

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD
Before Administrative Judges
Louis J. Carter, Chair
Frederick J. Shon
Dr. Oscar H. Paris

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In the Matter of: : Docket Nos.

CONSOLIDATED EDISON COMPANY OF NEW YORK : 50-247 SP
Inc. (Indian Point, Unit No. 2), : 50-286 SP
:
POWER AUTHORITY OF THE STATE OF NEW YORK : July 23, 1982
(Indian Point, Unit No. 3) :
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Testimony Submitted on Behalf of
"New York City Council" Intervenors

By

DR. STEVEN R. MESHNICK

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Testimony of Dr. Steven R. Meshnick

The effects of a major accident in one of the nuclear reactors at the Indian Point Nuclear Generating Station in Buchanan, New York, would be catastrophic, particularly if the wind were blowing toward New York City. In this testimony, I will describe some of the medical consequences of such an accident.

It is difficult to predict the health effects of an accident because there are large gaps in our knowledge both about reactor functioning and about the medical effects of radiation. Furthermore, the effects of any reactor accident are highly dependent on weather conditions which are extremely variable. Thus, mathematical models had to be created in order to predict the consequences of an accident. Many of these models contain assumptions which underestimate the effects of an accident. It is clear, however, that even with conservative assumptions, an accident at Indian Point would cause a high and completely unacceptable level of morbidity and mortality.

In this testimony, a model, developed by Ericson (Accident IV) (1) will be applied to the Indian Point Reactors. This is a PWR 4 type of accident. In applying this model to Indian Point, I will assume that the wind is blowing steadily toward New York City. This is a very reasonable assumption since the wind blows in this direction 20% of the year (2). In this accident scenario, a cloud of radioactive gases which is more than four miles wide would pass through New York City. Those who were in the path of this cloud would receive high doses of radiation. Most of those exposed would receive more than five rems to the

bone marrow, more than 25 rems to the thyroid and more than 25 rems to the lungs.

There would be no time to evacuate people from the path of the cloud because the cloud would reach New York City in a matter of hours. This cloud would be wider than the island of Manhattan. On a working day, there are 16 million people in Manhattan, and all of them could become contaminated. Would the authorities notify the public? Even if they did, few would be able to leave in time and avoid exposure. In addition, even if the cloud passed through Queens and Brooklyn instead of Manhattan, the consequences would be grim. Several million people would still be exposed to dangerous levels of radiation.

What would be the medical effects of this accident scenario? The incidence of both fatal and non-fatal cancers would increase dramatically. I will assume two million people are exposed. Their average whole body exposures (40 miles from the reactors) would be 20 rems, with 45 rems to their lungs and 900 rems to their thyroids. Using conventional conversion factors (3), these exposures would cause 4,000 fatal cancers of which 900 would be fatal lung cancers. Additionally, these exposures would cause 360,000 thyroid cancers (both benign and malignant) and thousands of other benign cancers.

The conversion factors used above, however, probably significantly underestimate the effects of radiation. According to Gofman (4), a 20 rem whole body dose doubles the risk of fatal cancer for persons aged 10 to 40. If all two million radiation victims were between 10 and 40, the accident would cause 400,000

cases of fatal cancer.

For children under 10, a 20 rem whole body exposure increases the risk of cancer 10-16 fold, while for those over 40, a 20 rem whole body exposure only increases the risk of cancer slightly (1-20%) (4). Assuming 20% of the population is less than 10 and 20% is over 40, this accident would cause over one million cancer deaths.

An accident at Indian Point would, in this way, kill between 4,000 and one million New Yorkers. The radioactive releases would cause, in addition, hundreds of thousands of benign cancers. The radiation would not discriminate on the basis of sex, occupation or race--all would succumb. Young children and fetuses, however, are especially vulnerable to the effects of radiation and they would suffer from a disproportionate number of cancer fatalities. There would be many other serious medical aftereffects of the accident, as well. Pregnant women would have miscarriages or give birth to children with birth defects as a result of their radiation exposures (4). Many people exposed to the radioactive cloud would have weakened immune systems (5) and could become chronically or fatally ill with infections from which they could have otherwise recovered.

We have been taught in school to believe that we, as American citizens, have the right to live healthy and productive lives. We in New York City are living with the specter of an accident at Indian Point. As long as this exists, our rights as citizens are being denied us.

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