, as amended, that the health and safety of the public must be served by the decisions of the NRC.

Footnote 12 of ALAB-509 requires the Staff to serve this response upon all parties in the other proceedings governed by ALAB-509. It may be assumed that the attorneys for the various utilities involved have already sent their law clerks to the NRC's document room to peruse the many filings which the TMI-2 Intervenors submitted in opposition to the TMI-2 licensing board's version of the de minimus theory. In response to the Staff's motion to consolidate of last April, the TMI-2 Intervenors specifically requested that copies of various of their filings on the radon issue be disseminated to the citizen groups who have intervened in the other affected licensing proceedings. Predictably, the Staff declined to disseminate these materials to the other intervenors, further corroborating that the Staff is not interested in a full ventilation of the radon issue. The Appeal Board did not deter the Staff from such inaction. Since these documents have now been incorporated by reference into this current response to the de minimus theory, and since this response must in turn be sent by the Staff to all the parties, we

It is (continued) undetectable. Under such circumstance, the impact cannot be significant." (Perkins Initial Decision, para. 51.)

expect that the other affected intervenors will soon receive copies of the following:

1. TMI-2 Intervenor's December 19, 1977, letter to the TMI-2 licensing board, pages 1-3.
2. TMI-2 Intervenor's December 30, 1977, Exceptions to the Initial Decision, para. 23, 24, 29-35, 37, 38, and 40-44.
3. TMI-2 Intervenor's January 13, 1978, Supplemental Memorandum in Support of Motion for Stay of the Initial Decision, pages 1-6.
4. TMI-2 Intervenor's January 30, 1978, Brief in Support of Exceptions to the Initial Decision, pages 24-57.
5. TMI-2 Intervenor's February 8, 1978, Appeal to the Commissioners for a Stay of the Initial Decision, pages 1-4.
6. TMI-2 Intervenor's February 18, 1978, letter to the Commissioners.
7. TMI-2 Intervenor's June 12, 1978, Appeal to the Commissioners from an Appeal Board Order on the Grounds of Fraud and on other Grounds, pages 1-55.

ALAB-509 departs abruptly and without explanation from the procedures outlined in ALAB-480 for addressing the radon problem. In ALAB-480, the Appeal Board ordered the parties to review the Perkins transcript and provided a brief 14 day opportunity to offer comments and criticisms of the Perkins proceeding (ALAB-480, pages 18-19). Each party requesting the opportunity to supplement the Perkins proceeding with additional information was to be given the option of deferring submission of a critique of the Perkins Initial Decision until his or her own request to supplement the information already in the Perkins record had been ruled upon (ALAB-480, page 19).

In the Perkins proceeding, the NRC Staff and the Perkins Applicant were given many months to prime their dozen or so witnesses for the evidentiary proceeding. The Staff had been working on a means to obfuscate the radon issue since at least January, 1977, if not several years earlier. By contrast, the Perkins Intervenor's, despite requests for additional preparation time,

were provided with less than a single week's time for their witness to prepare his testimony. A wholly artificial climate of rush was conducted by the Perkins Applicant, and the sole witness whom the Perkins Intervenors were able to secure in that time was therefore not heard and questioned before the licensing board itself, but was relegated instead to a testimony by deposition. To add further insult to injury, the Perkins licensing board deleted much of the most damaging testimony presented by the Intervenors' sole witness from the official Perkins record. The injury was compounded further by the crucial fact that Perkins had already been designated by ALAB-480 as the lead decision on radon for all other pending licensing proceedings. It might therefore reasonably be expected that the numerous affected intervenor groups might wish to supplement the grossly and intentionally imbalanced record produced by the Perkins proceeding. Conveniently, the Staff's refusal to forward to all parties the relevant prior filings of the TMI-2 Intervenors on the radon, as requested, served exclusively to prevent many of the other Intervenor groups from responding intelligently to the distortions inherent in the Perkins proceeding.

With ALAB-509, the Appeal Board chose suddenly to alter the ground rules established by ALAB-480, and to thrust additional (and, for the TMI-2 Intervenors, repetitious) evidentiary, procedural, as well as financial burdens upon the already beleaguered intervenors. Under ALAB-509, those intervenor groups who disagree with certain conclusions of the Perkins licensing board must now file briefs on the Perkins board's version of the de minimus theory, even prior to disposition of their various requests that the Perkins record be supplemented. ALAB-509 does not explicitly place such additional burdens upon intervenors alone, but it may be assumed that the utilities were not displeased by the outcome in Perkins, and that the utilities therefore

will not file briefs disputing the de minimus theory. The submissions under ALAB-480, whereby the intervenors in several cases requested that the Perkins record be supplemented, continue to gather dust and mold in some NRC closet. These ALAB-480 submissions were filed even though only a fourteen day period was provided for such submissions. The NRC has since been sitting on these submissions in excess of six months.

None of these other intervenor groups were parties to the Perkins proceeding, and they should not be subjected to the enormous burden of pinpointing the numerous fallacies to which the Perkins licensing board has succumbed. This burden of proof must legally rest upon the NRC Staff and the various Applicants. Similarly, under part 2.785 of the Commission's own rules, this burden may not be selectively transferred to the Intervenor. As noted by the United States Court of Appeals for the District of Columbia Circuit, in *Calvert Cliffs' v. USAEC*, 449 F. 2d 1109 (D.C. Cir. 1970)(footnote omitted):

It is, moreover, unrealistic to assume that there will always be an intervenor with the information, energy and money required to challenge a staff recommendation which ignores environmental costs. NEPA establishes environmental protection as an integral part of the Atomic Energy Commission's basic mandate. The primary responsibility for fulfilling that mandate lies with the Commission. Its responsibility is not simply to sit back, like an umpire, and resolve adversary contentions at the hearing stage. Rather, it must itself take the initiative of considering environmental values at every distinctive and comprehensive stage of the process beyond the staff's evaluation and recommendation.

NEPA clearly places the burden of consideration of environmental impacts and alternatives upon the NRC. Similarly, it is the NRC that is required to justify its decisions under the Administrative Procedure Act. These and the other statutes which legally must guide the agency's licensing process do not authorize the Appeal Board to place the initial and predominant burdens of proof on the citizens who participate in the administrative process. It is not incumbent upon these citizens to elicit from the agency actions mandated by its own statutory obligations.

