EIS000996

Sonnenschein

ST. LOUIS CHILDREN'S AQUARIUM

EXPLORE THE WONDERS OF WATER AT MID-AMERICA AQUACENTER®

ST. LOUIS CHILDREN'S AQUARIUM
416 Hanley Industrial Court
Brentwood, MO 63144
(314) 647-9594
Fax: 647-7874
Website: www.i-base.com\aquacntr

RECEIVED
JAN 20 2000

Testimony to the U.S. Department of Energy

Hello. My name is Leonard Sonnenschein. I am President of St. Louis Children's Aquarium. At St. Louis Children's Aquarium, we study the Mississippi River and its affect as a natural resource on our lives and on the lives of billions of other plants and animals.

1 The Mississippi River provides 70% of the nation's water resources and its boundaries as a water resource begin in the East in Appalachian Mountains and in the West in the Rocky Mountain Range. Drainage to the Mississippi River to the north and south is defined within the entire range of the United States and all the way North into Canada as well. Along the drainage system are 76 of 103 operating commercial reactors. Most of the shipments of radioactive materials are designed for storage in the Yucca Mountains will pass through this water resource area. The potential devastating effects of the gases released from the fission processes of radioactive nucleotides within these used cells being transported is unknown. What is known is that these gases will get into water resources of the Mississippi River drainage system and will affect our food, our water, and that for the billions of plants and animals that depend on this water. What would happen if an accident occurred and one of the shipments might fall into the water and affect 70% of the nation's water resource could be even more devastating. I question the validity of the casks which are storing radioactive materials capable of keeping fission products from escaping. What is the capacity, should these casks fall from trucks carrying them to withstand physical destruction? My suggestion is to
2 keep these radioactive materials stored at the point of origin until more is known about the safe handling and
3 storage safety. Furthermore, one could hope that the continuous production of these materials might cease.

4 If after this testimony and in due process of consideration, the Department of Energy decides to go ahead with the relocation process, my recommendation is to consider the safety issues associated with the transportation of radioactive materials. Create a road safety department which evaluates and approves each shipment timetable and safety associated with road conditions, weather conditions, accounting for traffic congestion and vacation travel. Further, consideration should be made for the safest movement through the least populated areas. However, wherever shipments going from point A to point B, they are more likely to fall within the Mississippi River drainage system and will most definitely affect billions of lives at some level of our living continuation. I would like to formally enter this document entitled "Radioactive Releases from Nuclear Power Plants of the Mississippi River Watershed," published by Nuclear Information and Resource Service, as an exhibit to my testimony.

Thank you.

Leonard A. Sonnenschein
President

Attachment

MID-AMERICA AQUA CENTER®

A Not For Profit Corporation
Committed to Learning by Participation

Printed on Recycled Paper

8. Accurate, economically-feasible filtering and monitoring technologies do not exist for some of the major reactor by-products, such as radioactive hydrogen (tritium) and noble gases, such as krypton and xenon. Some liquids and gases are retained in tanks so that the shorter-lived radioactive materials can break down before the batch is released to the environment.

9. Government regulations allow radioactive water to be released to the environment containing "permissible" levels of contamination. **Permissible does not mean safe.** Detectors at reactors are set to allow contaminated water to be released, unfiltered, if below the "permissible" legal levels.

10. The Nuclear Regulatory Commission relies upon self-reporting and computer modeling from reactor operators to track radioactive releases and their projected dispersion. A significant portion of the environmental monitoring data is extrapolated – virtual, not real.

11. Accurate accounting of all radioactive wastes released to the air, water and soil from the entire reactor fuel production system is simply not available. The system includes uranium mines and mills, chemical conversion, enrichment and fuel fabrication plants, nuclear power reactors, and radioactive waste storage pools, casks, and trenches.

12. Increasing economic pressures to reduce costs, due to the deregulation of the electric power industry, could further reduce the already unreliable monitoring and reporting of radioactive releases. Deferred maintenance can increase the radioactivity released – and the risks.

