

IMBA Professional Plus (Vers. 4.0)

User Manual

Appendix B: Bioassay Quality Assurance

August, 2005

Prepared by

ACJ & Associates, Inc.
129 Patton Street
Richland, WA 99354-1618
USA

AND

Radiation Protection Division
Health Protection Agency
Chilton, Didcot, Oxon OX11 0RQ
United Kingdom

E-mail: imba@hpa-rp.org.uk
Web Site: www.imbaprofessional.com

© 1997-2005 HPA

Anthony C. James, Ph.D.^Ψ
James W. Marsh, Ph.D.^{*}
Alan W. Phipps, Ph.D.^{*}
Alan Birchall, Ph.D.^{*}
Naomi S. Jarvis, Ph.D.⁺
David King^{*}
Tracy Smith^{*}
Katie Davis^{*}
Noelle Easterday^Ψ
Antonia H. James[£]

^Ψ ACJ & Associates, Inc., Richland, WA 99354, USA.

^{*} Health Protection Agency, Centre for Radiation, Chemical, and Environmental Hazards, Radiation Protection Division, Didcot, OXON OX11 0RQ, UK.

⁺ Consultant, Allison Park, PA 15101, USA.

This Appendix provides quality assurance of the accuracy of bioassay calculations performed by **IMBA Professional Plus**, by comparing the calculated results with “benchmark” values obtained by running the Health Protection Agency – Radiation Protection Division’s (HPA-RPD’s) **PLEIADES** code. **PLEIADES** was one of the codes used by the International Commission on Radiological Protection (ICRP) to calculate the intake retention functions (IRFs) for bioassay analysis and dose coefficients currently recommended by ICRP.

Contents

<u>B.1. QUALITY ASSURANCE PLAN</u>	1
<u>B.1.1. CRITERIA FOR ACCURACY OF CALCULATED BIOASSAY QUANTITIES</u>	1
<u>B.1.2. USE OF BENCHMARK COMPARISONS OF CALCULATED BIOASSAY QUANTITIES</u>	2
<u>B.2. RESULTS OF BENCHMARK COMPARISONS</u>	2
<u>B.2.1. SUMMARY OF “BENCHMARK” RESULTS FOR INTAKE BY INJECTION</u>	2
<u>B.2.2. SUMMARY OF “BENCHMARK” RESULTS FOR INTAKE BY INGESTION</u>	7
<u>B.2.3. SUMMARY OF “BENCHMARK” RESULTS FOR INTAKE BY INHALATION</u>	10
<u>B.3. VERIFICATION OF MAXIMUM LIKELIHOOD FITTING ROUTINE</u>	14
<u>B.4. FITTING MULTIPLE INTAKES</u>	16
<u>B.5. FITTING MULTIPLE BIOASSAY QUANTITIES</u>	19
<u>B.6. VALIDATION OF IMBA-FIT’S USE OF < LOD DATA</u>	21
<u>B.7. LISTING OF BIOASSAY FUNCTION BENCHMARKS</u>	24
<u>B.7.1. ACTINIUM – INJECTION OF ²²⁷Ac</u>	24
<u>B.7.1.1. Urinary Excretion Rate</u>	24
<u>B.7.1.2. Fecal Excretion Rate</u>	24
<u>B.7.1.3. Whole Body Retention</u>	25
<u>B.7.2. AMERICIUM – INHALATION OF ²⁴¹Am (TYPE “M”)</u>	25
<u>B.7.2.1. Urinary Excretion Rate</u>	26
<u>B.7.2.2. Fecal Excretion Rate</u>	26
<u>B.7.2.3. Whole Body Retention</u>	26
<u>B.7.2.4. Lung Retention</u>	26
<u>B.7.3. AMERICIUM – INGESTION OF ²⁴¹Am (F₁ = 0.0005)</u>	26
<u>B.7.3.1. Urinary Excretion Rate</u>	26
<u>B.7.3.2. Fecal Excretion Rate</u>	27
<u>B.7.3.3. Whole Body Retention</u>	27
<u>B.7.4. AMERICIUM – INJECTION OF ²⁴¹Am</u>	27
<u>B.7.4.1. Urinary Excretion Rate</u>	27
<u>B.7.4.2. Fecal Excretion Rate</u>	27
<u>B.7.4.3. Whole Body Retention</u>	27
<u>B.7.5. ANTIMONY – INHALATION OF ¹²⁵Sb (TYPE “F”)</u>	28
<u>B.7.5.1. Urinary Excretion Rate</u>	28
<u>B.7.5.2. Fecal Excretion Rate</u>	28
<u>B.7.5.3. Whole Body Retention</u>	28
<u>B.7.6. ANTIMONY – INHALATION OF ¹²⁵Sb (TYPE “M”)</u>	28

[£] Guy’s, King’s & St. Thomas’ School of Medicine, London, SE1 1UL, UK.

<u>B.7.6.1. Urinary Excretion Rate</u>	28
<u>B.7.6.2. Fecal Excretion Rate</u>	28
<u>B.7.6.3. Whole Body Retention</u>	29
<u>B.7.6.4. Lung Retention</u>	29
<u>B.7.7. ANTIMONY – INGESTION OF ¹²⁵Sb (F₁ = 0.1)</u>	29
<u>B.7.7.1. Urinary Excretion Rate</u>	29
<u>B.7.7.2. Fecal Excretion Rate</u>	29
<u>B.7.7.3. Whole Body Retention</u>	29
<u>B.7.8. ANTIMONY – INJECTION OF ¹²⁵Sb</u>	30
<u>B.7.8.1. Urinary Excretion Rate</u>	30
<u>B.7.8.2. Fecal Excretion Rate</u>	30
<u>B.7.8.3. Whole Body Retention</u>	30
<u>B.7.9. ARSENIC – INHALATION OF ⁷⁴As (TYPE “M”)</u>	30
<u>B.7.9.1. Urinary Excretion Rate</u>	30
<u>B.7.9.2. Fecal Excretion Rate</u>	30
<u>B.7.9.3. Whole Body Retention</u>	31
<u>B.7.9.4. Lung Retention</u>	31
<u>B.7.10. ARSENIC – INGESTION OF ⁷⁴As (F₁ = 0.5)</u>	31
<u>B.7.10.1. Urinary Excretion Rate</u>	31
<u>B.7.10.2. Fecal Excretion Rate</u>	31
<u>B.7.10.3. Whole Body Retention</u>	31
<u>B.7.11. ARSENIC – INJECTION OF ⁷⁴As</u>	31
<u>B.7.11.1. Urinary Excretion Rate</u>	31
<u>B.7.11.2. Fecal Excretion Rate</u>	32
<u>B.7.11.3. Whole Body Retention</u>	32
<u>B.7.12. BARIUM – INHALATION OF ¹³³Ba (TYPE “F”)</u>	32
<u>B.7.12.1. Urinary Excretion Rate</u>	32
<u>B.7.12.2. Fecal Excretion Rate</u>	32
<u>B.7.12.3. Whole Body Retention</u>	32
<u>B.7.13. BARIUM – INGESTION OF ¹³³Ba (F₁ = 0.1)</u>	32
<u>B.7.13.1. Urinary Excretion Rate</u>	33
<u>B.7.13.2. Fecal Excretion Rate</u>	33
<u>B.7.13.3. Whole Body Retention</u>	33
<u>B.7.14. BARIUM – INJECTION OF ¹³³Ba</u>	33
<u>B.7.14.1. Urinary Excretion Rate</u>	33
<u>B.7.14.2. Fecal Excretion Rate</u>	33
<u>B.7.14.3. Whole Body Retention</u>	34
<u>B.7.15. BARIUM – INJECTION OF ¹⁴⁰Ba</u>	34
<u>B.7.15.1. Urinary Excretion Rate</u>	34
<u>B.7.15.2. Fecal Excretion Rate</u>	34
<u>B.7.15.3. Whole Body Retention</u>	34
<u>B.7.16. BERKELIUM – INHALATION OF ²⁴⁹Bk (TYPE “M”)</u>	34
<u>B.7.16.1. Urinary Excretion Rate</u>	35
<u>B.7.16.2. Fecal Excretion Rate</u>	35
<u>B.7.16.3. Whole Body Retention</u>	35
<u>B.7.16.4. Lung Retention</u>	35
<u>B.7.17. BERKELIUM – INGESTION OF ²⁴⁹Bk (F₁ = 0.0005)</u>	35
<u>B.7.17.1. Urinary Excretion Rate</u>	35
<u>B.7.17.2. Fecal Excretion Rate</u>	36
<u>B.7.17.3. Whole Body Retention</u>	36
<u>B.7.18. BERKELIUM – INJECTION OF ²⁴⁹Bk</u>	36
<u>B.7.18.1. Urinary Excretion Rate</u>	36
<u>B.7.18.2. Fecal Excretion Rate</u>	36
<u>B.7.18.3. Whole Body Retention</u>	36
<u>B.7.19. CALCIUM – INHALATION OF ⁴⁵Ca (TYPE “M”)</u>	37
<u>B.7.19.1. Urinary Excretion Rate</u>	37