ALAB-509 further extends a protective cover to the Staff's continuing evasion of its legal responsibilities. The November 1975 rulemaking petition filed by the New England Coalition on Nuclear Pollution contained prima facie evidence that the number of curies of radon-222 then considered by Table S-3 was severely in error. This petition included the original report by Dr. Robert Pohl, in which the duration of radon releases due to the decay of Thorium-230 was described. In view of this petition, and particularly in view of the numerous subsequent filings by the intervenors in the TMI-2 proceeding, the burden of proof rests squarely and fully with the NRC and with all Applicants for licenses, including those who have been granted licenses already. As noted by at least one United States District Court, in *Sierra Club v. Froehke*, 359 F. Supp. 1289, 1335 (S.D. Texas, 1970):

If the burden were placed wholly upon citizen plaintiffs, the full disclosure requirements of NEPA would never be implemented satisfactorily and environmental protection as contemplated by Congress would be little more than a fiction. Accordingly, once a prima facie showing has been made that the federal agency has failed to adhere to the requirements of NEPA, the burden must, as a general rule, be laid upon this same agency which has the labor and public resources to make the proper environmental assessment and support it by a preponderance of the evidence contained in the impact statement.

Throughout the TMI-2 proceeding, the Staff has avoided assuming any of its burdens of proof on the radon emissions issue. Similarly, in order to comply with ALAB-509, the intervenors in Sterling and Tyrone were compelled to seek discovery from the Staff to determine whether information on radon releases was available to the Staff but had not been made publicly available even in the Perkins proceeding. Considering the prior Staff conduct on the radon issue, it is not surprising that this discovery produced material on numerous aspects of the radon problem which the Staff had not previously divulged.

As was observed by the Perkins licensing board (para. 24-25 of the Perkins Initial Decision), the quantities of radon to be released due to the operation of Perkins are truly prodigious. These quantities are released to the environment at large and constitute the largest source of emissions of any radionuclides associated with the nuclear fuel cycle. The total radon emissions attributable to the operation of Perkins will be larger than the maximum fission product inventories of Perkins, assuming the Perkins reactors someday achieve operation, however incompatible such a result would be with the existing state of the law.

When the number of curies of radon considered by the Commission to be attributable to the annual fuel requirement was 74.5 curies, that number was deemed to be significant and was therefore incorporated as such into the Commission's regulations under Table S-3, because it represented the contribution of curies from the nuclear fuel cycle due to the radon emissions. Yet suddenly, after the correct value for radon has been shown in reality to be between 100,000 times and 1,000,000,000 times larger, the TMI-2 and Perkins licensing boards have had the audacity to suggest that the corresponding vastly larger numbers of curies which must now be considered should be deemed insignificant.

The de minimus theory is an unabashed attempt by the NRC to avoid the substantial adverse public health consequences resulting from the radon emission. The de minimus theory is an artificial construct of the NRC's imagination devised to avoid the need to comply with its obligation to protect the health and safety of the public under the Atomic Energy Act and the Energy Reorganization Act, and similarly to postpone the need to comply with NEPA indefinitely, if possible. The e statutes do not permit the NRC to ignore the single largest long-term source of radioactive emissions identified to



date with the uranium fuel cycle. Potentially at stake is the need to halt all licensing of commercial nuclear reactors immediately until a genuine and permanent solution to the radon problem has been devised and implemented, in accordance with NEPA and the Atomic Energy Act. The TMI-2 and Perkins licensing boards chose instead to continue the NRC's standard policy of rubber stamping all licensing proposals regardless of the public health consequences or the mandates of the applicable statutes.

Just how small or large in comparison to natural background the radon gas resulting from plant operation will be will not be discussed here. Nor will we discuss here whether the relevant natural background, if any, should be restricted to a land area far smaller than the entirety of the continental United States. ALAB-509 specifically limits the present discussion to the unfounded assumption that the quantities of radon considered by the Perkins Board to result from plant operation and natural background are correct. We have only been asked to comment on the assumption that the radon releases from plant operation should be deemed insignificant if it is determined that they are small by comparison to the total radon released from all other sources within the continental United States.

We must begin by observing that it is premature to be considering such questions at all in view of the NRC Staff's continuing refusal to reveal to all of the parties covered by ALAB-509 all of the information available the Staff has on radon. As noted above in the case of the Sterling and Tyrone Intervenors, the process of extracting such information from the Staff continues, and the Staff has not yet agreed voluntarily to divulge all such information even at this late date. Under the applicable statutes and burdens of proof the Staff should not only long ago have voluntarily disclosed such information, but should also have initiated a coordinated effort to address the radon

problem in a manner befitting its legal responsibilities, which it has not.

For example, the Perkins licensing board (para. 13 of the Perkins Initial Decision) adopted the Staff's estimates of the radon emissions attributable to the mining of uranium ore. It remains to be seen, and surely the Staff has not yet demonstrated, whether these values are anywhere near correct. On the basis of data which the Staff was literally compelled to produce upon discovery, Ms. Sue Reinert of the Sterling Intervenor believes that the Staff's own data show its estimates before the Perkins licensing board to be far too low in the case of uranium mining. This example is simply the most recent evidence that the Staff continues to be derelict in the extreme in keeping the parties to this proceeding, as well as the Commission's licensing boards and Appeal Board, informed of exactly what information it has on the radon emissions. One cannot accept the Perkins assumptions regarding the radon emissions rates from mining as valid until accurate and complete radon emissions data have been made available to the parties to this proceeding. The same is true of radon emissions data from the other portions of the uranium fuel cycle. The Staff has failed in its burden of proof, and cannot even be said to have shown whether the radon releases from the nuclear fuel cycle are small in comparison to background, as is claimed in the de minimus theory.

Considering the state of the record, the TMI-2 and PB Intervenor aver that the Staff has not yet terminated its long-standing policy of concealing, wherever possible, the magnitude and duration of the radon emissions resulting from the nuclear fuel cycle. The Staff did not volunteer to acknowledge within Table S-3 the reality of radioactive decay, which produces radon gas, as a result of the current fuel requirements of nuclear reactors, virtually

forever. Nor did the Staff come forth of its own volition with information on the additional significant radon emissions from abandoned open pit mines (Perkins tr. 2465-2467). The TMI-2 intervenors, rather than the Staff, first raised the question of the magnitude of radon emissions from abandoned mill tailings piles in an NRC licensing context, on July 5, 1977. Prior to that date, the NRC and the AEC before it had virtually outlawed recognition of all but an infinitesimal portion of the nuclear fuel cycle's radon emission, by the development and deployment of Table S-3.

