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MAR 25 1987

Mr. Frank Stiles  
5121 Drummond Road  
Mound, MN 55364

Dear Mr. Stiles:

Thank you for your March 11, 1987 letter regarding the use of ozone for the containment of nuclear waste.

The U.S. Nuclear Regulatory Commission is not authorized to pursue your proposal for developmental research because we cannot properly be involved in the development of a technology that we may eventually be called upon to regulate. We are responsible for regulating the disposal of radioactive waste from licensed activities and high-level radioactive waste generated by the U.S. Department of Energy (DOE).

However, DOE is responsible for research and development of different containment and disposal methods for radioactive waste. I note that you have already sent a copy of this letter to DOE. In an effort to assist you in this matter, I have taken the liberty of forwarding your letter to Mr. Ralph Stein (the DOE point of contact for such inquiries). If you have further questions regarding this matter, we suggest you write to Mr. Ralph Stein, Director, Engineering and Geotechnology Division, Office of Civilian Radioactive Waste Management, U.S. Department of Energy, RW-23, Washington, D.C. 20585.

Sincerely,

Original Signed by  
MICHAEL J. BELL

Robert E. Browning, Director  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

cc: Ralph Stein with 3/11/87 ltr.  
from Mr. Stiles

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PDR WASTE PDR  
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WM 87123/Glenn/3/17/87

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LETTER TO: Frank Stiles  
FROM: Robert E. Browning, Director  
DWM  
SUBJECT: USE OF OZONE FOR THE CONTAINMENT OF NUCLEAR WASTE  
DATE: MAR 25 1987

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(Mailed by the WMDCC)  
3-16-87 10:30  
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March 11, 1987

Dear Sir,

The necessity for a safe and effective means of storing nuclear waste i.e., spent fuel rods, has long been a major concern in the industry. Recently, measures were enacted to find and study various locations in this country for the long-term storage of these wastes. Many proposals and methods have been discussed, each involving their own environmental impact surveys which dealt with adequate protection throughout the life-span of these radioactive materials. Containment is, of course, the least expensive and procedurally safest option. Along these lines, a theory has occurred to me.

The sun is essentially a nuclear reactor. The energy (light, heat) it emits spans every range of the spectrum. From gamma rays, through visible light, to radio waves (and presumably wave lengths beyond either end of the spectrum yet to be identified)... Gamma rays, X-rays and ultraviolet rays are, to a degree, harmful to life as we know it. They are of the shorter wave lengths. Yet, we on Earth, are spared from their destructive properties by virtue of our ozone layer. The shorter the wave length, the more efficient the ozone deflection and absorption. The least penetrable rays from space are the gamma rays, followed by the X-rays (astronomers found it necessary to construct and launch an orbital X-ray telescope in order to achieve unimpeded views of space in that wave length), then ultraviolet rays (though mostly absorbed, some percentile does filter through to the surface), and the visual spectrum which passes directly to us. It would seem, from the standpoint of physics

that, ozone plays a crucial role in the absorption and deflection of short wave length radiation.

Might it be assumed that, ozone could play a similar role in the absorption of nuclear radiation emitted from spent fuel rods?

I propose construction of containment devices based upon this concept. Think of it as the Earth/Sun relationship in reverse. The sun inside, and the Earth's atmosphere (in reverse order) surrounding it. Theoretically, the rod would need to be suspended in a vacuum. The next envelope (if necessary) would be the mesosphere, although it's function is still somewhat of a mystery. This, in turn, would be surrounded by ozone. The ozone layer would absorb radiation as well as oxidize the rods, accelerating their loss of radiation. Through natural chemical reaction, the ozone surrounding the spent nuclear fuel would facilitate the molecular breakdown of the rod into less harmful elements. Further enveloping layers would probably be necessary to replenish the ozone..

The entire "system" could then be sealed in an airtight vacuum bottle and further packed in a safety vessel similar to the canisters used in shipping radioactive isotopes. One would think that we could protect ourselves from within, the same way our atmosphere protects us from without.

Be advised that I am, by no means, an expert. You will no doubt find many discrepancies in this report. However, if this theory holds the least bit of validity, I sincerely hope that you will pursue experimentation based upon these ideas.

Signed,  
  
Frank Stiles