13

The Chesapeake Bay Foundation

"Citizen Representation - Environmental Education - Land Preservation"

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September 30, 1980

Mr. Bernard Snyder, Program Director
Three Mile Island Program Office
Office of Nuclear Reactor Regulation
U.S. - Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Draft Programmatic Environmental Impact Statement related to decontamination and disposal of radioactive wastes resulting from March 28, 1979 accident Three Mile Island Nuclear Station, Unit 2 (PEIS)

Dear Mr. Snyder:

The Chesapeake Bay Foundation is a non-profit, private conservation organization with over 6,000 members. Our basic purpose is the protection of Chesapeake Bay water quality and natural resources.

The Chesapeake Bay is our nation's most productive body of water and its seafood resources are most important to this country.

The Susquehanna River upon which the TMI Unit 2 is located is the single most important contributor of fresh water to the Bay, supplying 80% of the fresh water to the upper Bay and 50-60% to the entire Bay. Thus, the decontamination activities at TMI are of vital interest to the Chesapeake Bay Foundation and the citizens of the State of Maryland

The PEIS which was prepared by the Nuclear Regulatory Commission (NRC) is important as an analysis of thepotential impact of those decontaminati activites. However, we believe that there are several deficiencies in it and also note that it presents a series of alternatives, rather than a plan.

In order to guide the NRC in its review of the various alternatives, we believe that certain criteria should be used. It is our position that

the following criteria are most appropriate:

1. Clean up should proceed as expeditiously as possible consistent with proper planning. For example, we are most anxious that the processing and removal of sump water begin in order to avoid additional damage to equipment essential for safe operation and control of the reactor.

2. Adequate planning and impact assessment must be carried out to ensure that the safest and most effective procedures are chosen. This may necessitate further preparation of impact statements if unanticipated conditions occur which require actions which have not been addressed in this PEIS.

3. The accident-generated radioactive water should be promptly processed to remove most of its radioactivity in order to avoid the potential accidental release of this highly contaminated water to the river.

4. Decontamination procedures which would minimize the amount of liquid waste generated should be given preference. Processed water should be re-used as much as possible in the cleanup activities.

5. The processed accident water should not be discharged into the Susquehanna River since other alternatives are available and the potential impact on the marketability of Bay seafood could be serious.

6. Radioactive waste generated by the accident and subsequent cleanup activities must be promptly removed from the island so that TMI does not become our nation's first long-term high level waste disposal site. Its location on an island in the middle of a river which supplies 80% of the fresh water of the upper Chesapeake Bay is not appropriate for such disposal. We urge that the NRC work with DOE to establish an appropriate disposal site for this material.

7. In anticipation of waste transportation and disposal problems, we urge the NRC when selecting procedures for cleanup, to choose these which generate minimum amounts of wastes which are at the same time, in form and level of radioactivity and most readily transportable and suitable for long-term disposal.

8. Methods should be chosen which would keep levels of radiation to workers and the public to the lowest achievable levels.

Regarding the Draft Programmatic Environmental Impact Statement itself, we have both general and specific comments.

It is of special concern to us that the PEIS presents a number of alternatives but does not recommend a plan. Consequently the public has no assurance of the procedures which will be followed or even of the criteria which the NRC may use in considering plans proposed by Metropolitan Edison. We therefore request at this time that the public be given further opportunity to comment when actual proposals are made by Metropolitan Edison for cleanup and disposal activities.

A serious deficiency in the PEIS is the lack of cost estimates for the various alternatives. Although we don't want to have decisions made which would provide less adequate treatment in order to save money, there may be times when such information might help in a choice between otherwise equal alternatives. Particularly, we beleive that a decision regarding the feasibility of restarting Unit 2 should be based to some extent on the relative costs of cleanup to protect all the equipment for restart purposes, on the one hand, versus simpler and less expensive treatment that could be used if the equipment were going to be scrapped.

Since the Chesapeake Bay Foundation is particularly concerned about the potential release of accident generated processed water to the Susquehanna River, we will confine our most detailed comments on the PEIS to that area.

We believe that the PEIS is deficient or erroneous in several instances:

1. Estimates of the concentration and distribution of the constituents in the processed water are dependent on factors which are unknown at the present time, including the condition of the core and primary loop. Yet no best case and worst case conditions are presented regarding this.

2. Total radioactivity which would be released to the river as presented in Table 10.1-2 does not correspond with data in Table 6.3-5 regarding the volume of water and concentration of the radioactive constituents. In fact, Table 10.1-2 shows a total of 2.5 to 3 Ci of radionuclides from the processing of reactor building sump water, whereas a calculation based on the effluent volume, concentration and 1200 dilution factor shows a total of nearly 3,700 curies to be released, most of which is tritium.

3. It should be noted that the average amount of tritium released from a normal generating unit of this size is 400-500 curies/year. If the total amount of tritium in the processed water is 3700 curies, it would take approximately nine years to release it at that rate, instead of the one year that is being proposed.