Among other things, the Staff has not yet discussed the possibility of elevated radon emissions from the overburdens removed during open pit minings nor has the Staff assessed emissions from excess materials, called mine tailings, which are removed during deep mining. The Staff has not commented on the possibility that many deep mines have natural convective ventilation systems, nor has the Staff evaluated how long such systems will stay sealed, if they even can be sealed. Furthermore, the Staff has not discussed the radon problem in the context of the nondiscretionary requirements of NEPA. Since these and many other legal obligations of the Staff have been flouted without reprimand or even mention by the Appeal Board, it is difficult to escape the conclusion that the entire process mandated by ALAB-480 and ALAB-509 is a frivolous exercise in futility, the purpose of which is to divert attention away from the continuing failures of the Staff, Appeal Board, and the Commission itself to discharge their nondiscretionary obligations, the continued granting of construction permits and operating licenses for nuclear reactors for which there are no completed Environmental Impact Statements (EIS) on the entire radon problem, and the deliberate, physical and financial exhaustion of the various intervenors. Nothing associated with this elaborate shift of the burden of proof away from the Staff and Applicant and onto the intervenors, which shift

is mandated by the procedure devised by ALAB-420 and ALAB-509, moves in the direction of the satisfaction of NEPA or the Commission's obligation to protect the health and safety of the public. However, since this is the only game in town, and it must be played in order for citizen participants to "exhaust" their administrative "remedies", the TMI-2 and PB Intervenor's must play on and are firmly determined to do so.

The Licensing Board assumes (Perkins I.D., para. 9) that all open pit mines will be "reclaimed" within 100 years. For good reason, no citations to the Perkins record are given for this sweeping assumption, since none exist. To be sure, mine reclamation was discussed in Perkins. But if state mining laws are given the same respect as the Commission's rules and statutory obligations (see above) in this proceeding, the prospects of serious mine reclamation efforts are indeed dim or non-existent.

There still are other subjects which the Staff has not yet addressed, such as the period over which future mine reclamations might be expected to remain intact and the extent of any trade-offs between air-pollution problems (radon emissions) and water pollution problems (radium and radon dissolved in ground waters) as a result of any future efforts to stabilize the abandoned piles. In reaching its conclusion regarding the reclamation of open pit mines, the Perkins licensing board stopped short of mentioning several of the most elementary and necessary steps in mine reclamation, such as who will order that the reclamation must be done, who will pay the costs, how must the costs be included in a cost-benefit analysis now, and how and when will NEPA be satisfied in the current context of the licensing process, in which the NRC continues to take "major federal action" requiring uranium from such mines. It is difficult in the extreme to reconcile these and other of the many sweeping assumptions of the Perkins licensing board with the

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Commission's rules, part 2.760(c), which state:

An initial decision... will be based on the whole record and supported by reliable, probative, and substantial evidence.

Indeed, it is not surprising that the Perkins record contains no discussion whatsoever about the permanence of uranium mine reclamation efforts, since such information would not further the intended objective of rubber stamping.

Lastly, before abandoning the mining area, the Perkins licensing board poses two questions regarding reclamation:

What if we are wrong? Would radon from this source impose a serious burden on future generations?

The Perkins response to these basic questions is to assume that future generations of people would, of course, repair any damage which the NRC will have bequeathed to them as a legacy. We will return to a similar point in the discussion of the current outlook for reclamation of the abandoned mill tailings piles. Initially, however, it should be noted that NEPA isn't worth the paper it's printed on if the NRC can ignore the significant long-term adverse public health consequences which a continued policy of inaction on radon will inevitably generate. Compare Section 101(b)(3) of NEPA.

The licensing board in Perkins left no stone unturned in its quest to concoct reasons not found in the evidentiary record to relegate to obscurity the problem of long-term radon emissions from abandoned uranium mill tailings piles. In achieving this accomplishment of dubious merit, Perkins simply turns its back on what the licensing board must have viewed as the more "disagreeable" parts of the evidentiary record. Furthermore, where the board's overlooking of the facts brought forth on the evidentiary record would have been most striking, the board chose summarily to expunge the damaging material from the record.

For example, in paragraphs 26 and 32 of the Perkins Initial Decision, without any basis whatsoever of "reliable, probative, and substantial evidence" (10 CFR part 2.760(c)), the Perkins licensing board assumes, more so than did any witness, that the abandoned mill tailings piles could be stabilized in a somewhat permanent way. No justification is given by the Perkins licensing board for this abrupt departure from reliance upon the evidentiary record. Yet, once having made this break from the requirement of evidence, the Perkins board was then forced also to assume that

if there are people around to breathe radon, those people can readily repair any damage to the piles. (Perkins Initial Decision, para. 32).

To reach this groundless and astounding conclusion, the Perkins licensing board was forced to make even more outlandish assumptions about the analytical, political, and technological abilities and resources of societies of the future, which abilities and resources would have to exceed the demonstrated capabilities of even our own society.

Before any future peoples can respond intelligently to the problem of the mill tailing piles created to fuel the Perkins reactors, they must be able to perceive some level of need to focus attention on the piles themselves. These future peoples must, the board assumes, be able to detect the virtually permanent and uniform increases in cancer incidence and mortality resulting from the piles, while simultaneously associating this increase with radon emissions from the Perkins mill tailings piles. The established mechanisms for recognizing the sources of such increases in the context of the current licensing process, which produces this problem in the first instance, are being subverted and continue to be subverted by the Commission today.

Such epidemiological feats of future inhabitants of the earth as are assumed by the Perkins board must be placed in the context of our present

ability to identify causes of changes in cancer mortality. Since 1920, the death rate due to cancer has more than doubled in the U.S. However, no specific causes for this dramatic increase have yet been identified except for general accusations of changes in cigarette smoking habits or generalized environmental pollution. The Perkins licensing board is strangely silent on the question of how a future society will achieve a feat that has apparently eluded our own best epidemiologists.

