

**Scientific Analysis
Administrative Change Notice**

Complete only applicable items.

1. Document Number:	ANL-NBS-MD-000014	2. Revision:	00	3. ACN:	01
4. Title:	Biosphere Dose Conversion Factor Importance and Sensitivity Analysis				
5. No. of Pages Attached:	1				

6. Approvals:		
Preparer:	Paul E Sanchez <i>Paul Sanchez</i> Print Name and Sign	4-27-05 Date
Checker: MARYLA WASIOLOAK	<i>Maryla Wasiolak</i> Print name and sign	4/27/05 Date
QER:	Judy Gebhart <i>J Gebhart</i> Print name and sign	4/28/05 Date
Responsible Manager:	Ming Zhu <i>Ming Zhu</i> Print name and sign	4/28/05 Date

7. Affected Pages	8. Description of Change:
7-7	To resolve CR 4734-007, please make following change: page 7-7, paragraph three, first sentence Similarly, the following volcanic-exposure-related biosphere characteristics that are important to repository development are addressed: radionuclide accumulation in surface soil (Section 6.3.4.1), radionuclide transport to air (Section 6.3.4.2 6.4.3.2), radionuclide transport to crops (Section 6.3.4.3), and radionuclide transport to animal products (Section 6.3.4.4).

Acceptance Criteria from Section 2.2.1.3.14, *Biosphere Characteristics*

Acceptance Criterion 1, *System Description and Model Integration Are Adequate.*

Subcriterion (1): The BDCFs are used directly by the TSPA. The analyses in Sections 6.2 and 6.3, which identify the important pathways, processes, and parameters for the groundwater and volcanic exposure scenarios, respectively, show that the TSPA adequately incorporates important site features, physical phenomena, and couplings.

Subcriterion (2): This analysis of the BDCFs, which constitutes the biosphere model abstraction, provides the technical bases for determining the relative importance of the transport processes for the following groundwater-related biosphere characteristics that are important to repository performance: radionuclide accumulation in surface soil (Section 6.2.4.1); operation of evaporative coolers (Section 6.2.4.2.1); resuspension of surface soil (Section 6.2.4.2.2.); radionuclide transport to crops (Section 6.2.4.3); radionuclide transport to animal products (Section 6.2.4.4); and radionuclide transport to aquatic foods (Section 6.2.4.5). This analysis also provides technical bases for determining the relative importance of the receptor exposure pathways from groundwater that are important to repository development: ingestion (Section 6.2.5.1), inhalation of particulate matter (Section 6.2.5.2.1), inhalation of aerosols generated by evaporative coolers (Section 6.2.5.2.2), and external exposure (Section 6.2.5.3).

Similarly, the following volcanic-exposure-related biosphere characteristics that are important to repository development are addressed: radionuclide accumulation in surface soil (Section 6.3.4.1), radionuclide transport to air (Section 6.3.4.2), radionuclide transport to crops (Section 6.3.4.3), and radionuclide transport to animal products (Section 6.3.4.4). This analysis also provides technical bases for determining the relative importance of the receptor exposure pathways related to volcanic exposure that are important to repository development: inhalation (Section 6.3.5.1), ingestion (Section 6.3.5.2), and internal exposure (Section 6.3.5.3).

Subcriterion (3): Section 6.1 shows that this importance and sensitivity analysis is consistent with modeling of biosphere characteristics (climate, soil, sorption coefficients, volcanic ash properties, and radionuclide properties) used in other abstractions. Input parameters and related assumptions for the biosphere model were developed in a series of five analysis reports (BSC 2004 [DIRS 169673], BSC 2004 [DIRS 169671], BSC 2004 [DIRS 169672], BSC 2004 [DIRS 169458], and BSC 2004 [DIRS 169459]) that are used consistently over all applicable abstractions.

Acceptance Criterion 2, *Data Are Sufficient for Model Justification.*

Subcriterion (1): Input parameters for the biosphere model were developed and justified in a series of five analysis reports: BSC 2004 [DIRS 169673], BSC 2004 [DIRS 169671], BSC 2004 [DIRS 169672], BSC 2004 [DIRS 169458], and BSC 2004 [DIRS 169459]. These parameters are consistent with the characteristics of the reference biosphere and the definition of the RMEI in 10 CFR 63.312 [DIRS 156605]. The dietary and lifestyle characteristics of the RMEI were determined based on surveys of people living in the Amargosa Valley. Adequate descriptions of how the data were used, interpreted, and appropriately synthesized into the parameters are provided in the five analysis reports noted above.