

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Appeal Board

In the Matter of)	
)	
THE CLEVELAND ELECTRIC)	Docket Nos. 50-440 OL
ILLUMINATING CO. ET AL.)	50-441 OL
)	
(Perry Nuclear Power Plant,)	
Units 1 and 2))	

AFFIDAVIT OF DR. CARL J. JOHNSON

I, Dr. Carl J. Johnson, duly sworn depose and say:

1. I hold a Masters degree in Public Health from the University of California at Berkeley, MD and MS degrees from Ohio State University, and DVM and BS degrees from Michigan State University. I have extensive experience in the fields of pathology, epidemiology, public health, and preventive medicine. I am a recognized expert in the epidemiology of illness due to environmental pollutants such as radionuclides.

2. The purpose of this affidavit is to address the health consequences of exposure of cancer-susceptible persons to the radioactive effluents to be routinely emitted by the Perry Nuclear Power Plant (PNPP), which consists of two 1205 MWe boiling water reactors (BWRs) located in Lake County in northeastern Ohio. According to Tables D-1 and D-4 of the Final Environmental Statement (FES), NUREG-0884, each PNPP unit is projected to emit 7280 Curies per year of radioactive noble gases, 47 Curies per year of tritium, 9.5 Curies of carbon-14,

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and less than one Curie each of various other radionuclides, all emitted as gaseous effluents discharged to the atmosphere.

Liquid effluents, discharged

to Lake Erie, include 47 Curies of tritium and less than one Curie each of other radionuclides. It should be noted that these are projected releases; operating experience with smaller BWRs indicates that actual releases may be 10 to 200 times greater. For the purposes of this affidavit the FES values will be assumed.

3. PNPP meteorological data (Final Safety Analysis Report, Section 2.3.2.1.1 and wind rose Figures 2.3-3 through 2.3-6) show that winds are distributed from all directions, with prevailing winds from the east-southeast clockwise through the west-southwest directions, with an average wind speed of 8.2 miles per hour. The gaseous emissions will therefore be dispersed throughout the environment within a 25-40 mile radius.

4. Numerous pathways exist by which an individual living in this radius will be exposed to the radioactive emissions from PNPP. These pathways include external exposure from gaseous and liquid effluents and radionuclides deposited on the ground, inhalation of iodines and particulates, ingestion of crops, milk, meat, or aquatic foods containing radionuclides, and drinking contaminated water.

Radioactive elements ingested or inhaled pose a greater threat than does external exposure, as an individual carrying an internal source will be irradiated by it continually until it is

eliminated by biological excretion or radioactive decay. In addition to the rather large amounts of tritium and carbon-14 (and smaller amounts of radiiodine) which are known to accumulate internally, it must be recognized that the extremely large quantities of noble gases to be released by PNPP will not remain inert but will decay into biologically active elements. For example, krypton-87, of which PNPP is projected to emit 136 curies, will decay into rubidium-87, which has a half-life of 5E11 years and which will accumulate in the food chain. Xenon-135 (projected PNPP emission of 1093 curies) decays into cesium-135, having a half-life of 3 million years, and which is again biologically active. Krypton-88 decays into rubidium-88; xenon-138 decays into cesium-138. These substances have shorter half-lives, but will be absorbed by living organisms.

5. It is well recognized that exposure to low levels of ionizing radiation can induce cancer. It is now recognized that there is no "safe" level of radiation exposure, and that low levels of radiation may in fact pose a greater cancer risk per rem than higher levels.

There are a number of mechanisms of radiation damage to body cells, including damage to blood vessels, damage to a cell's membrane, formation of harmful substances such as hydrogen peroxide, damage to the reticulo-endothelial system (such that white blood cells fail to recognize and eliminate foreign protein and cancer cells), and direct damage to a cell's nucleus. The latter two mechanisms are thought to be

significant in the production of cancer.

When ionizing radiation interacts with body cells, there are four possible outcomes. (1) no damage is done; (2) the cell is killed or damaged such that it cannot reproduce itself; (3) the cell is damaged, but the damage is repaired; or (4) the cell is damaged but survives and reproduces itself in a disturbed form, eventually forming a malignancy. Although the cancer may not become apparent until 5, 10 or even 50 years after the exposure to radiation, the injury occurred at the time of exposure.

Thus, chronic exposure to ionizing radiation (as will occur in an individual living in the vicinity of PNPP and consuming food and water contaminated by the routine radioactive effluents from PNPP)

constitutes irreparable harm, as there is no way of repairing the carcinogenic damage to body cells that will occur. It is my professional opinion that the FES estimates of radionuclide release into the environment indicate a grave risk to the health of those living near PNPP.

6. It is believed that genetic factors play a role in determining which persons in a population exposed to carcinogens will be afflicted with cancer. A person having a history of cancer on both sides of the family is especially at risk. It is my professional opinion that the exposure of such a person to the radioactive effluents from PNPP constitutes severe irreparable harm and should be avoided at all costs.

Carl J. Johnson
Carl J. Johnson, MD, MS, MPH

Sworn to and subscribed before me this 5th day of September
1985.

Shirley A. Riedel
Notary public

My Commission Expires Nov. 27, 1986. *SR*
10403 West Colfax Avenue
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AFFIDAVIT OF SUSAN L. HIATT

I, Susan L. Hiatt, duly sworn, depose and say:

1. I am a member of Ohio Citizens for Responsible Energy;
2. I reside approximately 12.5 miles SW-WSW of the Perry Nuclear Power Plant;
3. I frequent the immediate vicinity of the Perry Nuclear Power Plant for business and recreational purposes;
4. I consume foods grown in the immediate vicinity of the Perry Nuclear Power Plant;
5. I obtain water for drinking, cooking, bathing, and garden irrigation from Lake Erie;
6. There is a history of cancer on both my mother's and father's sides of my family.

Susan L. Hiatt

Susan L. Hiatt

Sworn to and subscribed before me this 19th day of September 1985.

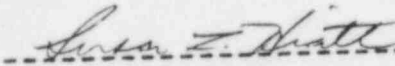


Marie Gasser
Notary public
MARIE S. GASSER, Notary Public
STATE OF OHIO - (Lake County)
My Commission Expires 12/6/89

CERTIFICATE OF SERVICE

This is to certify that copies of the foregoing were served by ^{DOCKETED} USNRC
deposit in the U.S. Mail, first class, postage prepaid, this
-----25th----- day of SEPT-----, 1985 to the Service List.

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Susan L. Hiatt

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