Another aspect of this same problem concerns the political overtones of the radiation effects controversy. If the history of the mill tailings controversy in the last 30 or so years in the U.S. is any indication of what the future might hold for these future societies, then there is absolutely no validity to the licensing board's assumption. (See The Atomic Establishment, H. Peter Metzger, Simon and Schuster, 1972, pages 117 through 198. See also "Intervenors' Appeal from an Appeal Board Order on the Grounds of Fraud and on Other Grounds," June 12, 1978, submitted in the TMI-2 proceeding.). For most of the last 30 years, various branches of the federal government have vehemently denied any responsibility for the mill tailings piles and even have denied that any "effects" (deaths due to cancer) result from the emanations from these piles. Howls of anguish, unqualified denials, and economic reprisals accompany all contemporary suggestions that radiation effects are poorly understood and grossly underestimated. (Witness the treatment accorded dissenters from official radiation dogma, such as Linus Pauling, John Gofman, Arthur Tamplin, Ernest Sternglass, Thomas Mancuso, Irwin Bross, and Alice Stewart, to name only a few). The Perkins licensing board would have us assume that the future societies would be significantly less dogmatic, less autocratic, less repressive, more scientific, more inclined to consider new information where human life itself is at stake, and more disposed and able to spend money on

public health measures than our present society. Nothing in the Perkins proceeding supports such a wishful and flamboyant proposition. The licensing board makes no mention of how many more people must die before these future societies take the remedial actions which the Perkins board is unwilling to take, but is more than willing to rely upon future generations to take. The radon problem continues to grow and will become increasingly more insoluble as basic research efforts are avoided and nuclear reactors continue to be licensed.

The current proposals for stabilization of mill tailings piles were admitted by Staff Witness Gotchy to provide only a temporary and transitory solution (Gotchy testimony, page 4), and offer more on the side of illusion and less in the nature of a solution to the mill tailings problem. In his deposition in the Perkins proceeding, the Intervenor's witness Dr. Kepford assumed no stabilization of the piles because, after a few decades if not substantially sooner, the supposedly stabilized piles would again become bare and exposed by action of the elements. The small quantity of radon which the stabilization held back would be unnoticeable compared to what would thereafter escape. Furthermore, there is ample reason to believe that even the stabilization discussed by Gotchy will not occur, since it hasn't occurred to date.

The Perkins licensing board also dredges up the spectre of an ice age within the next 10,000 years (Initial Decision, para. 32) to justify its summary dismissal of the radon problem. If this board had the slightest respect for the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, or NEPA, or even the Commission's own rules, it would have realized that the appropriate solution is not to use any conceivable excuse, however undemonstrable, to turn its back on the problem. Rather, the appropriate response is to confront the issue by requiring the disposal of the



mill tailings where they will be secure from erosion, glacially induced or otherwise, for the duration of the toxic period of the wastes.<sup>2</sup> Had this licensing board been sensitive to its statutory responsibilities or had it wished to exercise its independent reviewing authority, rather than merely machine-stamp another construction permit, the board would at least have displayed some recognition of its statutory obligations and the requirements of the Commission's rules. As the Supreme Court has stated

The Commission's prime area of concern in the licensing context...is public health and safety. (Vermont Yankee v. N.R.D.C., 1978, Slip Opinion, page 28).

It should be noted, furthermore, that the Perkins board (Initial Decision, para. 47) demonstrated its inability or refusal to comprehend and characterize accurately the Kepford testimony. In this paragraph of the Initial Decision, the Perkins board asserts that Kepford did not consider radioactive decay of the radon plume traveling across the U.S. This assertion is patently false (see Kepford's prepared Perkins testimony, pages 4-5).

The TMI-2 and Perkins licensing boards did not provide any reasoning to support their reliance upon the de minimus theory, in blatant defiance of the requirements of the Administrative Procedure Act. To remedy this gross departure from standard administrative practice, ALAB-509 forces the

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<sup>2</sup> See NRDC v. Vermont Yankee, 547 F.2d, 633, 639, n.12 (D.C. Cir. 1976) (reversed on other grounds). Since it has not been, and cannot be, shown that the radon emissions from the abandoned mines and mine and mill tailings piles are significantly less toxic than the high-level wastes over long periods of time, the appropriate period for the NRC to consider these problems is "the full detoxification period." Until such disposal is available, licensing should stop and current licenses should be withdrawn.

intervenors to rebut a theory for which no justification has been provided by the administrative agency itself, apparently hoping that the utilities and Staff can then appear to counter the arguments of the Intervenor and thereby lend the pretense of rational support to the agency's reflexive resort to bias and obfuscation.

The discussion, if any, by the Perkins board of the cost-benefit analysis which allegedly justified granting of the construction permits was not forwarded in the Perkins materials which the Staff sent to the TMI-2 and PB Intervenor. As stated in the Perkins Initial Decision, the cost-benefit analysis for Perkins was the subject of a March 7, 1977, hearing before the Perkins licensing board, where a Staff witness appeared to discuss the analysis (Perkins Initial Decision, para. 1). Yet the transcript of this hearing has not been provided to the TMI-2 and PB Intervenor, who are required to refute the presumed reliance of this analysis upon the de minimus theory, and are warned by the Appeal Board that any failure to criticize the theory at this time may be dispositive, since a further opportunity to rebut the theory may not be provided (ALAB -509, page 10 at n.13). We therefore will assume that the Perkins cost-benefit analysis relies upon the same manner of subterfuge as did the analysis which supposedly warranted the granting of an operating license to TMI-2.

The Perkins licensing board intensified its assault upon the laws of physics governing radioactive decay, the Commission's rules (10 CFR part s.760(c)), and reason itself in concluding that:

The benefits are certain--the impacts hypothetical (Initial Decision, para. 49).

As noted above, we cannot actually criticize the cost-benefit analysis which led the Perkins board to this conclusion because the Staff has not seen fit

to provide the Parties with a copy of such analysis, if such an analysis does exist. Nevertheless, Perkins may be assumed similar to all other nuclear licensing proceedings of the current vintage, in which event the supposed "benefit" of the Perkins reactors is equivalent to the net anticipated generating capacity of these reactors. Compare the TMI-2 Initial Decision, para. 122. Monetizing this supposed benefit is a bit more difficult, since it may not be assumed that an additional benefit accrues to consumers simply because a utility may have developed the ability to obtain significantly higher monopoly profits than a free market would support. Further complications arise, for example, upon consideration of the enormous excess generating capacity for which the consuming public is already paying, both in the form of excess prices and as a result of the tax advantages accruing to the owners of the utilities once all relevant permits have been issued. In any event, one might assume that the anticipated benefit of the three Perkins units would be calculated by the NRC to be approximately  $2.6 \times 10^{10}$  kw-hrs/year.

To determine the "costs" of Perkins, alleged by the licensing board to be hypothetical, the manner in which these costs arise must be considered. It is certainly hoped that the licensing board did not lapse into the standard NRC habit of disregarding the occurrence of radioactive decay whenever convenient for the purpose at hand. Significantly, the board found no errors in mathematics in the Kepford testimony (Initial Decision, para. 14, 25) on this very subject.

