

September 24, 2008

Mr. Ron Fowler  
140 Wingspan Way  
Chapin, SC 29036

SUBJECT: RESPONSE TO CONCERNS REGARDING ENSURING COMPLIANCE WITH  
40 CFR PART 190

Mr. Fowler:

Thank you for contacting the U.S. Nuclear Regulatory Commission (NRC) regarding NRC's role associated with the implementation of the Environmental Protection Agency (EPA) Uranium Fuel Cycle Standard, 40 Code of Federal Regulations (CFR) Part 190. Your concerns and questions appeared to focus on oversight and enforcement of 40 CFR Part 190 throughout the fuel cycle and whether there was documentation to verify that the regulation was being monitored and appropriately enforced.

The requirements in 40 CFR Part 190 were developed to encompass the nuclear fuel cycle including nuclear fuel reprocessing facilities. Consequently, release limits for certain isotopes such as krypton-85 (Kr-85) and iodine-129 (I-129), that may be only part of some aspects of the fuel cycle, were established. Processes occurring in non-reactor fuel cycle facilities in the United States, for example, do not release Kr-85 or I-129. The requirements associated with levels of Kr-85, I-129, and Pu-239 and other transuranic alpha emitters were developed considering, and would be applicable to, the reprocessing of spent nuclear fuel. Currently, commercial reprocessing of spent nuclear fuel does not occur in the United States.

NRC's regulations, 10 CFR Part 20, "Standards for Protection Against Radiation", include the requirement that licensees comply with 40 CFR Part 190. The NRC helps ensure compliance with 10 CFR Part 20 and, by reference, 40 CFR Part 190 through its oversight and inspection programs. The NRC pursues appropriate enforcement actions when licensees are determined to be out of compliance with NRC regulations.

Licensed facilities throughout the uranium fuel cycle, including nuclear power reactors, typically have license conditions or commitments to maintain the radioactive effluents as low as is reasonably achievable (ALARA). Commercial nuclear power plants have Technical Specifications, which require licensees to comply with Appendix I to 10 CFR Part 50. Appendix I to 10 CFR Part 50 provides annual dose objectives that are considered to be ALARA for gaseous and liquid effluents. These dose objectives are 3 mrem to the total body for liquid effluents and 5 mrem to the total body for gaseous effluents. In the Federal Register Notice 42 FR 2858 (the Federal Register notice that preceded implementation of 40 CFR Part 190), EPA states that NRC examined its existing programs for implementing Appendix I to 10 CFR Part 50 at nuclear reactors. NRC's review established that it was feasible for a licensee to inherently show compliance of 40 CFR Part 190 limits by meeting the dose objectives in 10 CFR Part 50 Appendix I.

The staff reviewed a sampling of effluent reports from 1981 to 2005, and the available effluent reports for 2006 to assess the levels of Kr-85, I-129, and Pu-239 and other transuranic

R. Fowler

-2-

alpha emitters released from operating nuclear power plants. The level of Kr-85 released annually varies from approximately 3000 Ci in 1981 to approximately 500 Ci in 2006. These levels are significantly less than the 50,000 Ci stated in the regulation considering that an average reactor produces slightly less than 1 Gigawatt of electrical energy per year. The isotopes of iodine reported in the reactor effluent reports are I-131, I-133 and I-135. Iodine's isotope, I-129, is not reported since it is a weak beta emitter and the amounts released are relatively small compared to the other iodine isotopes. Therefore, for reactors, I-129 does not contribute significantly to the iodine dose. The gross alpha data from the effluent reports also indicate that the 0.5 mCi limit cited in 40 CFR 190.10(b) is being met.

If you have any questions concerning this response, please contact Mr. Yawar Faraz of my staff at (301) 492-3207 or via e-mail at [yawar.faraz@nrc.gov](mailto:yawar.faraz@nrc.gov) .

Sincerely,

**/RA/**

Margie Kotzalas, Branch Chief  
Mox Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

R. Fowler

-2-

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Sincerely,

**/RA/**

Margie Kotzalas, Branch Chief  
Mox Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

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