4. Calculations of the expected dosages to fish from the release of the processed water are presented in Table 6.3-18. Assumed concentration factors are:

tritium	1:1
Cs137, Cs134	3000:1
Sr90,Sr89	500:1

yet the rationals for such factors are not presented in the PEIS. A number of factors which will cause those concentration factors to vary are not even mentioned, such as temperature, salinity and presence of calcium, potassium, etc.

5. A number of studies have been done which discuss substantial variation in concentration factors with many values being significantly higher than those assumed by the PEIS. Concentrations up to 40,000 times for cesium in fresh water low in potassium[1/] and up to 30,000 times for strontium[2/] have been documented. There is even uncertainty regarding the potential for bioaccumulation of tritium, although most scientists believe that tritium does not bioaccumulate.[3/]

6. The potential impact of these radionuclides is barely mentioned in the PEIS. Yet a recent report states, "Because a large percentage of the cesium accumulated by fishes lodges in edible muscle tissue, sport and commercial fisheries suspected to be contaminated by radiocesium should be carefully monitored".[4/] Strontium, on the other hand, concentrates in the bony portions. The same report states, "Because of this bone-seeking tendency, radiostrontium is extremely dangerous." It goes on to state that, "fishes such as sardines which are consumed in their entirety represent the greatest risk to humans, and soft waters contaminated by the radioisotope offer the optium conditions for isotopic bioaccumulation".[5/] Since the Susquehanna is a drinking water source as well as an important area for sport and commercial fisheries, including shad which are often eaten bones and all, we feel that the disposal of water containing these constituents into this river is inappropriate and the potential impact has been underestimated in the PEIS.

7. The hydrology of the river and its impact on the distribution of radioactive isotopes is incompletely addressed. Estimates of concentrations in the river assume complete mixing during average low flows, (p.6-19). Yet since there are islands to the west of Three Mile Island, the complete river is not available fc a mixing zone. As was noted on p. 6-24, fish could be exposed to conditions in which mixing was not complete, causing doses up to 20 times higher than those presented in Table 6.3-18.

8. Sediment deposition processes within the Susquehanna River are quite complex, yet they are barely mentioned. Because of dams downstream, sediments are likely to be deposited in certain rather concentrated areas. The tendency of cesium to be absorbed onto sediment particles creates the likelihood of "hot spots" being created within the river and on the Susquehanna Flats.[6] We believe that the PEIS incorrectly assumes that a fairly large percentage of the cesium will remain in the water column for some time. Considering sediment loading in the River and studies that have been done on behavior of cesium, we would expect virtually all of the cesium to have dropped out with the sediment within four days.[7] We are concerned that large storm events would cause a sudden release and resuspension of these contaminated sediments.

9. We must again stress that the release of processed water to the river is undesirable since it could have a substantial impact on the marketability of Bay seafood, which is worth millions of dollars to Maryland's economy and provides employment for thousands of individuals.

10. Viable alternatives exist for disposition of the water. We would recommend that it be immobilized in cement and eventually moved off-site for disposal as is all the other low level waste. In its immobilized state it would not represent a radiological threat and could be assigned a low priority for off-site disposal.

11. The apparent inability of the federal government to locate a high-level radioactive waste disposal site is a serious problem which seems to be avoided in the PEIS. Yet its resolution is essential if the high level waste is to be removed from the island. We believe that the seriousness of this problem should be fully exposed so that its solution is given top priority by the NRC and the Department of Energy.

In summary, we feel that the PEIS has inadequately addressed certain areas regarding the potential impact of the release of processed accident water and particularly the impact of such an action on the seafood indsutry. It also needs to address the ultimate waste disposal problem. And finally, criteria must be developed to assist in the selection of appropriate decontamination procedures.

Sincerely,

Nancy G. Kelly
Senior Staff Biologist

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FOOTNOTES

[1] Preston, A., D.F. Jefferies, and J.W.R. Dutton. 1967. The concentrations of cesium-137 and strontium-90 in the flesh of brown trout taken from rivers and lakes in the British Isles between 1961 and 1966: the variables in determining the concentrations and their use in radiological assessments. Water Res. 1(7): 475-496.

[2] Krumholz, L.A. 1956. Observations on the fish population of a lake contaminated by radioactive wastes. Bull Am. Mus. Nat. Hist. 110(4): 277-368.

[3] Bond, V.P. Evaluation of potential hazards from tritiated water. Brookhaven National Laboratory, p. 287-299.

[4] Phillips, G.R. and R.C. Russo. 1978. Metal bioaccumulation in fishes and aquatic invertebrates: A literature review. Environmental Research Laboratory. Office of Research and Development, U.S. Environmental Protection Agency, p.21.

[5] Ibid., p. 58,59.

[6] Troup, B.N. and O.P. Bricker. 1975. "Progesses affecting the transport of materials from continents to oceans", in Marine Chemistry in the Coastal Environment. American Chemical Society. p. 143-144

[7] Phillips and Russo, p. 20.