

November 3, 2000

Dr. Nga Tran
The Johns Hopkins University
Department of Health Policy and Management
Risk Sciences and Public Policy Institute (Room 457)
624 North Broadway
Baltimore, Maryland 21202

SUBJECT: REVIEW OF DRAFT REPORT ENTITLED, "CHEMICAL AND RADIATION ENVIRONMENTAL RISK MANAGEMENT AT THE CROSSROADS - CASE STUDIES"

Dear Dr. Tran:

The NRC staff has reviewed the subject document and found the six case studies provide a very informative range of environmental issues that will afford readers a better appreciation and understanding of a number of risk management issues. In particular, we found the many tables, which summarize key points across the six cases, to be very informative and useful. We do have the following general recommendations:

- 1) The evaluation of risks is quite variable between the six case studies (e.g., characteristics of exposed individual, exposure duration, time of the analysis, conservatism of the calculation). The report could be improved by: (a) explaining key concepts (e.g., dose versus risk, reasonably maximally exposed individual, average member of the critical group) early in the report and maintaining consistent use throughout the document; and (b) adding a table that provides, to the extent possible, information on conservatism in the risk/dose calculations.
- 2) The information presented for the Sequoyah Fuels Corporation (SFC) is based on proposals submitted to the U.S. Nuclear Regulatory Commission for approval, however, the NRC has not approved the SFC proposals at this time. In Section 2, clarification of the current regulatory status for each of the case studies would be helpful.

Specific comments are enclosed that provide the basis for our general comments and offer additional information regarding the SFC case study. Additionally, the Final Site Characterization Report for SFC was published in December 1999 and can be provided to you on your request. If you have any questions regarding our comments, please contact me at (301) 415-7437 or Tim McCartin at (301) 415-6681.

Sincerely,
/RA/

John T. Greeves, Director
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: Comments on Draft Report
Dr. Nga Tran
The Johns Hopkins University
Department of Health Policy and Management

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Comments on Draft Report

- 1) Page 18; Table 4.1.1

A number of chemicals of potential concern are listed for the Sequoyah Fuels Corporation (SFC) (e.g., benzyl chloride), however, none were detected at the SFC site. It is unclear why these chemicals are listed if they have not been detected on the site.

- 2) Page 26; Discussion under "Duration of Exposure"

This Section raises issues related to the duration of exposure to be used in calculating a lifetime risk and the length of time over which estimates of risk should be made. The discussion could be confusing because it intermingles the exposure duration (e.g., 30 years and 70 years) and time frames over which the calculation is made (e.g., 500 years, 100 years). It would improve clarity if the two concepts (e.g., exposure duration and time frame for the calculation) were defined and discussed separately.

The discussion on page 26 states dose calculations at SFC assumed a reasonably maximum exposure adult resident when in fact the calculation assumed an "average member of the critical group" (as stated on page 35). Also, the report states on page 44 that the calculation for SFC uses the "average member of the community." The report needs to accurately reflect the correct terminology used for exposure scenarios and should discuss potential differences in dose/risk calculations resulting from use of the different approaches (e.g., "average member of the critical group" and reasonably maximally exposed individual or RMEI).

- 3) Page 29; Table 4.1.3a

The Table specifies an exposure duration of 30 years for SFC, however, the radiation limit is an "annual" dose and does not require a 30 year exposure. The table includes exposure duration and the time frame of the calculation for MFDS. If the Table is going to include both exposure duration and the time frame for the calculation for one case study, an effort should be made to include both time periods for the other case studies and presented in a manner that does not confuse the two time periods (see also comment 2).

- 4) Pages 33-35; Cancer Risks

The cancer risks and doses for some of the case studies are extremely high (e.g., cancer risk of nearly one, 8000 rem/year) while others are extremely low (e.g., 10^{-7} per year). Some discussion is needed to put these risks in perspective because these calculations were most likely not done in a consistent manner (e.g., differences in the approach to conservatism in calculations may account for some of the differences). It is inappropriate to simply compare the results without some discussion regarding the approach used for estimating the dose/risk.

- 5) Page 35; Dose as a Measure of Risk

The report states that risk levels were not contained in SFC's Decommissioning Plan, however, doses were calculated. A dose value is easily converted into a cancer risk value via a conversion factor. The report needs to clearly define how the authors are using the term "risk" and why dose should not be used as a surrogate for the level of risk.

6) Page 58; Cost Estimates

The report states the estimated direct cost of D&D at SFC is approximately \$23 million. This is correct in that the direct or "contractor" costs are approximately \$23 million, however, if one includes other costs incurred by SFC the gross costs are approximately \$87 million. The reported costs for the other case studies could have similar subtleties in the reported cost estimates.

7) Page 58; Monitoring Requirements

The report states that the Cherokee Nation is concerned about the requirement for a 1000 year monitoring program for SFC. It should be clarified that NRC's regulations do not specify an explicit value of 1000 years for the monitoring program and monitoring is not required when doses are below 100 mrem/yr TEDE.

8) Pages 77 and 78; Casualties at SFC

The report mentions casualties associated with SFC but offers no information on the events leading to the casualties. Readers could incorrectly interpret the report as indicating casualties were the result of decommissioning activities. The report should provide sufficient information to inform the reader that the identified "accidents" were during operations at SFC and not a result of decommissioning activities. Additionally, the extent of the "casualties" were distinctly different for the two accidents and may deserve more clarification as to what is meant by "casualty."

9) Page 81; Exclusion of Citizens from Meetings

The report states that citizens have been frustrated by their exclusion from meetings that discuss financial assurance at SFC. The report should clarify that the NRC has excluded citizens only from those discussions involving proprietary information.

10) Page 81, and Page 83 Table 4.4.3; Local Stakeholders

The report fails to identify the stakeholder group Environment as Relates to Health (EARTH), which has been active at SFC. For more information, EARTH can be contacted by calling Jokay Dowell (telephone number: 918-458-5502) or writing (POB 73, Park Hill, Oklahoma 74451).

11) Page 82, Table 4.4.2; Public Hearing

The Table does not fully describe the opportunity for a hearing under NRC regulations. An affected party can request a hearing before the Commission (the State requested and received such a hearing).

12) Page 91; Meetings at SFC

The report states the NRC has held scoping meetings at SFC. In actuality, the NRC has held a number of public meetings at SFC but only one "scoping" meeting in connection with the EIS. Additionally, the report incorrectly states NRC has made, at times, a determination that an EIS is not required at SFC. The NRC made a determination (May, 2000) that an EIS is required at SFC (Draft EIS expected in approximately one year).

13) Page 98; Public Input

The report states that NRC regulations require licensees to only obtain public input on institutional control. NRC regulations also require the licensee to explain how the information on institutional controls, provided in the public comments, was used by the licensee.