<u>B.7.19.2. Fecal Excretion Rate</u>	37
<u>B.7.19.3. Whole Body Retention</u>	37
<u>B.7.19.4. Lung Retention</u>	37
<u>B.7.20. CALCIUM – INGESTION OF ⁴⁵Ca (F₁ = 0.3)</u>	37
<u>B.7.20.1. Urinary Excretion Rate</u>	37
<u>B.7.20.2. Fecal Excretion Rate</u>	38
<u>B.7.20.3. Whole Body Retention</u>	38
<u>B.7.21. CALCIUM – INJECTION OF ⁴⁵Ca</u>	38
<u>B.7.21.1. Urinary Excretion Rate</u>	38
<u>B.7.21.2. Fecal Excretion Rate</u>	38
<u>B.7.21.3. Whole Body Retention</u>	38
<u>B.7.22. CALIFORNIUM – INHALATION OF ²⁴⁹Cf (TYPE “M”)</u>	39
<u>B.7.22.1. Urinary Excretion Rate</u>	39
<u>B.7.22.2. Fecal Excretion Rate</u>	39
<u>B.7.22.3. Whole Body Retention</u>	39
<u>B.7.22.4. Lung Retention</u>	39
<u>B.7.23. CALIFORNIUM – INGESTION OF ²⁴⁹Cf (F₁ = 0.0005)</u>	39
<u>B.7.23.1. Urinary Excretion Rate</u>	40
<u>B.7.23.2. Fecal Excretion Rate</u>	40
<u>B.7.23.3. Whole Body Retention</u>	40
<u>B.7.24. CALIFORNIUM – INJECTION OF ²⁴⁹Cf</u>	40
<u>B.7.24.1. Urinary Excretion Rate</u>	40
<u>B.7.24.2. Fecal Excretion Rate</u>	40
<u>B.7.24.3. Whole Body Retention</u>	40
<u>B.7.25. CALIFORNIUM – INJECTION OF ²⁵²Cf</u>	41
<u>B.7.25.1. Urinary Excretion Rate</u>	41
<u>B.7.25.2. Fecal Excretion Rate</u>	41
<u>B.7.25.3. Whole Body Retention</u>	41
<u>B.7.26. CARBON – INJECTION OF ¹⁴C (ORGANIC)</u>	41
<u>B.7.26.1. Urinary Excretion Rate</u>	41
<u>B.7.26.2. Fecal Excretion Rate</u>	42
<u>B.7.27. CERIUM – INHALATION OF ¹³⁹Ce (TYPE “M”)</u>	42
<u>B.7.27.1. Urinary Excretion Rate</u>	42
<u>B.7.27.2. Fecal Excretion Rate</u>	42
<u>B.7.27.3. Whole Body Retention</u>	42
<u>B.7.27.4. Lung Retention</u>	42
<u>B.7.28. CERIUM – INHALATION OF ¹³⁹Ce (TYPE “S”)</u>	43
<u>B.7.28.1. Urinary Excretion Rate</u>	43
<u>B.7.28.2. Fecal Excretion Rate</u>	43
<u>B.7.28.3. Whole Body Retention</u>	43
<u>B.7.28.4. Lung Retention</u>	43
<u>B.7.29. CERIUM – INGESTION OF ¹³⁹Ce (F₁ = 0.0005)</u>	43
<u>B.7.29.1. Urinary Excretion Rate</u>	43
<u>B.7.29.2. Fecal Excretion Rate</u>	44
<u>B.7.29.3. Whole Body Retention</u>	44
<u>B.7.30. CERIUM – INJECTION OF ¹³⁹Ce</u>	44
<u>B.7.30.1. Urinary Excretion Rate</u>	44
<u>B.7.30.2. Fecal Excretion Rate</u>	44
<u>B.7.30.3. Whole Body Retention</u>	44
<u>B.7.31. CERIUM – INHALATION OF ¹⁴³Ce (TYPE “M”)</u>	44
<u>B.7.31.1. Urinary Excretion Rate</u>	45
<u>B.7.31.2. Fecal Excretion Rate</u>	45
<u>B.7.31.3. Whole Body Retention</u>	45
<u>B.7.31.4. Lung Retention</u>	45
<u>B.7.32. CERIUM – INHALATION OF ¹⁴³Ce (TYPE “S”)</u>	45
<u>B.7.32.1. Urinary Excretion Rate</u>	45

<u>B.7.32.2. Fecal Excretion Rate</u>	45
<u>B.7.32.3. Whole Body Retention</u>	45
<u>B.7.32.4. Lung Retention</u>	45
<u>B.7.33. CERIUM – INGESTION OF ¹⁴³Ce (F₁ = 0.0005)</u>	46
<u>B.7.33.1. Urinary Excretion Rate</u>	46
<u>B.7.33.2. Fecal Excretion Rate</u>	46
<u>B.7.33.3. Whole Body Retention</u>	46
<u>B.7.34. CERIUM – INJECTION OF ¹⁴³Ce</u>	46
<u>B.7.34.1. Urinary Excretion Rate</u>	46
<u>B.7.34.2. Fecal Excretion Rate</u>	46
<u>B.7.34.3. Whole Body Retention</u>	46
<u>B.7.35. CERIUM – INHALATION OF ¹⁴⁴Ce (TYPE “M”)</u>	47
<u>B.7.35.1. Urinary Excretion Rate</u>	47
<u>B.7.35.2. Fecal Excretion Rate</u>	47
<u>B.7.35.3. Whole Body Retention</u>	47
<u>B.7.35.4. Lung Retention</u>	47
<u>B.7.36. CERIUM – INHALATION OF ¹⁴⁴Ce (TYPE “S”)</u>	47
<u>B.7.36.1. Urinary Excretion Rate</u>	48
<u>B.7.36.2. Fecal Excretion Rate</u>	48
<u>B.7.36.3. Whole Body Retention</u>	48
<u>B.7.36.4. Lung Retention</u>	48
<u>B.7.37. CERIUM – INGESTION OF ¹⁴⁴Ce (F₁ = 0.0005)</u>	48
<u>B.7.37.1. Urinary Excretion Rate</u>	48
<u>B.7.37.2. Fecal Excretion Rate</u>	48
<u>B.7.37.3. Whole Body Retention</u>	49
<u>B.7.38. CERIUM – INJECTION OF ¹⁴⁴Ce</u>	49
<u>B.7.38.1. Urinary Excretion Rate</u>	49
<u>B.7.38.2. Fecal Excretion Rate</u>	49
<u>B.7.38.3. Whole Body Retention</u>	49
<u>B.7.39. CESIUM – INHALATION OF ¹³⁴Cs (TYPE “F”)</u>	49
<u>B.7.39.1. Urinary Excretion Rate</u>	50
<u>B.7.39.2. Fecal Excretion Rate</u>	50
<u>B.7.39.3. Whole Body Retention</u>	50
<u>B.7.40. CESIUM – INGESTION OF ¹³⁴Cs (F₁ = 0.99)</u>	50
<u>B.7.40.1. Urinary Excretion Rate</u>	50
<u>B.7.40.2. Fecal Excretion Rate</u>	50
<u>B.7.40.3. Whole Body Retention</u>	50
<u>B.7.41. CESIUM – INJECTION OF ¹³⁴Cs</u>	51
<u>B.7.41.1. Urinary Excretion Rate</u>	51
<u>B.7.41.2. Fecal Excretion Rate</u>	51
<u>B.7.41.3. Whole Body Retention</u>	51
<u>B.7.42. CESIUM – INHALATION OF ¹³⁷Cs (TYPE “F”)</u>	51
<u>B.7.42.1. Urinary Excretion Rate</u>	51
<u>B.7.42.2. Fecal Excretion Rate</u>	52
<u>B.7.42.3. Whole Body Retention</u>	52
<u>B.7.43. CESIUM – INGESTION OF ¹³⁷Cs (F₁ = 0.99)</u>	52
<u>B.7.43.1. Urinary Excretion Rate</u>	52
<u>B.7.43.2. Fecal Excretion Rate</u>	52
<u>B.7.43.3. Whole Body Retention</u>	52
<u>B.7.44. CESIUM – INJECTION OF ¹³⁷Cs</u>	53
<u>B.7.44.1. Urinary Excretion Rate</u>	53
<u>B.7.44.2. Fecal Excretion Rate</u>	53
<u>B.7.44.3. Whole Body Retention</u>	53
<u>B.7.45. CHLORINE – INHALATION OF ³⁶Cl (TYPE “F”)</u>	53
<u>B.7.45.1. Urinary Excretion Rate</u>	53
<u>B.7.45.2. Fecal Excretion Rate</u>	53

