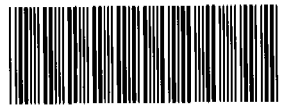
2E801

RMRS Rocky Mountain Remediation Services, L.L.C.
... protecting the environment

INTEROFFICE MEMORANDUM



DATE: October 9, 1995

TO: Andy Ledford, OU4 Closure, X8673

FROM: Win Chromec, PhD., Technical Support, X4535

SUBJECT: DRAFT TABLES AND FIGURES FOR HUMAN HEALTH RISK ASSESSMENT (HHRA) OF OPERABLE UNIT NO. 4 95-FWC-014

The data analysis and calculations for the Operable Unit No. 4 (OU4) HHRA have been completed. A report on the selection of potential chemicals of concern (PCOCs), tables documenting the chemical of concern (COC) selection and risk characterization, and figures showing sampling locations and the conceptual site model (CSM) are attached. A full report will be delivered by November 1. A brief summary and discussion of the results are presented below.

Metal and radionuclide PCOCs were determined using the Gilbert statistical methodology for comparison to background. The liner PCOCs were determined by comparing liner means and maximums to background surface soil UTLs and means. A list of PCOCs for each medium is shown in Table 10a. All organics detected were considered as PCOCs.

The selection of COCs followed the standard EPA Region VIII and Rocky Flats methodology. All compounds detected at less than 5 per cent frequency were compared to the appropriate Programmatic Risk-based Preliminary Remediation Goals (PPRGs) to determine if any hot spots exist. None were found, as shown in Table 11. Tables 12 and 13 list detected chemicals for which no toxicity values are given in EPA data bases. Possible effects of these chemicals on the risk assessment will be discussed in the uncertainty section.

A concentration-toxicity screen was performed for each medium on all metal and radionuclide PCOCs and organic chemicals with a greater than 5 percent detection frequency that have toxicity values. Results are given in Tables 14 through 22 . The COCs are summarized by medium in Table 23.

Sampling points used in this risk assessment are shown in Figures 1 and 2. The division of the OU into two areas of concern (AOCs) is shown in Figure 3. The AOC 1 includes IHSS 101, the solar ponds, and the berms surrounding them. The AOC 2 is all the rest of OU 4 to the north and down-slope.

The CSM for OU4 is shown in Figure 4. It was used to determine which pathways and receptors would be assessed. All pathways and receptors marked as complete will be evaluated in the HHRA.

Exposure point concentrations used in the risk characterization are given in Table 24. The concentrations were determined using EPA Region VIII guidance. The 95 percent upper confidence limit (95% UCL) on the mean was used, except when it exceeded the maximum, in which case the maximum was used.

The calculations for estimated risk and hazard for each AOC, pathway, and receptor are given in Tables 27 through 49. The estimated carcinogenic risks and the noncarcinogenic hazard indices are summarized for AOC 1 in Table 25 and for AOC 2 in Table 26.

1/2

In AOC 1, the estimated risk for the current onsite industrial worker (security guard), spending about 30 minutes a day in the AOC, was 3E-08 for the central tendency (CT) or average exposure and 8E-07 for the reasonable maximum exposure (RME). The hazard index was well below one. The estimated risks for the future onsite construction worker were 4E-07 for the CT and 1E-06 for the RME. The hazard index was below one for both. The estimated risks to the construction worker due to the pond liner materials alone were 2E-07 for the CT and 1E-06 for the RME. Thus, the majority of the estimated risk to the future onsite construction worker would be due to the liner materials, not the subsurface soil. The estimated risks for the future onsite office worker were the highest. The CT risk was 6E-07 and the RME risk was 2E-05; the hazard index was below one.

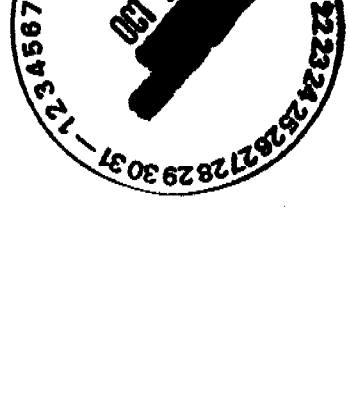
In AOC 2, the estimated risk for the current onsite worker (security guard), spending about 30 minutes a day in the AOC, was 7E-09 for the central tendency (CT) or average exposure and 2E-07 for the reasonable maximum exposure (RME). The hazard index was well below one. The estimated risk for the future onsite open-space recreational user were 3E-08 for the CT and 5E-07 for the RME. The hazard index was below one for both.

These results indicate that the only significant risk would be from surface soil to a future onsite office worker, located in a building on AOC 1. The drivers for surface soil in AOC 1 are americium-241 and plutonium-239/240.

Radiation dose estimates will be calculated for the final report.

Please contact me at X4535 if you have any questions.

cc (w/o attachments):
John Hopkins
Rotha Randall
Rick Roberts
Mary Siders
ERPD Records (2)



2/2