13. Many of the reactor's radioactive by-products continue giving off radioactive particles and rays for enormously long periods – described in terms of "half-lives." A radioactive material gives off hazardous radiation for at least ten half-lives. One of the radioactive isotopes of iodine (iodine-129) has a half-life of 16 million years; technetium-99 = 211,000 years; and plutonium-239 = 24,000 years. Xenon-135, a noble gas, decays into cesium-135, an isotope with a 2.3-million-year half-life.

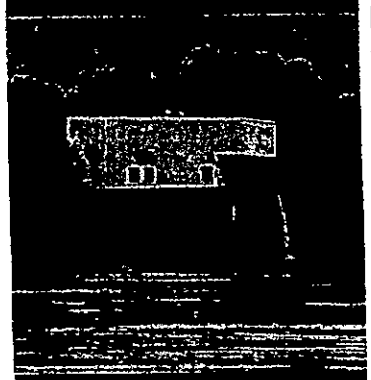
14. It is scientifically established that low-level radiation damages tissues, cells, DNA and other vital molecules – causing cell death (apoptosis), genetic mutations, cancers, leukemia, birth defects, and reproductive, immune and endocrine system disorders.

This pamphlet is intended for reprint and, therefore, is not copyrighted.

Nuclear Plant Releases to Air, Water and Soil

Callaway Nuclear Power Plant near Fulton, Missouri

It does not take an accident . . .



Callaway Plant Water Intake Structure and Discharge Area on the Missouri River

Typical discharge points for gaseous and liquid releases to air, water and soil from nuclear power plants including:

planned releases from the reactor's routine operation

and

unplanned releases from leaks and accidents.

RADIOACTIVE RELEASES FROM THE NUCLEAR POWER PLANTS OF THE MISSISSIPPI RIVER WATERSHED

WHAT ARE THE DANGERS?

Nuclear Information and Resource Service
1424 16th St., N.W., Suite 404
Washington, D.C. 20036

November 1999

St. Louis, MO 1/20/00
Exhibit 1-1
Sonnenschein

EIS000996

What you *ARE NOT* supposed to know:

1. **It doesn't take an accident** for a nuclear power plant to release radioactivity into our air, water and soil. All it takes is the plant's everyday routine operation, and federal regulations permit these radioactive releases.

2. Radioactivity is measured in "curies." A large medical center, with as many as 1000 laboratories in which radioactive materials are used, may have a combined inventory of only about two curies. In contrast, an average operating nuclear power reactor will have approximately 16 billion curies in its reactor core. This is the equivalent radioactivity of at least 1,000 Hiroshima bombs.