<u>B.7.45.3. Whole Body Retention</u>	54
<u>B.7.46. CHLORINE – INHALATION OF ³⁶CL (TYPE “M”)</u>	54
<u>B.7.46.1. Urinary Excretion Rate</u>	54
<u>B.7.46.2. Fecal Excretion Rate</u>	54
<u>B.7.46.3. Whole Body Retention</u>	54
<u>B.7.46.4. Lung Retention</u>	54
<u>B.7.47. CHLORINE – INGESTION OF ³⁶CL (F₁ = 0.99)</u>	54
<u>B.7.47.1. Urinary Excretion Rate</u>	55
<u>B.7.47.2. Fecal Excretion Rate</u>	55
<u>B.7.47.3. Whole Body Retention</u>	55
<u>B.7.48. CHLORINE – INJECTION OF ³⁶CL</u>	55
<u>B.7.48.1. Urinary Excretion Rate</u>	55
<u>B.7.48.2. Fecal Excretion Rate</u>	55
<u>B.7.48.3. Whole Body Retention</u>	55
<u>B.7.49. CHROMIUM – INJECTION OF ⁵¹CR</u>	55
<u>B.7.49.1. Urinary Excretion Rate</u>	56
<u>B.7.49.2. Fecal Excretion Rate</u>	56
<u>B.7.49.3. Whole Body Retention</u>	56
<u>B.7.50. COBALT – INHALATION OF ⁶⁰CO (TYPE “M”)</u>	56
<u>B.7.50.1. Urinary Excretion Rate</u>	56
<u>B.7.50.2. Fecal Excretion Rate</u>	56
<u>B.7.50.3. Whole Body Retention</u>	56
<u>B.7.50.4. Lung Retention</u>	57
<u>B.7.51. COBALT – INHALATION OF ⁶⁰CO (TYPE “S”)</u>	57
<u>B.7.51.1. Urinary Excretion Rate</u>	57
<u>B.7.51.2. Fecal Excretion Rate</u>	57
<u>B.7.51.3. Whole Body Retention</u>	57
<u>B.7.51.4. Lung Retention</u>	57
<u>B.7.52. COBALT – INGESTION OF ⁶⁰CO (F₁ = 0.1)</u>	58
<u>B.7.52.1. Urinary Excretion Rate</u>	58
<u>B.7.52.2. Fecal Excretion Rate</u>	58
<u>B.7.52.3. Whole Body Retention</u>	58
<u>B.7.53. COBALT – INGESTION OF ⁶⁰CO (F₁ = 0.05)</u>	58
<u>B.7.53.1. Urinary Excretion Rate</u>	58
<u>B.7.53.2. Fecal Excretion Rate</u>	58
<u>B.7.53.3. Whole Body Retention</u>	59
<u>B.7.54. COBALT – INJECTION OF ⁶⁰CO</u>	59
<u>B.7.54.1. Urinary Excretion Rate</u>	59
<u>B.7.54.2. Fecal Excretion Rate</u>	59
<u>B.7.54.3. Whole Body Retention</u>	59
<u>B.7.55. CURIUM – INHALATION OF ²⁴²CM (TYPE “M”)</u>	59
<u>B.7.55.1. Urinary Excretion Rate</u>	60
<u>B.7.55.2. Fecal Excretion Rate</u>	60
<u>B.7.55.3. Whole Body Retention</u>	60
<u>B.7.55.4. Lung Retention</u>	60
<u>B.7.56. CURIUM – INGESTION OF ²⁴²CM (F₁ = 0.0005)</u>	60
<u>B.7.56.1. Urinary Excretion Rate</u>	60
<u>B.7.56.2. Fecal Excretion Rate</u>	60
<u>B.7.56.3. Whole Body Retention</u>	61
<u>B.7.57. CURIUM – INJECTION OF ²⁴²CM</u>	61
<u>B.7.57.1. Urinary Excretion Rate</u>	61
<u>B.7.57.2. Fecal Excretion Rate</u>	61
<u>B.7.57.3. Whole Body Retention</u>	61
<u>B.7.58. CURIUM – INHALATION OF ²⁴⁴CM (TYPE “M”)</u>	61
<u>B.7.58.1. Urinary Excretion Rate</u>	62
<u>B.7.58.2. Fecal Excretion Rate</u>	62

<u>B.7.58.3. Whole Body Retention</u>	62
<u>B.7.58.4. Lung Retention</u>	62
<u>B.7.59. CURIUM – INGESTION OF ²⁴⁴CM (F₁ = 0.0005)</u>	62
<u>B.7.59.1. Urinary Excretion Rate</u>	62
<u>B.7.59.2. Fecal Excretion Rate</u>	62
<u>B.7.59.3. Whole Body Retention</u>	63
<u>B.7.60. CURIUM – INJECTION OF ²⁴⁴CM</u>	63
<u>B.7.60.1. Urinary Excretion Rate</u>	63
<u>B.7.60.2. Fecal Excretion Rate</u>	63
<u>B.7.60.3. Whole Body Retention</u>	63
<u>B.7.61. EUROPIUM – INJECTION OF ¹⁵²EU</u>	63
<u>B.7.61.1. Urinary Excretion Rate</u>	64
<u>B.7.61.2. Fecal Excretion Rate</u>	64
<u>B.7.61.3. Whole Body Retention</u>	64
<u>B.7.62. HAFNIUM – INJECTION OF ¹⁸¹HF</u>	64
<u>B.7.62.1. Urinary Excretion Rate</u>	64
<u>B.7.62.2. Fecal Excretion Rate</u>	64
<u>B.7.62.3. Whole Body Retention</u>	64
<u>B.7.63. HYDROGEN – INJECTION OF ³H (INORGANIC – HTO)</u>	65
<u>B.7.63.1. Whole Body Retention</u>	65
<u>B.7.64. HYDROGEN – INGESTION OF ³H (ORGANIC) (F₁ = 0.99)</u>	65
<u>B.7.64.1. Urinary Excretion Rate</u>	65
<u>B.7.64.2. Whole Body Retention</u>	65
<u>B.7.65. HYDROGEN – INJECTION OF ³H (ORGANIC)</u>	65
<u>B.7.65.1. Urinary Excretion Rate</u>	66
<u>B.7.65.2. Whole Body Retention</u>	66
<u>B.7.66. IODINE – INHALATION OF ¹²⁵I (TYPE “F”)</u>	66
<u>B.7.66.1. Urinary Excretion Rate</u>	66
<u>B.7.66.2. Fecal Excretion Rate</u>	66
<u>B.7.66.3. Whole Body Retention</u>	66
<u>B.7.66.4. Thyroid Retention</u>	66
<u>B.7.67. IODINE – INGESTION OF ¹²⁵I (F₁ = 0.99)</u>	67
<u>B.7.67.1. Urinary Excretion Rate</u>	67
<u>B.7.67.2. Fecal Excretion Rate</u>	67
<u>B.7.67.3. Whole Body Retention</u>	67
<u>B.7.67.4. Thyroid Retention</u>	67
<u>B.7.68. IODINE – INJECTION OF ¹²⁵I</u>	67
<u>B.7.68.1. Urinary Excretion Rate</u>	68
<u>B.7.68.2. Fecal Excretion Rate</u>	68
<u>B.7.68.3. Whole Body Retention</u>	68
<u>B.7.68.4. Thyroid Retention</u>	68
<u>B.7.69. IODINE – INHALATION OF ¹³¹I (TYPE “F”)</u>	68
<u>B.7.69.1. Urinary Excretion Rate</u>	68
<u>B.7.69.2. Fecal Excretion Rate</u>	68
<u>B.7.69.3. Whole Body Retention</u>	69
<u>B.7.69.4. Thyroid Retention</u>	69
<u>B.7.70. IODINE – INGESTION OF ¹³¹I (F₁ = 0.99)</u>	69
<u>B.7.70.1. Urinary Excretion Rate</u>	69
<u>B.7.70.2. Fecal Excretion Rate</u>	69
<u>B.7.70.3. Whole Body Retention</u>	69
<u>B.7.70.4. Thyroid Retention</u>	69
<u>B.7.71. IODINE – INJECTION OF ¹³¹I</u>	70
<u>B.7.71.1. Urinary Excretion Rate</u>	70
<u>B.7.71.2. Fecal Excretion Rate</u>	70
<u>B.7.71.3. Whole Body Retention</u>	70
<u>B.7.71.4. Thyroid Retention</u>	70

<u>B.7.72. Iridium – Inhalation of ¹⁹²Ir (Type “F”)</u>	70
<u>B.7.72.1. Urinary Excretion Rate</u>	70
<u>B.7.72.2. Fecal Excretion Rate</u>	70
<u>B.7.72.3. Whole Body Retention</u>	71
<u>B.7.73. Iridium – Inhalation of ¹⁹²Ir (Type “M”)</u>	71
<u>B.7.73.1. Urinary Excretion Rate</u>	71
<u>B.7.73.2. Fecal Excretion Rate</u>	71
<u>B.7.73.3. Whole Body Retention</u>	71
<u>B.7.73.4. Lung Retention</u>	71
<u>B.7.74. Iridium – Inhalation of ¹⁹²Ir (Type “S”)</u>	72
<u>B.7.74.1. Urinary Excretion Rate</u>	72
<u>B.7.74.2. Fecal Excretion Rate</u>	72
<u>B.7.74.3. Whole Body Retention</u>	72
<u>B.7.74.4. Lung Retention</u>	72
<u>B.7.75. Iridium – Ingestion of ¹⁹²Ir (F₁ = 0.01)</u>	72
<u>B.7.75.1. Urinary Excretion Rate</u>	72
<u>B.7.75.2. Fecal Excretion Rate</u>	73
<u>B.7.75.3. Whole Body Retention</u>	73
<u>B.7.76. Iridium – Injection of ¹⁹²Ir</u>	73
<u>B.7.76.1. Urinary Excretion Rate</u>	73
<u>B.7.76.2. Fecal Excretion Rate</u>	73
<u>B.7.76.3. Whole Body Retention</u>	73
<u>B.7.77. Iron – Inhalation of ⁵⁵Fe (Type “F”)</u>	73
<u>B.7.77.1. Urinary Excretion Rate</u>	74
<u>B.7.77.2. Fecal Excretion Rate</u>	74
<u>B.7.77.3. Whole Body Retention</u>	74
<u>B.7.78. Iron – Inhalation of ⁵⁵Fe (Type “M”)</u>	74
<u>B.7.78.1. Urinary Excretion Rate</u>	74
<u>B.7.78.2. Fecal Excretion Rate</u>	74
<u>B.7.78.3. Whole Body Retention</u>	74
<u>B.7.78.4. Lung Retention</u>	75
<u>B.7.79. Iron – Ingestion of ⁵⁵Fe (F₁ = 0.1)</u>	75
<u>B.7.79.1. Urinary Excretion Rate</u>	75
<u>B.7.79.2. Fecal Excretion Rate</u>	75
<u>B.7.79.3. Whole Body Retention</u>	75
<u>B.7.80. Iron – Injection of ⁵⁵Fe</u>	75
<u>B.7.80.1. Urinary Excretion Rate</u>	76
<u>B.7.80.2. Fecal Excretion Rate</u>	76
<u>B.7.80.3. Whole Body Retention</u>	76
<u>B.7.81. Iron – Inhalation of ⁵⁹Fe (Type “F”)</u>	76
<u>B.7.81.1. Urinary Excretion Rate</u>	76
<u>B.7.81.2. Fecal Excretion Rate</u>	76
<u>B.7.81.3. Whole Body Retention</u>	76
<u>B.7.82. Iron – Inhalation of ⁵⁹Fe (Type “M”)</u>	77
<u>B.7.82.1. Urinary Excretion Rate</u>	77
<u>B.7.82.2. Fecal Excretion Rate</u>	77
<u>B.7.82.3. Whole Body Retention</u>	77
<u>B.7.82.4. Lung Retention</u>	77
<u>B.7.83. Iron – Ingestion of ⁵⁹Fe (F₁ = 0.1)</u>	77
<u>B.7.83.1. Urinary Excretion Rate</u>	77
<u>B.7.83.2. Fecal Excretion Rate</u>	77
<u>B.7.83.3. Whole Body Retention</u>	78
<u>B.7.84. Iron – Injection of ⁵⁹Fe</u>	78
<u>B.7.84.1. Urinary Excretion Rate</u>	78
<u>B.7.84.2. Fecal Excretion Rate</u>	78
<u>B.7.84.3. Whole Body Retention</u>	78