The remaining ingredients of the health costs relevant to ALAB-509 are the radon gas escaping to the atmosphere as a result of the operation of Perkins and the people who must breathe this radon and consume food products containing its decay products. As even the Perkins board observed (Initial Decision, para. 25) at 10,000 years Staff Witness Gotchy and Kepford agreed on the quantity of radon released: the feeble efforts of the NRC to achieve

stabilization of the piles would produce no difference at even such a modest time projection. The Perkins board then chooses to disregard the substantial adverse health consequences to future generations from this radon, without support in the record, by the artifice of simply opting without explanation for the short-term uses of the electricity from Perkins, while ignoring the devastating long-term consequences of the radon gas which will result from operation of the Perkins reactors:

Such releases and impacts [of the radon-222 emissions] are insignificant in striking the cost-benefit analysis... (Initial Decision, para. 52)

The device upon which the Perkins board relies to achieve its unsupported conclusion is nothing more than the de minimus theory of the earlier TMI-2 licensing board.

The de minimus theory selectively deflates the staggering health costs of reactor operation due to radon by comparing such costs to a figure which is irrelevant but large in proportions, while providing no such equivalent comparison to the supposed "benefits" of plant operation. The enormous comparative "cost" upon which the Perkins board relies is a crude estimation of the quantity of radon which naturally emits from the land area of the entire continental United States. However, the quantities of radon resulting from even a single year's operation of one of the Perkins reactors nevertheless are of stunning magnitude. The obvious conclusion must be drawn that when the costs of plant operation, including all long-term radioactivity and its associated health effects, are compared to the supposed benefit of plant operation, in isolation from irrelevant comparisons (and particularly from irrelevant comparisons such as the one resorted to by the TMI-2 and Perkins licensing boards, whereby only one side of the cost-benefit balance is subjected to the irrelevant comparison), the costs of plant operation overwhelmingly dwarf the supposed benefits.

After the adverse health effects resulting from plant operation are misleadingly reduced to some allegedly insignificant size, the de minimus theory discards them as not being worthy of serious consideration, and hence they are deemed inappropriate in the context of a cost-benefit analysis. However, the radon-related costs and all other costs resulting from plant operation should be included in the cost-benefit analysis from the very outset, to determine whether and to what extent they are significant, rather than being excluded from consideration entirely merely because a particular agency decision-making body wishes that these costs were insignificant (which they are not). If these costs turn out to be "insignificant", or even if it is discovered that by comparison to the supposed benefits of plant operation they are remarkably "significant," they can then be compared to anything or everything. The sole reason for comparing them to something else before entering them into the cost-benefit analysis is, however, to concoct an excuse for not entering them into the cost-benefit analysis at all, so as to hide them from public scrutiny. The de minimus theory thus is no more than a cheap attempt to ignore the substantial and significant adverse health consequences from radon which will result from the operation of commercial nuclear reactors, e.g., the Per<sup>3</sup> and TMI-2 reactors.

In Perkins, as in TMI-2, the de minimus theory must falter because it attempts to compare apples with oranges. In Perkins, Staff Witness Gotchy, (prepared testimony, Table 7) and the Applicant's Witness Hamilton (tr. 2653-6) both attempt to divide the radon released due to operation of Perkins by the natural background emissions of radon.<sup>3</sup> The result of this division, be it

<sup>3</sup> Here Hamilton divided the actual dose due to background radon by the dose due to the radon attributable to the operation of a 1000 MW(e) reactor for just one year. In spite of the admonition of Dr. Jordan of the Perkins licensing board that "we are talking about licensing the Perkins plant which is three [1280MW(e)] reactors for 40 years." (tr. 2596), Hamilton chose to use numbers which grossly understated the full effect of the operation of Perkins.

large or small, is a number with no unit of measurement; this resultant number simply cannot be compared with the benefits of plant operation because such benefits are described universally by reference to some unit of measurement, usually dollars. The fallacy of their manipulation lies in the fact that when any number of curies is divided by some other number of curies, a pure number without descriptive units invariably results. Similarly, if the dollars which the utility involved in Perkins hopes to gain are compared to some other dollar figure, such as the total number of dollars which consumers would save if the NRC ordered an immediate halt to the licensing of nuclear reactors, a pure number without descriptive units results. The comparison attempted by Gotchy and Hamilton is illogical, since it is meaningless to compare the number 30 to, say, 10 dollars, and conclude that one of these numbers is larger than the other. Although the illogical nature of such a comparison was discussed by Dr. Kepford in his prepared testimony (Kepford's Perkins prepared testimony, pages 3-4, and Table 3), the Perkins licensing board adopted exactly such a comparison when it relied upon the de minimus theory.

The necessity of using comparable descriptive units in any cost-benefit analysis should by now be clear. The de minimus theory strives to compare the absolute benefits of plant operation (its 30 year burst of electricity) with the relative (long-term, significant) costs of plant operation. The Perkins and TMI-2 licensing boards did not compare the relative benefits with the relative costs, or the absolute benefits with the absolute costs, as would be compulsory in any honest and meaningful cost-benefit analysis. A symmetrical, non-biased cost-benefit analysis would, at the very minimum, require comparing the electrical output of the TMI-2 and Perkins reactors with, for example, the "background" solar energy received by the entire land area of the United States in one year, 30 years, 100 years, or 10,000 years, if the comparison with the natural background

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radon releases on the cost side of the analysis is to be of any relevance. Such a comparison of energy output from the reactor with naturally occurring "background" solar energy demonstrates that the supposed benefits of reactor operation are more "insignificant" than the substantial costs to the public health which will result from plant operation.

As an illustration of this principle, Dr. Kepford's prepared testimony in Perkins used a naturally occurring background effect on both sides of the cost-benefit balance to reveal the hypocrisy which lies at the core of the de minimus theory. The quantity of solar radiation incident upon the U.S. in a calendar year, measured in Btu's, was taken as an all pervasive background benefit. That this solar radiation constitutes a benefit is scarcely arguable. From this radiation comes the food we eat, the plant growth we see and use, some of our weather, and, yes, the energy necessary to remove the waste heat from Perkins and TMI-2. If anything, the quantity of solar radiation assumed as the natural background by Kepford is far too small, since we also benefit considerably from the solar energy which falls on the oceans and the other land masses.

The unit of measurement for this background solar energy, the Btu's, is also convenient for comparison with the output of Perkins, since all of the energy produced by Perkins is degraded by use to heat, for which the Btu is an accepted unit of measurement.

