

**From:** Charles Tinkler, *RES*  
**To:** Diane Jackson; Jason Schaperow  
**Date:** 3/6/01 5:12PM  
**Subject:** Re: TWG swedish govt question

Diane - attached are my thoughts are responding to the questions from the Swedish gov't. By the way what organization are we talking about exactly?

>>> Diane Jackson 02/28/01 02:12PM >>>  
Charlie and Jason -

Below is a question from the swedish gov't. I could not find an previous answer to it. I wrote the response based on your info in the report. But can you add any to the answer to make it more complete. Is there any reason why we would not use the Chernobyl values?

Thanks - Diane

2. Release Fractions, Page A4-5, Table A4-3. 100% release is assumed for noble gases, iodine and cesium. We feel that this is too conservative. The latest estimates by the Swedish Radiation Protection Institute for the Tjernobyi case says that 100 % of the noble gases, 50-60 % of the iodine and 20-40% of the cesium were released at the accident.

Response: The staff performed several sensitivity studies varying the release fractions to 75 percent for iodine and cesium. A discussion of the use of the radioactive inventories is provided in Appendices 4 and 4A of NUREG-1728

**CC:** David Diec; Farouk Eltawila; George Hubbard; Jack Rosenthal

*C/3*

## RESPONSE TO SWEDISH COMMENTS ON THE GENERIC SPENT FUEL POOL STUDY

The final release fractions of radionuclides assumed in the offsite consequence analyses for the generic spent fuel pool study are largely based on the release fractions determined appropriate for severe reactor accidents as documented in NUREG-1465, "Accident Source Terms for Light Water Nuclear Power Plants." This is particularly true of the release fractions for the volatile fission product species. Once the spent fuel pool heatup reaches the point of rapid and escalating zirconium oxidation the degradation of the affected spent fuel proceeds much as it does in severe reactor accidents thus it was judged that for the affected fuel the release fractions would be comparable. The release fractions in NUREG-1465 were drawn from a consideration of risk significant accidents identified in past probabilistic evaluations of reactor plants. While the estimated Chernobyl releases may differ from the assumed release fractions for the volatile form of cesium in our study, (iodine and noble gases were irrelevant to our study because of decay) this may be attributed to differences between the Chernobyl accident and a spent fuel pool accident involving massive heatup of the spent fuel pool. Differences may also arise when comparing release fractions from the fuel (as used in our study) and values estimated from offsite sampling at Chernobyl. Treatment of the offsite release in our study assumed all of the inventory released from the fuel was available to be transported offsite in the plume, whereas in some accidents deposition may occur onsite depending on the degree of confinement or containment. The NRC evaluation did not attempt to resolve that level of uncertainty.