B.7.85. LANTHANUM – INJECTION OF ¹⁴⁰ LA	78
B.7.85.1. Urinary Excretion Rate	79
B.7.85.2. Fecal Excretion Rate	79
B.7.85.3. Whole Body Retention	79
B.7.86. LEAD – INHALATION OF ²¹⁰ PB (TYPE “F”)	79
B.7.86.1. Urinary Excretion Rate	79
B.7.86.2. Fecal Excretion Rate	79
B.7.86.3. Whole Body Retention	79
B.7.87. LEAD – INGESTION OF ²¹⁰ PB (F ₁ = 0.2)	80
B.7.87.1. Urinary Excretion Rate	80
B.7.87.2. Fecal Excretion Rate	80
B.7.87.3. Whole Body Retention	80
B.7.88. LEAD – INJECTION OF ²¹⁰ PB	80
B.7.88.1. Urinary Excretion Rate	80
B.7.88.2. Fecal Excretion Rate	80
B.7.89. LUTETIUM – INHALATION OF ¹⁷⁴ LU (TYPE “M”)	81
B.7.89.1. Urinary Excretion Rate	81
B.7.89.2. Fecal Excretion Rate	81
B.7.89.3. Whole Body Retention	81
B.7.89.4. Lung Retention	81
B.7.90. LUTETIUM – INHALATION OF ¹⁷⁴ LU (TYPE “S”)	81
B.7.90.1. Urinary Excretion Rate	81
B.7.90.2. Fecal Excretion Rate	82
B.7.90.3. Whole Body Retention	82
B.7.90.4. Lung Retention	82
B.7.91. LUTETIUM – INGESTION OF ¹⁷⁴ LU (F ₁ = 0.0005)	82
B.7.91.1. Urinary Excretion Rate	82
B.7.91.2. Fecal Excretion Rate	82
B.7.91.3. Whole Body Retention	83
B.7.92. LUTETIUM – INJECTION OF ¹⁷⁴ LU	83
B.7.92.1. Urinary Excretion Rate	83
B.7.92.2. Fecal Excretion Rate	83
B.7.92.3. Whole Body Retention	83
B.7.93. MANGANESE – INJECTION OF ⁵⁴ MN	83
B.7.93.1. Urinary Excretion Rate	83
B.7.93.2. Fecal Excretion Rate	84
B.7.93.3. Whole Body Retention	84
B.7.94. MERCURY – INHALATION OF ²⁰³ HG (TYPE “F”)	84
B.7.94.1. Urinary Excretion Rate	84
B.7.94.2. Fecal Excretion Rate	84
B.7.94.3. Whole Body Retention	84
B.7.95. MERCURY – INGESTION OF ²⁰³ HG (F ₁ = 0.99)	84
B.7.95.1. Urinary Excretion Rate	85
B.7.95.2. Fecal Excretion Rate	85
B.7.95.3. Whole Body Retention	85
B.7.96. MERCURY – INJECTION OF ²⁰³ HG	85
B.7.96.1. Urinary Excretion Rate	85
B.7.96.2. Fecal Excretion Rate	85
B.7.96.3. Whole Body Retention	85
B.7.97. MOLYBDENUM – INHALATION OF ⁹⁹ MO (TYPE “F”)	86
B.7.97.1. Urinary Excretion Rate	86
B.7.97.2. Fecal Excretion Rate	86
B.7.97.3. Whole Body Retention	86
B.7.98. MOLYBDENUM – INGESTION OF ⁹⁹ MO (F ₁ = 0.8)	86
B.7.98.1. Urinary Excretion Rate	86
B.7.98.2. Fecal Excretion Rate	86

<u>B.7.98.3. Whole Body Retention</u>	86
<u>B.7.99. MOLYBDENUM – INJECTION OF ⁹⁹MO</u>	87
<u>B.7.99.1. Urinary Excretion Rate</u>	87
<u>B.7.99.2. Fecal Excretion Rate</u>	87
<u>B.7.99.3. Whole Body Retention</u>	87
<u>B.7.100. NEPTUNIUM – INHALATION OF ²³⁷Np (TYPE “M”)</u>	87
<u>B.7.100.1. Urinary Excretion Rate</u>	87
<u>B.7.100.2. Fecal Excretion Rate</u>	87
<u>B.7.100.3. Whole Body Retention</u>	87
<u>B.7.100.4. Lung Retention</u>	88
<u>B.7.101. NEPTUNIUM – INGESTION OF ²³⁷Np (F₁ = 0.0005)</u>	88
<u>B.7.101.1. Urinary Excretion Rate</u>	88
<u>B.7.101.2. Fecal Excretion Rate</u>	88
<u>B.7.101.3. Whole Body Retention</u>	88
<u>B.7.102. NEPTUNIUM – INJECTION OF ²³⁷Np</u>	88
<u>B.7.102.1. Urinary Excretion Rate</u>	89
<u>B.7.102.2. Fecal Excretion Rate</u>	89
<u>B.7.102.3. Whole Body Retention</u>	89
<u>B.7.103. NEPTUNIUM – INHALATION OF ²³⁹Np (TYPE “M”)</u>	89
<u>B.7.103.1. Urinary Excretion Rate</u>	89
<u>B.7.103.2. Fecal Excretion Rate</u>	89
<u>B.7.103.3. Whole Body Retention</u>	89
<u>B.7.103.4. Lung Retention</u>	89
<u>B.7.104. NEPTUNIUM – INGESTION OF ²³⁹Np (F₁ = 0.0005)</u>	90
<u>B.7.104.1. Urinary Excretion Rate</u>	90
<u>B.7.104.2. Fecal Excretion Rate</u>	90
<u>B.7.104.3. Whole Body Retention</u>	90
<u>B.7.105. NEPTUNIUM – INJECTION OF ²³⁹Np</u>	90
<u>B.7.105.1. Urinary Excretion Rate</u>	90
<u>B.7.105.2. Fecal Excretion Rate</u>	90
<u>B.7.105.3. Whole Body Retention</u>	90
<u>B.7.106. NICKEL – INJECTION OF ⁶³Ni</u>	91
<u>B.7.106.1. Urinary Excretion Rate</u>	91
<u>B.7.106.2. Fecal Excretion Rate</u>	91
<u>B.7.107. NIOBIUM – INHALATION OF ⁹⁵Nb (TYPE “M”)</u>	91
<u>B.7.107.1. Urinary Excretion Rate</u>	91
<u>B.7.107.2. Fecal Excretion Rate</u>	91
<u>B.7.107.3. Whole Body Retention</u>	91
<u>B.7.107.4. Lung Retention</u>	91
<u>B.7.108. NIOBIUM – INHALATION OF ⁹⁵Nb (TYPE “S”)</u>	92
<u>B.7.108.1. Urinary Excretion Rate</u>	92
<u>B.7.108.2. Fecal Excretion Rate</u>	92
<u>B.7.108.3. Whole Body Retention</u>	92
<u>B.7.108.4. Lung Retention</u>	92
<u>B.7.109. NIOBIUM – INGESTION OF ⁹⁵Nb (F₁ = 0.01)</u>	92
<u>B.7.109.1. Urinary Excretion Rate</u>	93
<u>B.7.109.2. Fecal Excretion Rate</u>	93
<u>B.7.109.3. Whole Body Retention</u>	93
<u>B.7.110. NIOBIUM – INJECTION OF ⁹⁵Nb</u>	93
<u>B.7.110.1. Urinary Excretion Rate</u>	93
<u>B.7.110.2. Fecal Excretion Rate</u>	93
<u>B.7.110.3. Whole Body Retention</u>	93
<u>B.7.111. PHOSPHORUS – INHALATION OF ³²P (TYPE “F”)</u>	94
<u>B.7.111.1. Urinary Excretion Rate</u>	94
<u>B.7.111.2. Fecal Excretion Rate</u>	94
<u>B.7.111.3. Whole Body Retention</u>	94