Table 3 of the prepared Kepford testimony in Perkins shows the temporal distribution of these relative costs and benefits of Perkins. Kepford assumed that the "benefits" ascribed to Perkins (in Btu's) will terminate after 30 years of operation. However, the background benefits of solar energy, like the natural background releases of radon, will continue virtually forever, as do the adverse health effects from radon resulting from the 30 years of

plant operation. An inspection of this Table reveals that when both the costs and benefits of Perkins are viewed in comparable terms, a radically different picture emerges than was presented by the licensing board: the relative benefits are seen to be exceedingly small and of short duration, while the relative annual costs are small, but they go on forever. Furthermore, the relative benefits simply do not exceed the relative costs because the benefits of plant operation cease after 30 years, whereas the costs from radon emissions attributable to plant operation continue to accumulate steadily with time. <sup>4</sup>

Similar relative comparisons could be made comparing the benefits of Perkins to the GNP, for instance, using dollars as a unit, while converting Perkins costs into dollars per person-rem, and comparing these costs to natural radon, in terms of dollars per person-rem. Again, however, when a long-term view of the comparison of the relative costs and benefits of operating Perkins is taken, the benefits are rapidly dwarfed by the cumulative long-term costs.

One crucial missing component of the cost-benefit balance adopted by the Perkins board, but by no means the only missing component, is that of explanation. No explanation at all is offered, and no references to other sources are given, as to how this balance was struck, what costs and benefits were included, how they were included, what data manipulations and juggling feats were performed, and what time periods were considered. Similarly, no explanation has been offered as to what costs were excluded, how and why they were excluded, and what manipulations were performed so as to exclude these costs. As a result, the enormous costs due to the long-term emissions of radon remain hidden from public scrutiny and omitted from the cost-benefit balance which was apparently developed to justify the pre-determined decision

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If, as the Perkins board and the Panel would have us believe, the quantity of radon attributable to the operation of Perkins is de minimus, then the ratio of the Perkins "benefits" to the solar background gives a number which is de minimuser.



of the Perkins licensing board.

The radon comparison with natural background must be rejected because the Perkins and TMI-2 records do not show that such a comparison can be factored into the cost-benefit analysis, or the relevance of such a comparison even if it could be factored into the analysis. No discussion is offered of how such a comparison is of any use at all in enabling the Commission to satisfy its non-discretionary obligations under NEPA, its obligations to protect the health and safety of the public, or even the requirements of its own rules, e.g., 10 CFR 51.20(b-c), 51.23(b-c), and 51.26 (a-b). The case for the relevance of this comparison to the adverse environmental impacts of plant operation has yet to be advanced in either the Perkins or the TMI-2 proceedings. Nor has it yet been shown how such a comparison pertains to the evaluation of alternatives required under NEPA. Under NEPA, an analysis of the proposed project itself is required, not a comparison of the project itself with non-project-related subjects. Since the adverse health effects of alternative fuel cycles are being compared to evaluate the proposed operation of TMI-2, Perkins, PB, and all other reactors affected by ALAB-500, any causes of death or any adverse health effects which operated equally upon all options do not affect the comparison. Thus, the level of background releases of radon-222, the number of people dying from natural causes over any time span, or the deaths due to bites by poisonous insects and reptiles, may not play any part in the comparative analysis required under NEPA.

Under the de minimus theory, any polluter could claim that his or her incremental contribution to pollution, however unauthorized by law, must be excused because, like the radon emissions resulting from operation of Perkins and TMI-2, this incremental pollution may be small by comparison to the pollution present from all other sources combined (such as natural or other sources of pollution).

The de minimus theory also fails because, as proposed by the TMI-2 and Perkins licensing boards, it guarantees a fragmented and incremental decision-making process which is incompatible with NEPA. Similar reactors are already functioning, with a concomitant continuing need for fuel which will produce long-term radon releases, and approximately 100 additional reactors are in the construction phase (NUREG-0030-78/01, Construction Status Report, pages 1-3). The isolation of the licensing boards' attention solely upon Perkins or TMI-2, respectively, is wholly unjustified under such circumstances. As the Supreme Court observed in *Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976):

...when several proposals...that will have cumulative or synergistic environmental impacts upon a region are pending before an agency, their environmental consequences must be considered together.

Similarly, the Circuit Court observed in *NRDC v. USNRC*, 539 F.2d 824, 844 (D.C. Cir. 1976)(footnotes omitted, emphasis in the original):

We must consider the possibility that there are options often imperceptibly foreclosed by fragmented growth and that commitments of resources already being made would curtail subsequent broad-scale assessment of alternatives... it is the cumulative environmental impact which must be evaluated as a whole.

The cumulative impact concept is pertinent here because deaths due to cancer from radon result from the fuel requirements of all currently operating commercial reactors, and will result from the fuel requirements of all reactors currently under construction. The concept is also pertinent because most of the mines and mills which produce this fuel (and the associated mine and mill tailings and overburdens) supply fuel for a number of reactors. Under the cumulative impact doctrine, the NRC cannot view each reactor's contribution to the radon problem in isolation from the related contributions of all other reactors. Furthermore, most of the uranium being mined in the United States comes from two general areas, the Colorado plateau and Wyoming's Powder

River Basin (NUREG-0002, GESMO, Volume 3, IV F-7).

What is demonstrated by the records compiled in the Perkins and TMI-2 proceedings is that the NRC Staff, both Applicants, both licensing boards, and the entire Appeal Board Panel are content to have chosen, consciously and deliberately, to exclude the long-term adverse health consequences of radon from the applicable cost-benefit analyses, in defiance of NEPA and parts 51.20(b-c), 51.21, 51.23(b-c), and 51.26(a-b) of the Commission's own rules. On this subject, the Commission's own rules plainly prohibit such selective striking of a cost-benefit analysis. For example:

The cost-benefit analysis...shall, for the purposes of NEPA, consider radiological effects, ... of the facility... Part 51.20(c)

The final environmental impact statement will make a meaningful reference to the existence of any responsible opposing view not adequately discussed in the draft... 51.26(b)

In the event that it is argued that radiological impacts cannot be quantified for inclusion into the cost-benefit balance, we note that these costs are frequently vastly larger than all other population doses attributable to either Perkins or TMI-2. In fact, if one considers the integrated radon releases due to any one of these reactors over periods of time that are comparable with the toxic periods of just one of the primary parents of radon-222, namely thorium-230, the health costs due to radon emissions dominate all of the population exposures due to the reactor's operation over any time period (See Kepförd's prepared Perkins testimony, Table 2).

