

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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In the matter of CAROLINA POWER & LIGHT CO. Et al.) Dockets 50-400
Shearon Harris Nuclear Power Plant, Units 1 and 2) and 50-401 O.L.

CERTIFICATE OF SERVICE

I hereby certify that copies of Richard Wilson Response to Applicants'

Interrogatories and Request for Production of Documents

HAVE Been served this 29th day of March 1983, by deposit in the US Mail,
first-class postage prepaid, upon all parties whose names are listed below, except
those whose names are marked with an asterisk, for whom service was accomplished
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

3-29-83

BEFORE ADMINISTRATIVE JUDGES

Glenn O. Bright

Dr. James H. Carpenter

James L. Kelley, Chairman

In the Matter of

CAROLINA POWER & LIGHT COMPANY
AND NORTH CAROLINA MUNICIPAL POWER
AGENCY NO. 3

Docket Nos. 50-400 OL
50-401 OL

(Shearon Harris Nuclear Power Plant,
Units 1 and 2)

RICHARD WILSON RESPONSE TO APPLICANTS'
INTEROGATORIES AND REQUEST FOR PRODUCTION OF DOCUMENTS (Second Set)

Answers to General Interrogatories

- 1 (a) I relied on no one.
(b) See 1 (a)
(c) See 1 (a)
- 2 (a) I relied on no one
(b) See 2 (a)
- 3 (a) I have not selected any expert witnesses yet
(b) See 3 (a)
- 4 (a)(b) The ER and FSAR do not address bioaccumulation in any terrestrial system other than cows and milk.
- 5 (a) I used no documents
(b) See 5 (a)
- 6 (a) (b) I am undertaking a personal independent investigation of the issues discussed in 1 (9) - 3 but at this point I have not identified any documents related to the subject. At this point I rely only on my knowledge of biological sciences.
- 7 (a) (b) See 6 (a) (b)

Answers to Specific Interrogatories

I(g) - 1 Substances (elements or compounds) deposited in the environment and acted upon by physical forces such as wind, rain, and sun, tend to become less concentrated over time. However, if a substance is assimilated by a living organism, there are at least two possible ~~ways~~ ways in which the natural tendency toward diffusion and lower concentrations may be counteracted or even reversed.

First, the substance may be used in some physiological process in the organism and thereby accumulate in a particular organ, part, or fluid within the organism. The substance might then be found in a greater concentration in the part than in the rest of the organism or in the outside environment. Examples of this include the affinity of strontium for bones and iodine for the thyroid gland.

Second, once a substance is assimilated by a living organism, it enters a food chain. The next - highest organism in the chain may consume many of the lower organisms. In turn, the third organism or the chain may consume many of the second. Through this process a substance may achieve a higher concentration in an organism higher on the food chain than in the organisms lower on the chain or in the outside environment.

In general, in using the term "bio accumulation" I refer to the achievement, through various biological processes, of higher concentrations of a substance in a living organism than in the outside environment.

I (g) - 2 The issues I am concerned with are those discussed in I(g) - 3 below.

I (g) - 3 The Applicants should present proof that normal operation of the Shearon Harris Plant will not

(1) have any adverse impact on the plants important as nectar sources for bees,

(2) have any adverse impact on the bees themselves

(3) result in any unsuspected human exposure through the consumption of

honey, pollen, or beeswax in excess of accepted standards.

- (4) have any adverse impact on predatory birds or mammals
- (5) result in any unsuspected human exposure through the contamination of water supplies or public waters by the dead bodies of predatory birds or mammals in excess of accepted standards.

In addition they should analyze the effects of "unanticipated releases" of gaseous and liquid effluents and the effects of serious accidents on each of the items mentioned above.

I (g) - 4 The exposure pathway through grass and milk is only one of many possible ways bioaccumulation may result in human exposure. In addition, it does not address potential harm to the bee industry or to mammals and birds at the tops of food chains.

I (g) - 5,6 At this point in this proceeding I am not prepared to discuss "all... (my) concerns" with respect to the plant-flower-bee-honey pathway because I have not yet undertaken a full study of the issue. I have pointed out that it is a potential route for environmental, including human, damage that was not addressed in the ER or the FSAR.

My concern is based on the following points:

- (1) radionuclide assimilated by plants may be concentrated in nectar or pollen.
- (2) Radionuclides in the air may be deposited on flowers
- (3) Radiation from these radionuclides may result in mutations in the germ cells of the plants which adversely affect the attractiveness or value of the future generations of plants to bees. Young flowering trees may sustain somatic mutations which adversely affect the attractiveness or value of the tree to bees.

(4) Bees may ingest radionuclides in nectar or water or carry them in pollen baskets or on body hairs and transport them back to their hives. The bees in the hive might be injured in a variety of ways:

- a) death from direct effects of radiation
- b) Mutation-induced behavioral changes resulting in extreme aggressiveness, laziness, change in plant preference, uncooperativeness, infertility confusion about tasks. (Insect behavior is very directly and delicately controlled by genetics).
- c) Mutation-induced physical changes resulting in decreased strength or fertility.

(5) Through the ingestion of radionuclide contaminated pollen or honey (nectar concentrated by bees) or through various uses of beeswax, there may be unanticipated human exposures to radiation.

I (9) - 7 Yes. See response to I (9) - 3 above.

I (9) - 8 I do not know. See responses to I (9) - 5,6 above.

RWilson