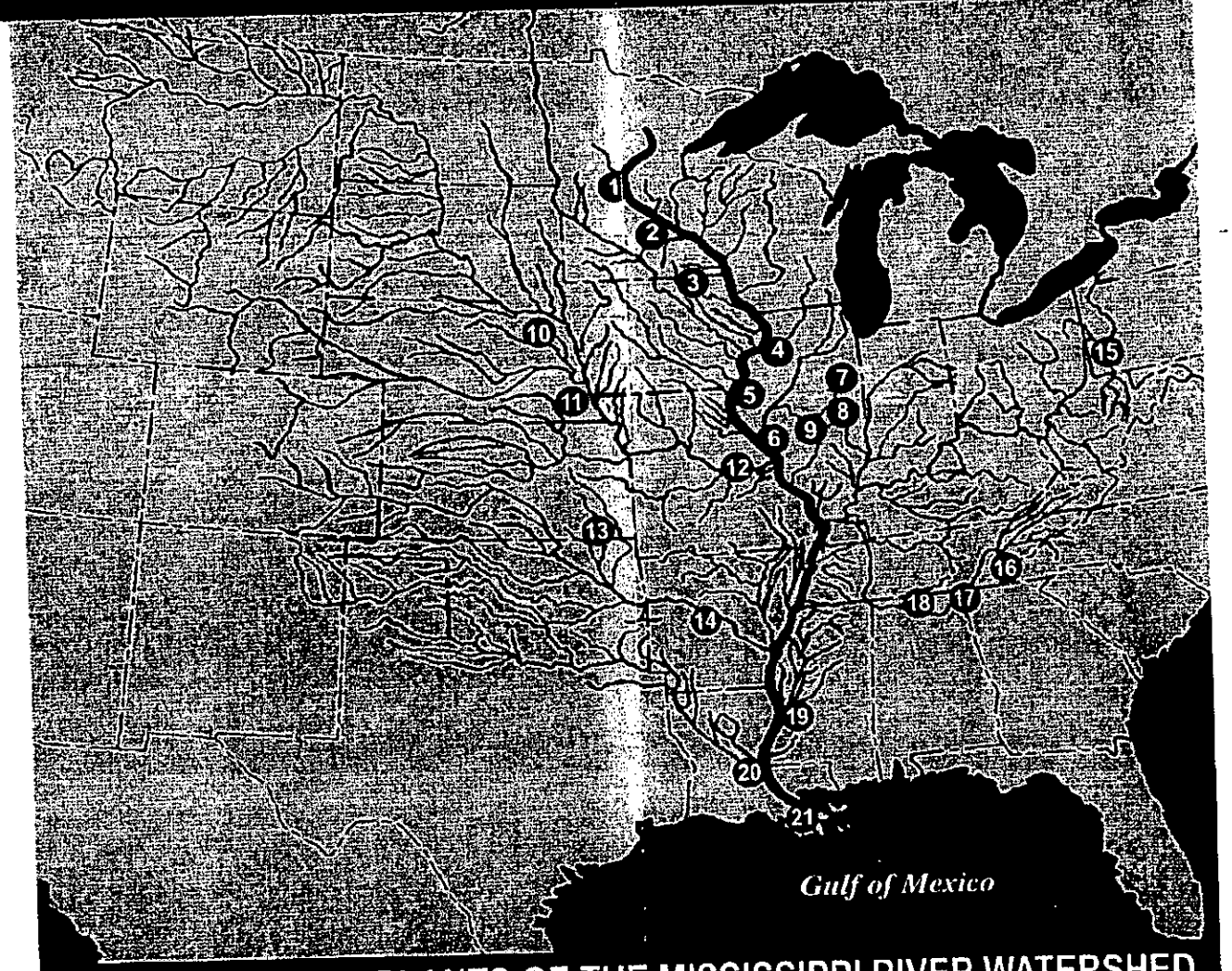
3. A reactor's fuel rods, pipes, tanks and valves can leak. Mechanical failure and human error can also cause leaks. As a nuclear plant ages, so does its equipment – and leaks generally increase.

4. Some contaminated water is intentionally removed from the reactor vessel to reduce the amount of the radioactive and corrosive chemicals that damage valves and pipes. This water is filtered and then either recycled back into the cooling system or released into the environment.

5. A typical 1000-megawatt pressurized-water reactor (with a cooling tower) takes in 20,000 gallons of river, lake or ocean water per minute for cooling, circulates it through a 50-mile maze of pipes, returns 5,000 gallons per minute to the same body of water, and releases the remainder to the atmosphere as vapor. A 1000-megawatt reactor without a cooling tower takes in even more water – as much as one-half million gallons per minute. The discharge water is contaminated with radioactive elements in amounts that are not precisely known or knowable, but are biologically active.

6. Some radioactive fission gases, stripped from the reactor cooling water, are contained in decay tanks for days before being released into the atmosphere through filtered rooftop vents. Some gases leak into the power plant buildings' interiors and are released during periodic "purges" or "ventings." These airborne gases contaminate not only the air, but also soil and water.

7. Radioactive releases from a nuclear power reactor's routine operation often are not fully detected or reported. Accidental releases may not be completely verified or documented.



NUCLEAR POWER PLANTS OF THE MISSISSIPPI RIVER WATERSHED

1. Monticello
2. Prairie Island 1 & 2
3. Duane Arnold
4. Byron 1 & 2
5. Quad Cities 1 & 2
6. LaSalle 1 & 2
7. Dresden 2 & 3
8. Braidwood 1 & 2
9. Clinton
10. Ft. Calhoun
11. Cooper
12. Callaway
13. Wolf Creek
14. Arkansas Nuclear One, 1 & 2
15. Beaver Valley 1 & 2
16. Watts Barr
17. Sequoyah 1 & 2
18. Browns Ferry 2 & 3
19. Grand Gulf
20. River Bend
21. Waterford 3

TOTAL REACTORS: 31

EIS00996