



STATE OF MINNESOTA
 MINNESOTA POLLUTION CONTROL AGENCY
 459 BOARD OF HEALTH BUILDING
 UNIVERSITY CAMPUS
 MINNEAPOLIS
 55440

September 3, 1968

Mr. Harold L. Price
 Director of Regulations
 U. S. Atomic Energy Commission
 Washington, D. C. 20545

Dear Mr. Price:

The matters of nuclear power plants and nuclear radiation still hold and play an important part in our monthly Agency meetings. The AEC-owned reactor at Elk River, Minnesota, periodically makes news, as does the NSP Monticello plant now under construction.

One of our Agency members, Mr. Steve J. Gadler, is greatly concerned about the operation of the Rural Electric Cooperative Association's nuclear power plant at Elk River, and I am enclosing for your information a letter dated August 12, 1968, addressed to Mr. R. C. Tuveson, Chairman of this Agency. This letter was read into the record at one of our recent meetings and does emphasize Mr. Gadler's concern about this AEC-owned reactor and its future operation.

I am also enclosing for your review and comment six pages of questions posed by Mr. Gadler that need clarification. I believe the AEC is in the best position to answer these questions. Would it be possible for your staff to prepare these answers? An acknowledgment of this request would be appreciated.

Another question that has been discussed at various times is the level of tritium in the Mississippi River below and above the location of the RECA's nuclear plant at Elk River. It is my understanding that information is available from the AEC on these tritium levels, and I would therefore request that the MPCA be supplied this available data. The information should encompass the period prior to the construction of the Elk River reactor to the present date.

Our consultant, Dr. E. C. Tsivoglou, is presently under contract with our Agency and is gathering pertinent information, meeting with persons other than the Agency who are concerned with nuclear radiation, and with representatives of Northern States Power Company, General Electric Company, and others. It is anticipated that an interim report on nuclear radiation standards for Minnesota will be presented to the Agency by Dr. Tsivoglou within 45 days, and final recommendations made within 100 days. In the event Dr. Tsivoglou requests

Mr. Harold L. Price
Washington, D. C.

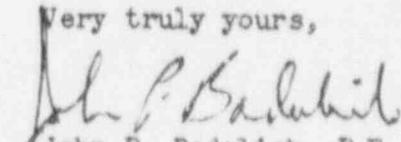
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additional information from the AEC regarding nuclear power plants in Minnesota,
We would appreciate your cooperation in this matter.

Again, I wish to express my appreciation to you and others of the AEC staff
for your cooperation in the past, and I trust this cooperative effort will con-
tinue in the future.

Very truly yours,


John P. Badalich, P.E.
Executive Director

JPB:mab
Enclosures

1968 SEP 11 10 51 AM

August 12, 1968

Mr. R.C. Tuveson, Chairman
Minnesota Pollution Control Agency
Albert Lea, Minnesota

Dear Mr. Tuveson:

At the July meeting of the Minnesota Pollution Control Agency, Mr. Miller read into the record a letter addressed to the agency which had been signed by Mr. Edward E. Walter, General Manager of the Rural Electric Cooperative Association at Elk River, Minnesota. In view of the fact that the letter cast aspersions on the Minnesota Pollution Control Agency and specifically upon the integrity and motives of one of its members, I asked for permission, which has been granted, to make a public statement concerning the referenced letter.

The letter appears to indicate to me at least, that it maybe an attempt to silence the many people who are concerned by the amount and type of radio active contaminants discharged and being discharged into the Mississippi River at Elk River by the AEC owned reactor.

Since the operator of this facility has admitted discharging radio active contaminants including tritium into the Mississippi River which is the source of St. Paul and Minneapolis water supplies both for drinking and industrial purposes, it may just be possible that clams placed in water taken from or near the reactor discharge point may up-take some of this discharged radio activity. Clams and other Biota are unaware that the radio active contaminants have been diluted by water to AEC Specifications.

The literature is replete with references to the bioaccumulation in the fish, shell fish and the biota. Apparently all biota has the capability of up-taking and concentrating radio activity. Evidence for this is well documented. As an example:

Dr. T.R. Rice, Chief Radiobiological Program, Bureau of Commercial Fisheries Biological Laboratory, Beaufort, North Carolina, in U.S. Dept. of Health & Welfare publication #999-R-3 Studies of fate of certain "Radionuclides in Estuarine and other Aquatic Environments", Page 35 and 36, said

"When the Maximum Permissible Concentrations (MPC's) were calculated for the different radionuclides which occur in drinking water, the assumption must have been made that such concentration of radionuclides in the aquatic environment would result in not only an insignificant return of activity to man, but would also be of no harm to aquatic organisms. This assumption has not been validated and will require the collection of considerable data before any confidence can be attached to it." And he continues, "It is known from experimental evidence that certain organisms, in addition to those of

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commercial value, service as a vital link in certain food webs and can concentrate some radioisotopes to levels much greater than those occurring in the ambient water."