B.7.112. PHOSPHORUS – INHALATION OF ^{32}P (TYPE “M”)	94
B.7.112.1. Urinary Excretion Rate	94
B.7.112.2. Fecal Excretion Rate	94
B.7.112.3. Whole Body Retention	94
B.7.112.4. Lung Retention	95
B.7.113. PHOSPHORUS – INGESTION OF ^{32}P ($F_1 = 0.8$)	95
B.7.113.1. Urinary Excretion Rate	95
B.7.113.2. Fecal Excretion Rate	95
B.7.113.3. Whole Body Retention	95
B.7.114. PHOSPHORUS – INJECTION OF ^{32}P	95
B.7.114.1. Urinary Excretion Rate	95
B.7.114.2. Fecal Excretion Rate	95
B.7.114.3. Whole Body Retention	96
B.7.115. PLUTONIUM – INHALATION OF ^{238}Pu (TYPE “M”)	96
B.7.115.1. Urinary Excretion Rate	96
B.7.115.2. Fecal Excretion Rate	96
B.7.115.3. Whole Body Retention	96
B.7.115.4. Lung Retention	96
B.7.116. PLUTONIUM – INHALATION OF ^{238}Pu (TYPE “S”)	97
B.7.116.1. Urinary Excretion Rate	97
B.7.116.2. Fecal Excretion Rate	97
B.7.116.3. Whole Body Retention	97
B.7.116.4. Lung Retention	97
B.7.117. PLUTONIUM – INGESTION OF ^{238}Pu ($F_1 = 0.0005$)	97
B.7.117.1. Urinary Excretion Rate	97
B.7.117.2. Fecal Excretion Rate	98
B.7.117.3. Whole Body Retention	98
B.7.118. PLUTONIUM – INGESTION OF ^{238}Pu ($F_1 = 0.00001$)	98
B.7.118.1. Urinary Excretion Rate	98
B.7.118.2. Fecal Excretion Rate	98
B.7.118.3. Whole Body Retention	98
B.7.119. PLUTONIUM – INGESTION OF ^{238}Pu ($F_1 = 0.0001$)	99
B.7.119.1. Urinary Excretion Rate	99
B.7.119.2. Fecal Excretion Rate	99
B.7.119.3. Whole Body Retention	99
B.7.120. PLUTONIUM – INJECTION OF ^{238}Pu	99
B.7.120.1. Urinary Excretion Rate	99
B.7.120.2. Fecal Excretion Rate	99
B.7.120.3. Whole Body Retention	100
B.7.121. PLUTONIUM – INHALATION OF ^{239}Pu (TYPE “M”)	100
B.7.121.1. Urinary Excretion Rate	100
B.7.121.2. Fecal Excretion Rate	100
B.7.121.3. Whole Body Retention	100
B.7.121.4. Lung Retention	100
B.7.122. PLUTONIUM – INHALATION OF ^{239}Pu (TYPE “S”)	101
B.7.122.1. Urinary Excretion Rate	101
B.7.122.2. Fecal Excretion Rate	101
B.7.122.3. Whole Body Retention	101
B.7.122.4. Lung Retention	101
B.7.123. PLUTONIUM – INGESTION OF ^{239}Pu ($F_1 = 0.0005$)	101
B.7.123.1. Urinary Excretion Rate	101
B.7.123.2. Fecal Excretion Rate	102
B.7.123.3. Whole Body Retention	102
B.7.124. PLUTONIUM – INGESTION OF ^{239}Pu ($F_1 = 0.00001$)	102
B.7.124.1. Urinary Excretion Rate	102
B.7.124.2. Fecal Excretion Rate	102

<u>B.7.124.3. Whole Body Retention</u>	102
<u>B.7.125. PLUTONIUM – INGESTION OF ²³⁹PU (F₁ = 0.0001)</u>	103
<u>B.7.125.1. Urinary Excretion Rate</u>	103
<u>B.7.125.2. Fecal Excretion Rate</u>	103
<u>B.7.125.3. Whole Body Retention</u>	103
<u>B.7.126. PLUTONIUM – INJECTION OF ²³⁹PU</u>	103
<u>B.7.126.1. Urinary Excretion Rate</u>	103
<u>B.7.126.2. Fecal Excretion Rate</u>	103
<u>B.7.126.3. Whole Body Retention</u>	104
<u>B.7.127. PLUTONIUM – INHALATION OF ²⁴⁰PU (TYPE “M”)</u>	104
<u>B.7.127.1. Urinary Excretion Rate</u>	104
<u>B.7.127.2. Fecal Excretion Rate</u>	104
<u>B.7.127.3. Whole Body Retention</u>	104
<u>B.7.127.4. Lung Retention</u>	104
<u>B.7.128. PLUTONIUM – INHALATION OF ²⁴⁰PU (TYPE “S”)</u>	105
<u>B.7.128.1. Urinary Excretion Rate</u>	105
<u>B.7.128.2. Fecal Excretion Rate</u>	105
<u>B.7.128.3. Whole Body Retention</u>	105
<u>B.7.128.4. Lung Retention</u>	105
<u>B.7.129. PLUTONIUM – INGESTION OF ²⁴⁰PU (F₁ = 0.0005)</u>	105
<u>B.7.129.1. Urinary Excretion Rate</u>	105
<u>B.7.129.2. Fecal Excretion Rate</u>	106
<u>B.7.129.3. Whole Body Retention</u>	106
<u>B.7.130. PLUTONIUM – INGESTION OF ²⁴⁰PU (F₁ = 0.00001)</u>	106
<u>B.7.130.1. Urinary Excretion Rate</u>	106
<u>B.7.130.2. Fecal Excretion Rate</u>	106
<u>B.7.130.3. Whole Body Retention</u>	106
<u>B.7.131. PLUTONIUM – INGESTION OF ²⁴⁰PU (F₁ = 0.0001)</u>	107
<u>B.7.131.1. Urinary Excretion Rate</u>	107
<u>B.7.131.2. Fecal Excretion Rate</u>	107
<u>B.7.131.3. Whole Body Retention</u>	107
<u>B.7.132. PLUTONIUM – INJECTION OF ²⁴⁰PU</u>	107
<u>B.7.132.1. Urinary Excretion Rate</u>	107
<u>B.7.132.2. Fecal Excretion Rate</u>	107
<u>B.7.132.3. Whole Body Retention</u>	108
<u>B.7.133. PLUTONIUM – INHALATION OF ²⁴¹PU (TYPE “M”)</u>	108
<u>B.7.133.1. Urinary Excretion Rate</u>	108
<u>B.7.133.2. Fecal Excretion Rate</u>	108
<u>B.7.133.3. Whole Body Retention</u>	108
<u>B.7.133.4. Lung Retention</u>	108
<u>B.7.134. PLUTONIUM – INHALATION OF ²⁴¹PU (TYPE “S”)</u>	109
<u>B.7.134.1. Urinary Excretion Rate</u>	109
<u>B.7.134.2. Fecal Excretion Rate</u>	109
<u>B.7.134.3. Whole Body Retention</u>	109
<u>B.7.134.4. Lung Retention</u>	109
<u>B.7.135. PLUTONIUM – INGESTION OF ²⁴¹PU (F₁ = 0.0005)</u>	109
<u>B.7.135.1. Urinary Excretion Rate</u>	109
<u>B.7.135.2. Fecal Excretion Rate</u>	110
<u>B.7.135.3. Whole Body Retention</u>	110
<u>B.7.136. PLUTONIUM – INGESTION OF ²⁴¹PU (F₁ = 0.00001)</u>	110
<u>B.7.136.1. Urinary Excretion Rate</u>	110
<u>B.7.136.2. Fecal Excretion Rate</u>	110
<u>B.7.136.3. Whole Body Retention</u>	110
<u>B.7.137. PLUTONIUM – INGESTION OF ²⁴¹PU (F₁ = 0.0001)</u>	111
<u>B.7.137.1. Urinary Excretion Rate</u>	111
<u>B.7.137.2. Fecal Excretion Rate</u>	111

<u>B.7.137.3. Whole Body Retention</u>	111
<u>B.7.138. PLUTONIUM – INJECTION OF ²⁴¹Pu</u>	111
<u>B.7.138.1. Urinary Excretion Rate</u>	111
<u>B.7.138.2. Fecal Excretion Rate</u>	111
<u>B.7.138.3. Whole Body Retention</u>	112
<u>B.7.139. POLONIUM – INHALATION OF ²⁰⁸Po (TYPE “F”)</u>	112
<u>B.7.139.1. Urinary Excretion Rate</u>	112
<u>B.7.139.2. Fecal Excretion Rate</u>	112
<u>B.7.139.3. Whole Body Retention</u>	112
<u>B.7.140. POLONIUM – INHALATION OF ²⁰⁸Po (TYPE “M”)</u>	112
<u>B.7.140.1. Urinary Excretion Rate</u>	112
<u>B.7.140.2. Fecal Excretion Rate</u>	113
<u>B.7.140.3. Whole Body Retention</u>	113
<u>B.7.140.4. Lung Retention</u>	113
<u>B.7.141. POLONIUM – INGESTION OF ²⁰⁸Po (F₁ = 0.1)</u>	113
<u>B.7.141.1. Urinary Excretion Rate</u>	113
<u>B.7.141.2. Fecal Excretion Rate</u>	113
<u>B.7.141.3. Whole Body Retention</u>	113
<u>B.7.142. POLONIUM – INJECTION OF ²⁰⁸Po</u>	114
<u>B.7.142.1. Urinary Excretion Rate</u>	114
<u>B.7.142.2. Fecal Excretion Rate</u>	114
<u>B.7.142.3. Whole Body Retention</u>	114
<u>B.7.143. POLONIUM – INHALATION OF ²⁰⁹Po (TYPE “F”)</u>	114
<u>B.7.143.1. Urinary Excretion Rate</u>	114
<u>B.7.143.2. Fecal Excretion Rate</u>	114
<u>B.7.143.3. Whole Body Retention</u>	115
<u>B.7.144. POLONIUM – INHALATION OF ²⁰⁹Po (TYPE “M”)</u>	115
<u>B.7.144.1. Urinary Excretion Rate</u>	115
<u>B.7.144.2. Fecal Excretion Rate</u>	115
<u>B.7.144.3. Whole Body Retention</u>	115
<u>B.7.144.4. Lung Retention</u>	115
<u>B.7.145. POLONIUM – INGESTION OF ²⁰⁹Po (F₁ = 0.1)</u>	116
<u>B.7.145.1. Urinary Excretion Rate</u>	116
<u>B.7.145.2. Fecal Excretion Rate</u>	116
<u>B.7.145.3. Whole Body Retention</u>	116
<u>B.7.146. POLONIUM – INJECTION OF ²⁰⁹Po</u>	116
<u>B.7.146.1. Urinary Excretion Rate</u>	116
<u>B.7.146.2. Fecal Excretion Rate</u>	116
<u>B.7.146.3. Whole Body Retention</u>	117
<u>B.7.147. POLONIUM – INHALATION OF ²¹⁰Po (TYPE “F”)</u>	117
<u>B.7.147.1. Urinary Excretion Rate</u>	117
<u>B.7.147.2. Fecal Excretion Rate</u>	117
<u>B.7.147.3. Whole Body Retention</u>	117
<u>B.7.148. POLONIUM – INHALATION OF ²¹⁰Po (TYPE “M”)</u>	117
<u>B.7.148.1. Urinary Excretion Rate</u>	117
<u>B.7.148.2. Fecal Excretion Rate</u>	118
<u>B.7.148.3. Whole Body Retention</u>	118
<u>B.7.148.4. Lung Retention</u>	118
<u>B.7.149. POLONIUM – INGESTION OF ²¹⁰Po (F₁ = 0.1)</u>	118
<u>B.7.149.1. Urinary Excretion Rate</u>	118
<u>B.7.149.2. Fecal Excretion Rate</u>	118
<u>B.7.149.3. Whole Body Retention</u>	118
<u>B.7.150. POLONIUM – INJECTION OF ²¹⁰Po</u>	119
<u>B.7.150.1. Urinary Excretion Rate</u>	119
<u>B.7.150.2. Fecal Excretion Rate</u>	119
<u>B.7.150.3. Whole Body Retention</u>	119