Nevertheless, this largest single source of population exposure to radiation attributable to the operation of Perkins, TMI-2, or any other commercial nuclear reactor is said to be insignificant. Herein lies the objective as well as the deceit behind the de minimus theory: it compares these staggering quantities of radon, with their concomitant population doses, to some

background effect, whose relevance, if any, in the cost-benefit balance has not yet been demonstrated, discussed, explained, or in any way established, in order to obscure the magnitude and duration of these man-induced radon releases attributable to the reactors in question. The de minimus theory, then, is a device whose purpose is to thwart NEPA and the health and safety requirements of the Atomic Energy Act through the deliberate concealment of significant environmental damages. In addition, this theory is an artifice to divert attention away from the indisputable fact that none of the requirements of NEPA has been met with regard to these radon emissions. Were the emissions truly small, a failure might possibly be excused. However, the magnitude and duration of the radon emissions are actually sufficiently "significant" to have led the NRC to pursue a coverup of major proportions.

The de minimus theory must also be abandoned because it would require revocation of the first principle of radiation protection. In the 1972 report of the Advisory Committee of the National Academy of Sciences (the "BEIR" Report), a number of guiding principles were set forth, the very first one of which was:

No exposure to ionizing radiation should be permitted without the expectation of some commensurate benefit (BEIR Report, at 2).

The radon emissions attributable to the fuel requirements of Perkins and TMI-2 will continue long after plant operations have ceased. No benefits have yet been advanced which will accrue to the multitudes of people who will continue to be irradiated due to the ill-conceived and ill-considered decisions to construct and operate these reactors. If a truly permanent solution to the abandoned mine, mine tailings and mill tailings and overburdens disposal problems were on the drawing boards or had even been conceptualized, if the NRC had any notion of the manner in which the problem of radon releases from abandoned open pit uranium mines could be addressed, the Perkins and TMI-2

licensing boards would not be hiding behind the transparent mask of the de minimus theory.

The de minimus theory is notable primarily for its obvious lack of concern for human lives. The theory holds that the radon releases from Perkins cannot be significant because they are indistinguishable, once dispersed, compared to the natural background radon. Such a conclusion assumes that all the impacts of any carcinogenic agent are not only known but are also separately detectable and identifiable from the impacts of any other carcinogenic agent. This assumption is unsupported by modern research findings or technology. On the order of 300,000 people in the United States reportedly died from cancer in its various forms during 1978. While deaths due to cancer are identifiable, in principle, knowledge of which particular carcinogens or which combinations of carcinogens produced each of these deaths has eluded the best efforts of modern man. Our alleged inability to detect which radon releases result from operation of a particular nuclear plant, as compared with background releases of radon, will not protect those who will be exposed to this reactor-related radon and its daughter products.

Even if the radon emissions due to Perkins or TMI-2 were found to be small compared to background radon,<sup>5</sup> one could not conclude from this that these emissions or their effects are insignificant in any absolute sense. To the best knowledge of these Intervenor, only one specific environmental carcinogenic agent has been identified to date as being a general carcinogen (i.e., one that can readily produce cancer in a wide variety of tissues). That one general carcinogenic agent is ionizing radiation. Years of intensive search for other general carcinogens have thus far yielded no additions beyond

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We note that the Staff admits that their proposal for reclaiming the abandoned mill tailings piles would not reduce radon emissions from the piles below twice the natural background rate.

ionizing radiation. Background radiation from all sources contributes throughout the lives of all living organisms to a death risk of some magnitude. For humans, the numerical value of this risk due to background radiation remains an unresolved matter.

It must also be borne in mind that there is only very limited experience with radiation experiments based upon duration-of-life exposures of the subjects, and that such lifetime exposure experiments are the only ones which can provide data pertinent to the effects of chronic exposure of human beings. The absence of such studies results from the failure of radiation researchers to comprehend the full significance of the latency period in chronic radiation experiments or to appreciate the absolute necessity of performing experiments involving chronic or duration-of-life exposures. There is no scientifically valid justification for the assumption that single exposures or high dose and/or high dose-rate exposures do, or should, yield results comparable with cumulative life time doses or low dose, low dose-rate exposures.

Recent publications on the effects of low dose and low dose-rate radiations (See, for instance, Radiation Research 66 615-25, 1976; 71 1-8, 1977; British Journal of Cancer 37 448-57, 1978; Health Physics, 33 369-85, 1977; 34 237-47, 1978; 34 353-60, 1978; 34 433-8, 1978) serve to emphasize the inadequacies of our previous understanding of radiation effects, an understanding which was based entirely upon high dose and high dose-rate experimentation with the subsequent linear extrapolation to low dose and low dose-rate effects (see testimony of Applicant Witness Lewis, after tr. 2266). When these voids in our knowledge of chronic radiation exposure leading to cancer induction are coupled with the absence of research findings which unequivocally demonstrate the cancer inducing effects of other environmental agents (in the absence of concurrent radiation exposure), it seems not only appropriate but also necessary

to reconsider the possibility that the various forms of background radiation alone may be the principal cause of the majority of cancer incidence and cancer mortality.

Although those who profit from the spreading of ionizing radiation throughout the biosphere often note that ionizing radiation is the most studied of all carcinogens, many very fundamental questions concerning ionizing radiation remain unanswered, because these questions, such as the ones raised above, have not even been asked or because those who attempt to seek answers to these questions are blacklisted from further grants to support their research. The Perkins licensing board would have us believe that because a carcinogen cannot be detected against its background sources, or because it has not been identified as the causal agent of a particular instance of cancer, any incremental additions of this carcinogen may be ignored by declaring them to be insignificant. Like the other aspects of the de minimus theory, this tortured reasoning lacks any validity or relevance. It seeks to link indistinguishable sources, which happen to cause death in humans, with the conclusion that the number of resulting deaths must somehow be justified due to the undetectability of the cause. Under comparable circumstances, one would hardly expect a person accused of murder to defend his or her alleged actions by stating that murder is justified because a few additional deaths among an annual national death toll of two million will scarcely be noticed and may therefore be viewed as de minimus, or relatively, acceptably insignificant.<sup>6</sup> If this Appeal Board can decree that premature deaths due to cancer will henceforth be permitted, then any other forms of murder must, for similar reasons, be equally permissible, even including genocide.

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If the radon attributable to Perkins (and TMI-2) is de minimus, then, as shown earlier, the benefits are de minimus, and, therefore, a single murder becomes de minimus.

For the reasons stated above, the Appeal Board must dismiss the de minimus theory as irrational, unfounded, irrelevant, inhuman, and incompatible with the Commission's legal responsibilities.