And finally, "With the expanding nuclear energy industry which has developed in less than 15 years, man will probably find that keeping his environment free from radioactive pollution will be more and more difficult. Thus a responsibility rests upon those who pollute the environment with these materials and upon those who must protect human health and insure the safekeeping of the living resources."

In addition to the literature, many experiments have been conducted in this area as an example, Dr. William A. Brungs, Jr., Research Aquatic Biologist, Fish Toxicology Activities, FWPCA, U.S. Dept. of the Interior, discusses an experiment by the Cooperative Studies Unit, Radiological Health Research Activities of the Taft Engineering Center, in Public Health Service Publication #999-RH-24. The experiment concerns bioaccumulation of radionuclides in fish, tadpoles, snails, clams, including *Lampsilis* and *Anodonta* clams and other biota. A large pond, specifications detailed in cited publication, was used for this experiment according to Dr. Brungs, all biota, including the clams, concentrated radionuclides which had been introduced into the radio active water.

The MPCA is concerned with the problems of water and air pollution and I, in addition, am concerned with the integrity of the St. Paul and Minneapolis water supplies that may become unsafe because of the radio active contaminants discharged into the river by the AEC reactor.

Why am I concerned, first, because the American Health Association in their publication entitled "Public Exposure to Ionizing Radiations" caution that the eventual contamination of the environment by reactor products are a grave health question and the effects are cumulative and irreversible.

Second, Dr. Karl Z. Morgan, Director, Health Physics Division of the U.S. Atomic Energy Commission's Oak Ridge National Laboratory on Page 39 of the July 1968 issue of the American Engineer said, and I quote, "I believe that it is probable and desirable that the working level will be further reduced in the near future. This is because present scientific evidence seems to indicate there is no threshold level of exposure to any form of ionizing radiation so low that the risk of radiation damage becomes zero. In other words, there are certain types of radiation induced risks such as leukemia, bone tumors, thyroid cancers, and genetic damage that seem to relate more or less linearly with the dose". Question, are genetic mutations a future event in spite of AEC regulations to the contrary.

In his letter, Mr. Walters said, "The Rural Cooperative Power Association has always operated and will continue to operate the ERR with the utmost concern for the safety of the public and feels that the public is entitled to the facts and information concerning any matter affecting the public interest." No one can disagree with this statement since we are all concerned with the health and welfare of the public and particularly in factual information -- so lets give the public a chance to look at the record.

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1. RCPA letter* dated Jan. 18, 1967, addressed to Dr. P.A. Morris, Director Division of Reactor Licensing, U.S. Atomic Energy Commission, Washington, D.C. thru Mr. K.A. Dunbar, Manager, Chicago Operations Office from Mr. Edward E. Walters, General Manager, explaining the accident which released radio active Iodine 131 to the environment and stating that 'corrective measures have been taken to -- avoid repetition of this incident'.
2. Letter* from Lawrence D. Low, Director, Division of Compliance, U.S. AEC, Washington, D.C., dated December 26, 1967, sent thru Mr. K.A. Dunbar, General Manager, Chicago Operations Office, addressed to RCPA, Elk River, attention of Mr. Edward E. Walter. Mr. Low complains that reactor operations at a relatively high power level without reactor core emergency cooling and primary cooling make up capability and 'your associated increase of the reactor power level to 100% of the licensed limit, are contrary to prudent safety practices and should be discontinued'.
3. Page 501 of the Jan.Feb. 1968 Hearings before the Joint Committee on Atomic Energy Congress of the United States (Part 1), the U.S. AEC presented the following, 'A reactor can potentially be destroyed by a nuclear excursion or by the loss of core coolant resulting in release of fission products'. This loss of core coolant could lead to a melt down of the fuel which would probably result in a breach of the containment releasing radio active fission products to the environment. Reactor core emergency cooling system is for use in prevention of a core melt down in the event of loss of primary coolant.
4. Publication C00-651-49 "Elk River Reactor System Monitoring Data" for July 1, 1966, through June 30, 1967, reports 23 leaking elements, increase in primary coolant activity and Iodine 131, higher tritium levels, fission gasses migration from the primary to secondary and primary system leakage.
5. Mr. Harold L. Price, Director of Regulation, U.S. AEC by letter* dated 28 March 1968 advised Mr. John T. Conway, Executive Director Joint Committee on Atomic Energy Congress of the United States that 'prior to current shutdown of ERR minor leakage of water into the lower reactor cavity was experienced' and as a result of further checks water containing radio active Iodine was found which he said was 'indicative of a leak in the primary system'.