B.7.151. PRASEODYMIUM – INHALATION OF ¹⁴³ PR (TYPE “M”)	119
B.7.151.1. Urinary Excretion Rate	119
B.7.151.2. Fecal Excretion Rate	119
B.7.151.3. Whole Body Retention	119
B.7.151.4. Lung Retention	120
B.7.152. PRASEODYMIUM – INHALATION OF ¹⁴³ PR (TYPE “S”)	120
B.7.152.1. Urinary Excretion Rate	120
B.7.152.2. Fecal Excretion Rate	120
B.7.152.3. Whole Body Retention	120
B.7.152.4. Lung Retention	120
B.7.153. PRASEODYMIUM – INGESTION OF ¹⁴³ PO (F ₁ = 0.0005)	120
B.7.153.1. Urinary Excretion Rate	121
B.7.153.2. Fecal Excretion Rate	121
B.7.153.3. Whole Body Retention	121
B.7.154. PRASEODYMIUM – INJECTION OF ¹⁴³ PR	121
B.7.154.1. Urinary Excretion Rate	121
B.7.154.2. Fecal Excretion Rate	121
B.7.154.3. Whole Body Retention	121
B.7.155. PRASEODYMIUM – INHALATION OF ¹⁴⁷ PR (TYPE “M”)	122
B.7.155.1. Urinary Excretion Rate	122
B.7.155.2. Fecal Excretion Rate	122
B.7.155.3. Whole Body Retention	122
B.7.155.4. Lung Retention	122
B.7.156. PRASEODYMIUM – INHALATION OF ¹⁴⁷ PR (TYPE “S”)	122
B.7.156.1. Urinary Excretion Rate	122
B.7.156.2. Fecal Excretion Rate	122
B.7.156.3. Whole Body Retention	122
B.7.156.4. Lung Retention	122
B.7.157. PRASEODYMIUM – INGESTION OF ¹⁴⁷ PO (F ₁ = 0.0005)	122
B.7.157.1. Urinary Excretion Rate	122
B.7.157.2. Fecal Excretion Rate	122
B.7.157.3. Whole Body Retention	122
B.7.158. PRASEODYMIUM – INJECTION OF ¹⁴⁷ PR	123
B.7.158.1. Urinary Excretion Rate	123
B.7.158.2. Fecal Excretion Rate	123
B.7.158.3. Whole Body Retention	123
B.7.159. PROMETHIUM – INJECTION OF ¹⁴⁷ PM	123
B.7.159.1. Urinary Excretion Rate	123
B.7.159.2. Fecal Excretion Rate	123
B.7.160. PROTACTINIUM – INJECTION OF ²³¹ PA	123
B.7.160.1. Urinary Excretion Rate	123
B.7.160.2. Fecal Excretion Rate	124
B.7.160.3. Whole Body Retention	124
B.7.161. PROTACTINIUM – INHALATION OF ²³³ PA (TYPE “M”)	124
B.7.161.1. Urinary Excretion Rate	124
B.7.161.2. Fecal Excretion Rate	124
B.7.161.3. Whole Body Retention	124
B.7.161.4. Lung Retention	124
B.7.162. PROTACTINIUM – INHALATION OF ²³³ PA (TYPE “S”)	125
B.7.162.1. Urinary Excretion Rate	125
B.7.162.2. Fecal Excretion Rate	125
B.7.162.3. Whole Body Retention	125
B.7.162.4. Lung Retention	125
B.7.163. PROTACTINIUM – INGESTION OF ²³³ PA (F ₁ = 0.0005)	125
B.7.163.1. Urinary Excretion Rate	125
B.7.163.2. Fecal Excretion Rate	125

<u>B.7.163.3. Whole Body Retention</u>	126
<u>B.7.164. PROTACTINIUM – INJECTION OF ²³³PA</u>	126
<u>B.7.164.1. Urinary Excretion Rate</u>	126
<u>B.7.164.2. Fecal Excretion Rate</u>	126
<u>B.7.164.3. Whole Body Retention</u>	126
<u>B.7.165. PROTACTINIUM – INHALATION OF ²³⁴PA (TYPE “M”)</u>	126
<u>B.7.165.1. Urinary Excretion Rate</u>	126
<u>B.7.165.2. Fecal Excretion Rate</u>	126
<u>B.7.165.3. Whole Body Retention</u>	127
<u>B.7.165.4. Lung Retention</u>	127
<u>B.7.166. PROTACTINIUM – INHALATION OF ²³⁴PA (TYPE “S”)</u>	127
<u>B.7.166.1. Urinary Excretion Rate</u>	127
<u>B.7.166.2. Fecal Excretion Rate</u>	127
<u>B.7.166.3. Whole Body Retention</u>	127
<u>B.7.166.4. Lung Retention</u>	127
<u>B.7.167. PROTACTINIUM – INGESTION OF ²³⁴PA (F₁ = 0.0005)</u>	127
<u>B.7.167.1. Urinary Excretion Rate</u>	127
<u>B.7.167.2. Fecal Excretion Rate</u>	127
<u>B.7.167.3. Whole Body Retention</u>	127
<u>B.7.168. PROTACTINIUM – INJECTION OF ²³⁴PA</u>	128
<u>B.7.168.1. Urinary Excretion Rate</u>	128
<u>B.7.168.2. Fecal Excretion Rate</u>	128
<u>B.7.168.3. Whole Body Retention</u>	128
<u>B.7.169. RADIUM – INHALATION OF ²²³RA (TYPE “M”)</u>	128
<u>B.7.169.1. Urinary Excretion Rate</u>	128
<u>B.7.169.2. Fecal Excretion Rate</u>	128
<u>B.7.169.3. Whole Body Retention</u>	128
<u>B.7.169.4. Lung Retention</u>	128
<u>B.7.170. RADIUM – INGESTION OF ²²³RA (F₁ = 0.2)</u>	129
<u>B.7.170.1. Urinary Excretion Rate</u>	129
<u>B.7.170.2. Fecal Excretion Rate</u>	129
<u>B.7.170.3. Whole Body Retention</u>	129
<u>B.7.171. RADIUM – INJECTION OF ²²³RA</u>	129
<u>B.7.171.1. Urinary Excretion Rate</u>	129
<u>B.7.171.2. Fecal Excretion Rate</u>	129
<u>B.7.171.3. Whole Body Retention</u>	129
<u>B.7.172. RADIUM – INHALATION OF ²²⁶RA (TYPE “M”)</u>	130
<u>B.7.172.1. Urinary Excretion Rate</u>	130
<u>B.7.172.2. Fecal Excretion Rate</u>	130
<u>B.7.172.3. Whole Body Retention</u>	130
<u>B.7.172.4. Lung Retention</u>	130
<u>B.7.173. RADIUM – INGESTION OF ²²⁶RA (F₁ = 0.2)</u>	130
<u>B.7.173.1. Urinary Excretion Rate</u>	130
<u>B.7.173.2. Fecal Excretion Rate</u>	131
<u>B.7.173.3. Whole Body Retention</u>	131
<u>B.7.174. RADIUM – INJECTION OF ²²⁶RA</u>	131
<u>B.7.174.1. Urinary Excretion Rate</u>	131
<u>B.7.174.2. Fecal Excretion Rate</u>	131
<u>B.7.174.3. Whole Body Retention</u>	131
<u>B.7.175. RADIUM – INHALATION OF ²²⁸RA (TYPE “M”)</u>	132
<u>B.7.175.1. Urinary Excretion Rate</u>	132
<u>B.7.175.2. Fecal Excretion Rate</u>	132
<u>B.7.175.3. Whole Body Retention</u>	132
<u>B.7.175.4. Lung Retention</u>	132
<u>B.7.176. RADIUM – INGESTION OF ²²⁸RA (F₁ = 0.2)</u>	132
<u>B.7.176.1. Urinary Excretion Rate</u>	132

