

March 7, 2005

The Honorable Edward J. Markey
United States House of Representatives
Washington, D.C. 20515

Dear Congressman Markey:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your letter dated January 19, 2005, concerning potential health effects to members of the public living near nuclear power plants and, in particular, potential health effects in the vicinity of the Dresden nuclear plant in Illinois. The enclosures to this letter provide copies of several documents related to your request. The NRC is committed to protecting public health and safety, which includes monitoring environmental releases from operating nuclear reactors.

In fulfilling our mission to protect public health and safety, the NRC establishes and enforces regulations to limit radiation exposure to members of the public from nuclear power plants. The limits established by these regulations are based, in part, on the recommendations of the International Commission on Radiological Protection and the National Council on Radiation Protection and Measurements, as well as the standards set by the U.S. Environmental Protection Agency (EPA).

In particular, the NRC's regulations at 10 CFR Part 20 provide specific limits on radiation exposure to the public from nuclear power plants. These regulations also require that each nuclear power reactor licensee must maintain control over radioactive materials in gaseous and liquid effluents. Furthermore, the regulations require each licensee to keep levels of radioactive materials in effluents to unrestricted areas as low as reasonably achievable. Toward that end, the NRC requires each licensee to submit to the Commission an annual report specifying the quantities of the principal radionuclides released in gaseous and liquid effluents to unrestricted areas, as well as any other information that may be required to estimate maximum potential annual radiation doses to the public resulting from effluent releases.

Representative effluent release and radiological environmental monitoring reports submitted by Exelon Generation Company, LLC, the license holder for the Dresden Nuclear Power Station, for reporting years 1999 – 2003, are provided in enclosures 1-5. These reports demonstrate that the quantities of effluents released to the environment result in exposure far below the regulatory limits set to protect the public. Specifically, the reports show that the potential radiation dose to individuals living at the very edge of the plant's boundary is less than 10 percent of the dose from natural background sources of radioactivity in Grundy County and that at distances greater than 1 mile from the plant's boundary, the potential radiation dose is less than 1 percent of the natural background radiation. Exelon and the State of Illinois verify the level of radiological effluents by routinely measuring the amount of radioactive material present in the air, soil, water, crops, and milk in the area surrounding the Dresden plant, and the NRC regularly inspects the monitoring program and the results. Reviews of these measurements demonstrate that the effluents are within the impacts evaluated in the Final Environmental Impact Statement used to license the Dresden plant.

NRC inspectors also investigate any unanticipated releases of radioactive material from nuclear power plants. For example, regional inspectors investigated an unanticipated tritium release from the Dresden Nuclear Power Station in 1994. In that instance, slightly contaminated water containing tritium leaked from a storage tank into the storm sewers. Subsequent analysis of water samples taken from the storm sewers indicated that the amount of tritium in the water was well below the limits set forth in Part 20 of Title 10 of the Code of Federal Regulations, which governs radiation dose limits for individual members of the public. Further details on this event, as well as other unanticipated releases at Dresden and Braidwood Nuclear Power Station, are provided in enclosure 6.

The NRC also routinely reviews information from studies and evaluations of the health effects of radiation exposure conducted by national and international radiation protection experts, such as the U.S. National Academies' reports on the *Biological Effects of Ionizing Radiation* (BEIR). The most recent BEIR report addressing exposure to ionizing radiation was BEIR V, "Health Effects of Exposure to Low Levels of Ionizing Radiation." This report can be viewed on the National Academy Press web site at <http://www.nap.edu/books/0309039959/html/>. The BEIR V report concluded that, in general, adverse health effects have been observed only at relatively high dose and dose rates. Conversely, the report states, "Studies of populations chronically exposed to low-level radiation, such as those residing in regions of elevated natural background radiation, have not shown consistent or conclusive evidence of an associated increase in the risk of cancer."

As noted by Mr. James E. Dyer, Director of NRC's Office of Nuclear Reactor Regulation, in his April 16, 2004 letter to Mrs. Sauer, the NRC is not aware of a demonstrated link between radioactive emissions or radioactive byproducts from nuclear power plants and changes or trends either in cancer population statistics or in juvenile cancer risk that would lead to a change in the radiation protection limits or that would prompt additional epidemiological studies. The potential of a link between nuclear power plant operation and changes on trends in cancer statistics was examined by the experts at the National Cancer Institute (NCI), which is part of the National Institute of Health of the U.S. Department of Health and Human Services (HHS). In January 2004, the staff provided Mrs. Sauer a copy of the 1990 NCI report, "Cancer Populations Living Near Nuclear Facilities," which found no evidence that an excess occurrence of cancer has resulted from living near nuclear facilities. That report was prepared in response to the direction of the U.S. Congress. As noted in the report by the study authors and in your letter, it is very difficult to draw conclusions from any study involving low doses and a small study population. The statistical power of such comparisons is low and while the study concluded that there was no evidence of increased cancer from the operation of nuclear facilities, it is also true that the absence of any effect cannot be proven. While the NRC does not rely solely on such studies to make a determination that the health risks associated with living near a nuclear reactor are minimal, the results are consistent with other sources of information on radiation health effects, such as the BEIR V report mentioned above.

Finally, while scientists are continuing to study the causes of cancer, the medical community currently believes that the development of cancer depends on many factors, such as genetics, nutrition, and personal habits, as well as environmental factors. In addition, great care is required when interpreting trends in health statistics data, such as the data cited for Grundy County, Illinois. Over short time periods, rates such as infant mortality may appear very large in counties with small total population figures. When trends are expressed as percentages (often per 1,000 residents), changes in rates may appear to be even more magnified. Usually,

when examined over longer time periods, these changes fluctuate around the averages for larger population health statistics, such as those for the State of Illinois as a whole.

If you have further questions regarding this matter, please contact me.

Sincerely,

/RA/

Nils J. Diaz

Enclosures:

1. Dresden Nuclear Power Station 1999
Radioactive Effluent Release Report
2. Dresden Nuclear Power Station 2000
Radioactive Effluent Release Report and
Offsite Dose Calculation Manual Changes
3. Dresden Nuclear Power Station Annual
Radiological Environmental Operating
Report for 2001
4. Revised Dresden Nuclear Power Station
2002 Radioactive Effluent Release Report
5. Dresden Nuclear Power Station 2003
Radioactive Effluent Release Report and
Offsite Dose Calculation Manual Changes
6. Information abstracted from NRC Inspection
Reports for the Dresden Generation Station,
Units 2 and 3, involving the unanticipated
release of tritium and/or radioactive
contaminants from the Dresden, Braidwood,
and LaSalle Stations since 1990
7. NUREG-1437, Supplement 17, Generic
Environmental Impact Statement for License
Renewal of Nuclear Plants, regarding
Dresden Nuclear Power Station, Units 2
and 3 (CD enclosed)