This letter then reemphasizes my concern about the radio active contaminants that are discharged into the Mississippi River above the St. Paul and Minneapolis water intakes and my concern for the safety and health of our citizens.

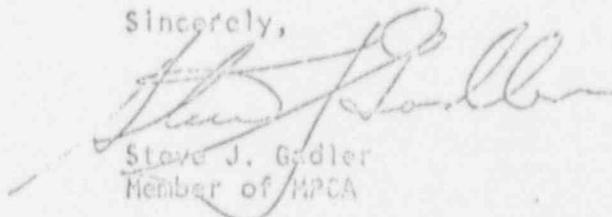
Mr. R. A. Tuveson

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I believe a responsibility rests upon those who contaminate the environment with radio active materials but I know that a greater responsibility rests upon those of us whose duty it is to protect and insure the present and future public welfare.

Sincerely,

A handwritten signature in cursive script, appearing to read "Steve J. Godler".

Steve J. Godler
Member of MPCA

Letters attached as follows:

- Page 3, Item 1.
- Page 3, Item 2.
- Page 3, Item 5.

- 1 "The hazards associated with potential airborne radioactivity require development of methods for removing these radio active fission products from the gas streams and for determining the disposition of radio activity released to the environment" appears on page 504 of the Budget Hearings. Does this indicate or imply that NSP has not been given complete information by the AEC on the dangers of radio active discharges?
- 2 Is stainless steel to be utilized in the feed water heaters to prevent accumulation of corrosion products?
- 4 Broken lower tie rods, forced the closing of the Seln reactor in April, 1967, what preventive action has been taken to prevent similar occurrence at the Monticello reactor?
- 5 Due to erratic operation the Senn reactor was closed down on January 21, 1968 and upon removal of the reactor head it was discovered that broken pieces tentatively identified as part of the reactor internals were found in the steam generators in this respect will the Monticello operation take preventive action to prevent such an occurrence? How?
- 7 Will the vessel crack problem of the Oyster Creek Jersey Central Power and Light Company which required recheck of all field welds employed to install control housings in stub tubes attached to bottom head of reactor vessel because 137 stub welds contained defects require NSP to reassess to insure integrity of the Monticello reactor and insure safety of the operation?
- 8 Does the Tarapur reactor problems which are similar to Oyster Creek in that 67 stub tubes in vessel #1 and 70 of 89 in vessel #2 were cracked require welding control practices at Monticello to prevent the extensive delays being experienced at Tarapur?
- 9 In the event of a Fermi type of accident does AEC authorize NSP a license to abandon the plant? What are the provisions in the permit issued by AEC to NSP? Are abandoning procedures, in event of nuclear excursion, provided for in the license?
- 10 Does the extensive cracking of fuel elements cladding in the SSER facility require qualitative and quantitative check clearances between fuel rods and the cladding tubes in the Monticello reactor to insure improved safety? (481)
- 11 Should, since AEC states that "a reactor can potentially be destroyed by a nuclear excursion or by loss of core coolant resulting in the release of fission products", action be taken by NSP to protect its position and to meet both the goals of safety and economic operation? (501)
- 12 Has AEC furnished NSP with the necessary technical criteria for the controlled disposal of radio active contaminants into the environment under both normal operations and in the event of a reactor accident or nuclear excursion? (503)
- 13 In the Safety Evaluation for the Monticello plant and in other documents it is referred to as Monticello #1; does this mean that there will be two reactors at this location?