<u>B.7.176.2. Fecal Excretion Rate</u>	133
<u>B.7.176.3. Whole Body Retention</u>	133
<u>B.7.177. RADIUM – INJECTION OF ²²⁸RA</u>	133
<u>B.7.177.1. Urinary Excretion Rate</u>	133
<u>B.7.177.2. Fecal Excretion Rate</u>	133
<u>B.7.177.3. Whole Body Retention</u>	133
<u>B.7.178. RUTHENIUM – INHALATION OF ¹⁰⁶RU (TYPE “F”)</u>	134
<u>B.7.178.1. Urinary Excretion Rate</u>	134
<u>B.7.178.2. Fecal Excretion Rate</u>	134
<u>B.7.178.3. Whole Body Retention</u>	134
<u>B.7.179. RUTHENIUM – INHALATION OF ¹⁰⁶RU (TYPE “M”)</u>	134
<u>B.7.179.1. Urinary Excretion Rate</u>	134
<u>B.7.179.2. Fecal Excretion Rate</u>	134
<u>B.7.179.3. Whole Body Retention</u>	135
<u>B.7.179.4. Lung Retention</u>	135
<u>B.7.180. RUTHENIUM – INHALATION OF ¹⁰⁶RU (TYPE “S”)</u>	135
<u>B.7.180.1. Urinary Excretion Rate</u>	135
<u>B.7.180.2. Fecal Excretion Rate</u>	135
<u>B.7.180.3. Whole Body Retention</u>	135
<u>B.7.180.4. Lung Retention</u>	135
<u>B.7.181. RUTHENIUM – INGESTION OF ¹⁰⁶RU (F₁ = 0.05)</u>	136
<u>B.7.181.1. Urinary Excretion Rate</u>	136
<u>B.7.181.2. Fecal Excretion Rate</u>	136
<u>B.7.181.3. Whole Body Retention</u>	136
<u>B.7.182. RUTHENIUM – INJECTION OF ¹⁰⁶RU</u>	136
<u>B.7.182.1. Urinary Excretion Rate</u>	136
<u>B.7.182.2. Fecal Excretion Rate</u>	136
<u>B.7.182.3. Whole Body Retention</u>	137
<u>B.7.183. SAMARIUM – INHALATION OF ¹⁵¹SM (TYPE “M”)</u>	137
<u>B.7.183.1. Urinary Excretion Rate</u>	137
<u>B.7.183.2. Fecal Excretion Rate</u>	137
<u>B.7.183.3. Whole Body Retention</u>	137
<u>B.7.183.4. Lung Retention</u>	137
<u>B.7.184. SAMARIUM – INGESTION OF ¹⁵¹SM (F₁ = 0.0005)</u>	138
<u>B.7.184.1. Urinary Excretion Rate</u>	138
<u>B.7.184.2. Fecal Excretion Rate</u>	138
<u>B.7.184.3. Whole Body Retention</u>	138
<u>B.7.185. SAMARIUM – INJECTION OF ¹⁵¹SM</u>	138
<u>B.7.185.1. Urinary Excretion Rate</u>	138
<u>B.7.185.2. Fecal Excretion Rate</u>	138
<u>B.7.185.3. Whole Body Retention</u>	139
<u>B.7.186. SCANDIUM – INHALATION OF ⁴⁶SC (TYPE “S”)</u>	139
<u>B.7.186.1. Urinary Excretion Rate</u>	139
<u>B.7.186.2. Fecal Excretion Rate</u>	139
<u>B.7.186.3. Whole Body Retention</u>	139
<u>B.7.186.4. Lung Retention</u>	139
<u>B.7.187. SCANDIUM – INGESTION OF ⁴⁶SC (F₁ = 0.0001)</u>	139
<u>B.7.187.1. Urinary Excretion Rate</u>	140
<u>B.7.187.2. Fecal Excretion Rate</u>	140
<u>B.7.187.3. Whole Body Retention</u>	140
<u>B.7.188. SCANDIUM – INJECTION OF ⁴⁶SC</u>	140
<u>B.7.188.1. Urinary Excretion Rate</u>	140
<u>B.7.188.2. Fecal Excretion Rate</u>	140
<u>B.7.188.3. Whole Body Retention</u>	140
<u>B.7.189. SILVER – INJECTION OF ^{110M}AG</u>	141
<u>B.7.189.1. Urinary Excretion Rate</u>	141

<u>B.7.189.2. Fecal Excretion Rate</u>	141
<u>B.7.189.3. Whole Body Retention</u>	141
<u>B.7.190. SODIUM – INJECTION OF ²²Na</u>	141
<u>B.7.190.1. Urinary Excretion Rate</u>	141
<u>B.7.190.2. Fecal Excretion Rate</u>	141
<u>B.7.190.3. Whole Body Retention</u>	142
<u>B.7.191. STRONTIUM – INHALATION OF ⁸⁵Sr (TYPE “F”)</u>	142
<u>B.7.191.1. Urinary Excretion Rate</u>	142
<u>B.7.191.2. Fecal Excretion Rate</u>	142
<u>B.7.191.3. Whole Body Retention</u>	142
<u>B.7.192. STRONTIUM – INHALATION OF ⁸⁵Sr (TYPE “S”)</u>	142
<u>B.7.192.1. Urinary Excretion Rate</u>	142
<u>B.7.192.2. Fecal Excretion Rate</u>	143
<u>B.7.192.3. Whole Body Retention</u>	143
<u>B.7.192.4. Lung Retention</u>	143
<u>B.7.193. STRONTIUM – INGESTION OF ⁸⁵Sr (F₁ = 0.3)</u>	143
<u>B.7.193.1. Urinary Excretion Rate</u>	143
<u>B.7.193.2. Fecal Excretion Rate</u>	143
<u>B.7.193.3. Whole Body Retention</u>	143
<u>B.7.194. STRONTIUM – INGESTION OF ⁸⁵Sr (F₁ = 0.01)</u>	144
<u>B.7.194.1. Urinary Excretion Rate</u>	144
<u>B.7.194.2. Fecal Excretion Rate</u>	144
<u>B.7.194.3. Whole Body Retention</u>	144
<u>B.7.195. STRONTIUM – INJECTION OF ⁸⁵Sr</u>	144
<u>B.7.195.1. Urinary Excretion Rate</u>	144
<u>B.7.195.2. Fecal Excretion Rate</u>	144
<u>B.7.195.3. Whole Body Retention</u>	145
<u>B.7.196. STRONTIUM – INHALATION OF ⁸⁹Sr (TYPE “F”)</u>	145
<u>B.7.196.1. Urinary Excretion Rate</u>	145
<u>B.7.196.2. Fecal Excretion Rate</u>	145
<u>B.7.196.3. Whole Body Retention</u>	145
<u>B.7.197. STRONTIUM – INHALATION OF ⁸⁹Sr (TYPE “S”)</u>	145
<u>B.7.197.1. Urinary Excretion Rate</u>	145
<u>B.7.197.2. Fecal Excretion Rate</u>	146
<u>B.7.197.3. Whole Body Retention</u>	146
<u>B.7.197.4. Lung Retention</u>	146
<u>B.7.198. STRONTIUM – INGESTION OF ⁸⁹Sr (F₁ = 0.3)</u>	146
<u>B.7.198.1. Urinary Excretion Rate</u>	146
<u>B.7.198.2. Fecal Excretion Rate</u>	146
<u>B.7.198.3. Whole Body Retention</u>	146
<u>B.7.199. STRONTIUM – INGESTION OF ⁸⁹Sr (F₁ = 0.01)</u>	147
<u>B.7.199.1. Urinary Excretion Rate</u>	147
<u>B.7.199.2. Fecal Excretion Rate</u>	147
<u>B.7.199.3. Whole Body Retention</u>	147
<u>B.7.200. STRONTIUM – INJECTION OF ⁸⁹Sr</u>	147
<u>B.7.200.1. Urinary Excretion Rate</u>	147
<u>B.7.200.2. Fecal Excretion Rate</u>	147
<u>B.7.200.3. Whole Body Retention</u>	147
<u>B.7.201. STRONTIUM – INHALATION OF ⁹⁰Sr (TYPE “F”)</u>	148
<u>B.7.201.1. Urinary Excretion Rate</u>	148
<u>B.7.201.2. Fecal Excretion Rate</u>	148
<u>B.7.201.3. Whole Body Retention</u>	148
<u>B.7.202. STRONTIUM – INHALATION OF ⁹⁰Sr (TYPE “S”)</u>	148
<u>B.7.202.1. Urinary Excretion Rate</u>	148
<u>B.7.202.2. Fecal Excretion Rate</u>	148
<u>B.7.202.3. Whole Body Retention</u>	149