In footnote 14 of ALAB-509, the Appeal Board requests the parties to address the question of whether the radon problem can be solved by reference to a standard similar to that of 10 CFR, Appendix I, Section II.

Appendix I refers to the "as low as reasonably achievable" principle (also known as ALARA) which the Commission determined would be more meaningful than the "as low as practicable" (also known as ALAP) standard. Regrettably, the objective of keeping radiation doses as low as possible is a far more laudable objective which has found no place in the rigid NRC mindset. In any event, sufficient ambiguities and uncertainties plague the ALARA principle (as spelled out in 10 CFR 50.34a and Appendix I) and footnote 14 of ALAB-509 so as to render the ALARA principle inappropriate for addressing the radon problem.

First, tailings piles and abandoned mines generally result from production of fuel for a number of different reactors. Under Appendix I, however, the radon attributable to the other reactors would be considered "background" radon (Section 2, footnote 1). This concept, guidance, or whatever it is intended to be could not pass the requirements of the Supreme Court case of *Kleppe v. Sierra Club*, cited earlier, and related judicial decisions under NEPA which require federal agencies to address the cumulative impacts of incremental decisionmaking.

Second, the ALARA concept cannot be used to justify the "pussy cat" method of mill tailings stabilization currently incorporated into new mill licenses. This method of "reclamation" is designed to fail. It entails merely



scratching a little dirt over the piles and then departing as quickly as possible from the scene. This "solution" is claimed to reduce radon emission levels to twice the background rate for some undefined but exceedingly short period, relative to the full detoxification period. The performance and design guides which would regulate such a temporary disposal method may also not pass muster when tested against the wilds of, for example, the Powder River Basin. Furthermore, until some hard and credible emissions and exposure numbers become available, little can be said qualitatively about applying ALARA to the radon problem.

ALARA is also not readily adapted to the radon problem because of the temporal dimensions of the problem. Appendix I now pertains only to emissions during reactor operation which are expected to cease shortly after final shutdown of a specific reactor. With regard to the radon emissions, as should be apparent by now, the emissions will continue virtually indefinitely into the future. The Staff's proposed pussy cat solution is expected to fail in the near future. The Staff's proposed solution is also untried and unproven, and, given our present understanding of erosional processes, seems highly unlikely to succeed except for the immediate short term. The questions must therefore be asked: To what time periods would ALARA guidance apply? Who will guarantee a long-term solution if the problem is allowed to balloon through additional licensing of reactors and/or the continuing refusal of the Commission to suspend all current operating licenses until solutions, if any, to this and other aspects of the waste disposal problem have been devised, tested, and proven? Furthermore, questions regarding noncompliance and remedies to deter noncompliance in a convincing way must be addressed regardless of the regulatory solution which the agency chooses to follow.

In addition, the Appendix I guides currently apply to unrestricted or off-site areas in the case of reactor effluents. For the radon sources, this concept has little or no meaning. How could the ALARA guides be applied to homes constructed on a tailings pile 50 or 500 years from now? Would the Appendix I guides of 5 millirem whole body or 15 millirem to any organ above background apply? Or, does the Appeal Board anticipate that the obsolete FRC exposure recommendations of Table S-4, footnote 2, would be revived for this purpose? And how might "background" be calculated, especially in areas with substantial additions of radiation from man-made sources, such as tailings from military or other commercial reactors, residual sources of radiation from weapons testing, or radon-emitting rocks exposed through the mining of minerals other than uranium ore?

The ALARA concept, in short, raises more questions than it answers. In reality, however, there is but one unanswered question in the Perkins and TMI-2 proceedings, and it is the responsibility of the NRC, rather than the various intervenors, to answer this question: namely, when will the Commission abide by NEPA and protect the health and safety of the public by acting decisively in response to the radon problem? Application of the ALARA concept would merely waste additional time, effort, and money, as do ALAB-480, ALAB-509, and ALAB-512. The ALARA concept will not satisfy the requirements of NEPA and the Atomic Energy Act on the radon issue. In this respect, the ALARA concept is similar to the de minimus theory, since neither bears any positive relation to the Commission's obligation to address the radon problem as mandated by law.

CONCLUSION


When ALAB-480, the Perkins Initial Decision, ALAB-509, and ALAB-512 are read closely, it becomes sadly apparent that NEPA and the health and safety provisions of the Atomic Energy Act play no part in the agency's consideration of the radon problem. In these four documents NEPA is mentioned only twice; specifically, it is given passing reference only in ALAB-480, at page 9 (footnote 4) and on page 19. At no point does the Appeal Board reprimand the Staff for its continuing conspiracy to defraud the public on the radon emissions issue, or on its continuing and deliberate failure to address its statutory duties openly and honestly. As the Staff seems not to recognize, the need to comply with NEPA is not a joking matter. As noted by one Circuit Court, *Public Service of New Hampshire v. NRC*, 12 ERC 1561, 1563 (First Cir. 1978, cert. denied)(references omitted, emphasis added):

NEPA's mandate has been given strict enforcement in the courts, with frequent admonitions that it is insufficient to give mere lip service to the statute and then proceed in blissful disregard of its requirements.

The term "blissful disregard" is wholly inappropriate to either the Perkins or the TMI-2 proceedings. Through repeated submissions, the TMI-2 Intervenor's have highlighted the defects in the unchanging positions of the Staff and licensing board on the radon issue. Virtually all issues addressed in this filing have on several occasions been presented to the agency previously (see, e.g., the seven filings listed above, copies of which the Staff is to forward to all other intervenors affected by ALAB-509). We have described the deliberate plotting by the AEC and NRC to repeal the laws of physics governing radioactive decay in an attempt to mislead the public about the radon release values contained in the infamous Table S-3. Yet, here we are, once again, compelled by ALAB-480 and ALAB-509 to repeat our previous analysis for the eighth time and to

attack positions which neither the NRC itself, nor the Staff, nor any Applicant, has articulated to date. We are forced to conclude as a result of this continuing experience that (1) none of our numerous previous has yet been understood or, apparently, even read, and that (2) that the NRC Staff, the Perkins and TMI-2 licensing boards, and the entire Appeal Board are engaged in determined conspiracy to violate NEPA and to make a mockery of the health and safety requirements of the Atomic Energy Act, as amended.

Respectfully submitted,

  
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CERTIFICATE OF SERVICE

I hereby certify that copies of IN RESPONSE TO THE DE MINIMUS THEORY AND ALAB-509 have been served on the following by deposit in the United States Mail, First Class, postage paid, this      day of February, 1979.

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