- 14 In the event that a number of fuel rods slipped from the charge machine and dropped into the parking hole of the core reflector and several feet of the element would break off and bounce back out of the hole as happened at the Peach Bottom Reactor on February 24, 1968, would this constitute the postulated serious accident on page 14 of NSP Accident Analysis?
- 15 Has the Fermi Plant "incredible accident" so classified by Mr. Shaw of AEC in the hearing before the Joint Committee on Atomic Energy Congress of the United States point up to NSP that nuclear power plants are not cheap?
- 16 Would the amount of radio active contaminants released to the environment by this nuclear excursion be of concern to the Metropolitan residents?
- 17 It is noted that the Public Service Company of Colorado contract specifies termination if Price-Anderson coverage and property damage and liability are not obtained and in this respect does NSP have a contract of this type with AEC?
- 18 Peach Bottom reactor operated by Phil. Electric Company was shut down on January 11, 1968 after 150 days of operation to investigate the increase in primary loop activity of a rise from 1/3 curie to approximately 4 curies apparently due to cracked element or blocked purge flow through the element in this respect has NSP followed up on this occurrence to become familiar with the reason for such rise in curie production?
- 19 Has NSP considered the Fort St. Vrain containment problem in building the Monticello plant since apparently this added protection will help safeguard the environment?
- 20 What will be the total amount of thermal additives that will be discharged to the Mississippi River water by Monticello #1 and #2? Will water carrying thermal additives be contaminated with radio active tritium?
- 21 Based on AEC experience on the Columbia River, what will be the effect on the ecology of the Mississippi River by the thermal additives to the water?
- 22 Can the extensive release of Iodine 131 which spread the radio active contaminant over Europe in the Windscale accident occur at the Monticello facility? If such an accident occurs who pays for all the radio active milk that would have to be destroyed due to Iodine 131?
- 23 Because Piqua Nuclear Facility which experienced 12 major shut down periods and experienced difficulties with control rod drives was permanently closed down will this necessitate a re-evaluation of the Monticello reactor with reference to control rod drives?
- 24 From page 171 of 1966 AEC publication "Major Activities of Atomic Energy" we learn that tritium was produced by fission through fuel element cladding and Battelle Memorial Institute recommended collection of the primary leakage at PA-1 facility with off site disposal of the radio active tritium. Will Monticello follow these recommendations and dispose of all tritium contaminated water by site shipment to AEC burial grounds?
- 25 Since fission product releases to the environment are the main hazards of nuclear reactors how will NSP guarantee the integrity of the Monticello reactor to prevent a public hazard?

- 29 What are costs per KWHR produced for necessary equipment to provide maximum cleaning of all radio active gases destined for discharge into the atmosphere?
- 30 For water? What will be costs for off shipment of all radio active liquid, solid and particulate matter?
- 32 AEC has committed about 100,000,000 in fiscal 1969 for safety and reactor technology and in this respect will AEC expect Monticello to be utilized to assist in carrying out the experimental program that in any case will reduce its own safety due to the gemmi-type of event that can't happen but did? (491-497)
- 33 What new method will Monticello employ to prevent the discharge of SR 90, C 137, I 131, and H 3 into the river?
- 34 In view of the water supply uses down river from the Monticello site why was this site chosen for the facility?
- 35 Has NSP become familiar with delay occasioned in Dresden #1 of Commonwealth Edison due to cracks in the primary system in April of 1967? Will the closing of Dresden in February, 1968 to check and repair all cracks require a new material program at Monticello?
- 37 Will Monticello have enough capacity to contain and hold up discharge of gaseous wastes pending favorable winds?
- 38 How many venting or exhaust methods will be employed and will be available to vent radio active gases and materials to the atmosphere by the Monticello plant?
- 39 In the event of the escape accidentally of radio active gases from the plant either through the regular channels or through a nuclear excursion penetrating the integrity of the building will the Twin Cities be notified and warned about the forthcoming radio active cloud? How will the officials be notified? Who will do the notification?
- 40 Is all radio active materials and waste released through the stack or other outside vents properly filtered before release? Will any radio active contaminant be released to the atmosphere without filtration even after delay for one-half life decay?
- 42 What will it cost NSP to operate the towers on closed cycle to prevent thermal discharge to the river? What is the cost expressed in cost per KWHR? In both capital equipment and in operating costs?
- 45 What are the costs for transporting the radio active Monticello wastes to the AEC perpetual burial grounds? What are the cost for burial by gallon and by cubic feet? How many curies of activity will be shipped by mega watt of electricity generated?
- 48 What action will NSP take to prevent installing the engineering field adaptations employed at Fermi which was the probable cause of the incredible accident that forced closing and kept the \$120,000,000 plant closed down for the past two years?
- 57 During periods of fumigation or during fumigating conditions what means will be employed to withhold radio active discharges to the atmosphere from the stack?

W. J. ...
AEC in its budget request of 2 billion, nine hundred million in fiscal 69 ... budgeted \$775,000.00 for studies of the environment including environmental aspects of nuclear operations and the effects of these radio active effluents on the environment which is approximately one penny for every \$30,000.00 in the AEC budget.

- 57 Preoperational testing of the ERB facility developed thousand of gallons of radio active boric acid which was released into the river by Allis Chalmers Company? Will this performance be repeated at Monticello by G.E.?
- 52 Does AEC impose a requirement on NSP Monticello plant to test safety systems and safety features and to conduct in-plant and engineering scale tests related to safety features design and engineering of large nuclear plants? Would this type of research and development endanger facility and in turn the metro area? (507)
- 51 Does NSP plan to join in the CSE (Containment Systems Experiment) Program in studying the effects of a simulated loss of coolant accident and consequent release of radioactivity upon systems employed to reduce the post accident pressure and upon the efficiency of engineered safety systems in restricting the movement of radioactivity? (507)
- 55 In event of a maximum accident as postulated by the AEC in the "Theoretical Possibilities and Consequences of Major Accidents in Large Nuclear Plants", are plans being formulated for reimbursing property losses for evacuated areas and evacuated people?
- 53 Will sufficient medical facilities be available in the event of such an emergency?
- 57 Have plans been made for the medical requirements for this probably impossible nuclear event?
- 59 Please present an evaluation of the amounts of radio active products escaping from the containment structure in the event of a partial melt down? In the event of a 50% melt down of the fuel? What is the significance of the dangers from these radio active contaminants released to the environment from this type of accident?
- 61 What action will be taken to safeguard the 230,000 gallons retention tanks containing radio active wastes? What protection is provided to prevent seepage of radio active contaminants into the underground waters? What amount of radio activity is contained in these tanks?
- 62 What action to prevent sabotage of the tanks by a foreign enemy or our country?
- 65 The current operation of Peach Bottom Plant and the planned PSC Plant is to demonstrate fuel elements, prestressed concrete pressure vessels and other key components of the HTGR Plant which is beyond the present state of technology of this plant and the research and development is required for developing larger nuclear plants and in this respect will AEC require the Monticello plant to enter into these AEC research and development objectives?
- 63 Will dilution of the radio active contaminant discharged into the water prevent the reconcentration in the biota and the food chain?

67. The St. Paul Dispatch for 8 August 1968 contained information that AEC closed down the Elk River Reactor because of leaks in the primary coolant system. Will this closing increase amount of concern to NSP and to AEC?
68. In addition to the 16 nuclear facilities that have been closed permanently down it now appears that Fermi, Pathfinder, Elk River, Bonus and Peach Bottom Reactor plants may never reopen in view of these developments has AEC advised NSP to participate in reactor safety programs thru assignment of personnel to specific safety projects such as CSE and LOFT programs?
69. When will AEC release the study of the upper Mississippi on the predicative capability of a river basin?
70. Tritium which is produced in nuclear reactors and becomes a constituent of water making the water a radio active and extremely dangerous and capable of contaminating all parts of the environment and all life is called a radio active contaminant by Chairman Seaborg of the AEC. How much will be shipped from Monticello to AEC burial grounds?
71. Since shell fish, according to radiological Health Data and Reports Vol.8 Sept. 1967, are sensitive indicators of radiocontaminants in water, will Monticello operations in testing the environment include shell fish in the sampling program for determination if their uptake exceeds the proposed concentration guide?
72. AEC divulges that as the fuel material is recycled in the recovery operations the concentration of contaminants increases since the highly irradiated power fuel will contain gamma or neutrons or both which emit contaminants which increase the biological shielding requirements. Has AEC instructed NSP in this matter to in order to protect the safety and health of the people at the Reactor.
73. When will AEC furnish MPCA complete information on tritium production in all the reactors licensed by AEC in this state?
74. Will AEC and NSP furnish to the MPCA the total amount of tritium that the proposed plants on the Minnesota and Mississippi rivers in Minnesota will discharge into the environment?
75. What will be the total amount of this radio active contaminant, that cannot be removed, altered, changed or chemically treated coursing down the heart of America via the Mississippi River to the Gulf.
76. What amount of insurance protecting the public from nuclear excursions does NSP plan to carry? Will insurance be carried for damage to property, soil, plant life, people, etc. from radio active contaminants continually discharged into the environment or from a nuclear excursion of the type which occurred in the Fermi Nuclear Plant?
77. From AEC docket of May 4, 1967, it is learned that ground level inversions will take place at Monticello about 30% of the time will radio active contaminant discharges be automatically controlled to prevent discharges when wind is not in cooperation.
78. What is meant by the statement "maximum credible accident" in relation to the safety of the residents of the Twin City metropolitan area and the Monticello reactor?

79. Is information available as to the amount of tritium produced in a BW Reactor? Will this be furnished to the MPCA?
80. How much radio active contaminants will be discharged into the Atmosphere, the river and the soil by the closed ERR at Elk River?
81. For how long?
82. What amount and types?
83. Why was ERR closed down? How much radio active contaminants was it actually discharging to environment? What was effect on Plant Personnel? Did fear of a Nuclear Excursion impel close down to prevent Fermi type experience?