<u>B.7.202.4. Lung Retention</u>	149
<u>B.7.203. STRONTIUM – INGESTION OF ⁹⁰Sr (F₁ = 0.3)</u>	149
<u>B.7.203.1. Urinary Excretion Rate</u>	149
<u>B.7.203.2. Fecal Excretion Rate</u>	149
<u>B.7.203.3. Whole Body Retention</u>	149
<u>B.7.204. STRONTIUM – INGESTION OF ⁹⁰Sr (F₁ = 0.01)</u>	150
<u>B.7.204.1. Urinary Excretion Rate</u>	150
<u>B.7.204.2. Fecal Excretion Rate</u>	150
<u>B.7.204.3. Whole Body Retention</u>	150
<u>B.7.205. STRONTIUM – INJECTION OF ⁹⁰Sr</u>	150
<u>B.7.205.1. Urinary Excretion Rate</u>	150
<u>B.7.205.2. Fecal Excretion Rate</u>	150
<u>B.7.205.3. Whole Body Retention</u>	151
<u>B.7.206. STRONTIUM – INHALATION OF ⁹¹Sr (TYPE “F”)</u>	151
<u>B.7.206.1. Urinary Excretion Rate</u>	151
<u>B.7.206.2. Fecal Excretion Rate</u>	151
<u>B.7.206.3. Whole Body Retention</u>	151
<u>B.7.207. STRONTIUM – INHALATION OF ⁹¹Sr (TYPE “S”)</u>	151
<u>B.7.207.1. Urinary Excretion Rate</u>	151
<u>B.7.207.2. Fecal Excretion Rate</u>	151
<u>B.7.207.3. Whole Body Retention</u>	151
<u>B.7.207.4. Lung Retention</u>	152
<u>B.7.208. STRONTIUM – INGESTION OF ⁹¹Sr (F₁ = 0.3)</u>	152
<u>B.7.208.1. Urinary Excretion Rate</u>	152
<u>B.7.208.2. Fecal Excretion Rate</u>	152
<u>B.7.208.3. Whole Body Retention</u>	152
<u>B.7.209. STRONTIUM – INJECTION OF ⁹¹Sr</u>	152
<u>B.7.209.1. Urinary Excretion Rate</u>	152
<u>B.7.209.2. Fecal Excretion Rate</u>	152
<u>B.7.209.3. Whole Body Retention</u>	152
<u>B.7.210. SULFUR – INJECTION OF ³⁵S (INORGANIC)</u>	153
<u>B.7.210.1. Urinary Excretion Rate</u>	153
<u>B.7.210.2. Fecal Excretion Rate</u>	153
<u>B.7.210.3. Whole Body Retention</u>	153
<u>B.7.211. SULFUR – INJECTION OF ³⁵S (ORGANIC)</u>	153
<u>B.7.211.1. Urinary Excretion Rate</u>	153
<u>B.7.211.2. Fecal Excretion Rate</u>	153
<u>B.7.211.3. Whole Body Retention</u>	153
<u>B.7.212. TANTALUM – INHALATION OF ¹⁸²Ta (TYPE “M”)</u>	154
<u>B.7.212.1. Urinary Excretion Rate</u>	154
<u>B.7.212.2. Fecal Excretion Rate</u>	154
<u>B.7.212.3. Whole Body Retention</u>	154
<u>B.7.212.4. Lung Retention</u>	154
<u>B.7.213. TANTALUM – INHALATION OF ¹⁸²Ta (TYPE “S”)</u>	154
<u>B.7.213.1. Urinary Excretion Rate</u>	155
<u>B.7.213.2. Fecal Excretion Rate</u>	155
<u>B.7.213.3. Whole Body Retention</u>	155
<u>B.7.213.4. Lung Retention</u>	155
<u>B.7.214. TANTALUM – INGESTION OF ¹⁸²Ta (F₁ = 0.001)</u>	155
<u>B.7.214.1. Urinary Excretion Rate</u>	155
<u>B.7.214.2. Fecal Excretion Rate</u>	155
<u>B.7.214.3. Whole Body Retention</u>	156
<u>B.7.215. TANTALUM – INJECTION OF ¹⁸²Ta (ORGANIC)</u>	156
<u>B.7.215.1. Urinary Excretion Rate</u>	156
<u>B.7.215.2. Fecal Excretion Rate</u>	156
<u>B.7.215.3. Whole Body Retention</u>	156

B.7.216. TECHNETIUM – INHALATION OF ⁹⁹ Tc (TYPE “F”)	156
B.7.216.1. Urinary Excretion Rate	156
B.7.216.2. Fecal Excretion Rate	156
B.7.216.3. Whole Body Retention	157
B.7.217. TECHNETIUM – INHALATION OF ⁹⁹ Tc (TYPE “M”)	157
B.7.217.1. Urinary Excretion Rate	157
B.7.217.2. Fecal Excretion Rate	157
B.7.217.3. Whole Body Retention	157
B.7.217.4. Lung Retention	157
B.7.218. TECHNETIUM – INGESTION OF ⁹⁹ Tc (F ₁ = 0.8)	158
B.7.218.1. Urinary Excretion Rate	158
B.7.218.2. Fecal Excretion Rate	158
B.7.218.3. Whole Body Retention	158
B.7.219. TECHNETIUM – INJECTION OF ⁹⁹ Tc	158
B.7.219.1. Urinary Excretion Rate	158
B.7.219.2. Fecal Excretion Rate	158
B.7.219.3. Whole Body Retention	159
B.7.220. TELLURIUM – INHALATION OF ¹³¹ Te (TYPE “F”)	159
B.7.220.1. Urinary Excretion Rate	159
B.7.220.2. Fecal Excretion Rate	159
B.7.220.3. Whole Body Retention	159
B.7.221. TELLURIUM – INHALATION OF ¹³¹ Te (TYPE “M”)	159
B.7.221.1. Urinary Excretion Rate	159
B.7.221.2. Fecal Excretion Rate	159
B.7.221.3. Whole Body Retention	159
B.7.221.4. Lung Retention	159
B.7.222. TELLURIUM – INGESTION OF ¹³¹ Te (F ₁ = 0.3)	159
B.7.222.1. Urinary Excretion Rate	160
B.7.222.2. Fecal Excretion Rate	160
B.7.222.3. Whole Body Retention	160
B.7.223. TELLURIUM – INJECTION OF ¹³¹ Te	160
B.7.223.1. Urinary Excretion Rate	160
B.7.223.2. Fecal Excretion Rate	160
B.7.223.3. Whole Body Retention	160
B.7.224. TELLURIUM – INHALATION OF ^{131m} Te (TYPE “F”)	160
B.7.224.1. Urinary Excretion Rate	160
B.7.224.2. Fecal Excretion Rate	160
B.7.224.3. Whole Body Retention	160
B.7.225. TELLURIUM – INHALATION OF ^{131m} Te (TYPE “M”)	161
B.7.225.1. Urinary Excretion Rate	161
B.7.225.2. Fecal Excretion Rate	161
B.7.225.3. Whole Body Retention	161
B.7.225.4. Lung Retention	161
B.7.226. TELLURIUM – INGESTION OF ^{131m} Te (F ₁ = 0.3)	161
B.7.226.1. Urinary Excretion Rate	161
B.7.226.2. Fecal Excretion Rate	161
B.7.226.3. Whole Body Retention	161
B.7.227. TELLURIUM – INJECTION OF ^{131m} Te	162
B.7.227.1. Urinary Excretion Rate	162
B.7.227.2. Fecal Excretion Rate	162
B.7.227.3. Whole Body Retention	162
B.7.228. TERBIUM – INJECTION OF ¹⁶⁰ Tb	162
B.7.228.1. Urinary Excretion Rate	162
B.7.228.2. Fecal Excretion Rate	162
B.7.228.3. Whole Body Retention	162
B.7.229. THALIUM – INHALATION OF ²⁰¹ Tl (TYPE “F”)	164

<u>B.7.229.3. Whole Body Retention</u>	164
<u>B.7.230. THALIUM – INGESTION OF ²⁰¹Tl (F₁ = 0.99)</u>	164
<u>B.7.230.3. Whole Body Retention</u>	164
<u>B.7.231. THALIUM – INJECTION OF ²⁰¹Tl</u>	164
<u>B.7.231.3. Whole Body Retention</u>	164
<u>B.7.232. THALIUM – INHALATION OF ²⁰²Tl (TYPE “F”)</u>	164
<u>B.7.232.1. Urinary Excretion Rate</u>	164
<u>B.7.232.2. Fecal Excretion Rate</u>	164
<u>B.7.232.3. Whole Body Retention</u>	165
<u>B.7.233. THALIUM – INGESTION OF ²⁰²Tl (F₁ = 0.99)</u>	165
<u>B.7.233.1. Urinary Excretion Rate</u>	165
<u>B.7.233.2. Fecal Excretion Rate</u>	165
<u>B.7.233.3. Whole Body Retention</u>	165
<u>B.7.234. THALIUM – INJECTION OF ²⁰²Tl</u>	165
<u>B.7.234.1. Urinary Excretion Rate</u>	165
<u>B.7.234.2. Fecal Excretion Rate</u>	165
<u>B.7.234.3. Whole Body Retention</u>	166
<u>B.7.235. THALIUM – INHALATION OF ²⁰⁴Tl (TYPE “F”)</u>	166
<u>B.7.235.1. Urinary Excretion Rate</u>	166
<u>B.7.235.2. Fecal Excretion Rate</u>	166
<u>B.7.235.3. Whole Body Retention</u>	166
<u>B.7.236. THALIUM – INGESTION OF ²⁰⁴Tl (F₁ = 0.99)</u>	166
<u>B.7.236.1. Urinary Excretion Rate</u>	166
<u>B.7.236.2. Fecal Excretion Rate</u>	166
<u>B.7.236.3. Whole Body Retention</u>	167
<u>B.7.237. THALIUM – INJECTION OF ²⁰⁴Tl</u>	167
<u>B.7.237.1. Urinary Excretion Rate</u>	167
<u>B.7.237.2. Fecal Excretion Rate</u>	167
<u>B.7.237.3. Whole Body Retention</u>	167
<u>B.7.238. THORIUM – INHALATION OF ²²⁸Th (TYPE “M”)</u>	167
<u>B.7.238.1. Urinary Excretion Rate</u>	167
<u>B.7.238.2. Fecal Excretion Rate</u>	168
<u>B.7.238.3. Whole Body Retention</u>	168
<u>B.7.238.4. Lung Retention</u>	168
<u>B.7.239. THORIUM – INHALATION OF ²²⁸Th (TYPE “S”)</u>	168
<u>B.7.239.1. Urinary Excretion Rate</u>	168
<u>B.7.239.2. Fecal Excretion Rate</u>	168
<u>B.7.239.3. Whole Body Retention</u>	169
<u>B.7.239.4. Lung Retention</u>	169
<u>B.7.240. THORIUM – INGESTION OF ²²⁸Th (F₁ = 0.0005)</u>	169
<u>B.7.240.1. Urinary Excretion Rate</u>	169
<u>B.7.240.2. Fecal Excretion Rate</u>	169
<u>B.7.240.3. Whole Body Retention</u>	169
<u>B.7.241. THORIUM – INGESTION OF ²²⁸Th (F₁ = 0.0002)</u>	170
<u>B.7.241.1. Urinary Excretion Rate</u>	170
<u>B.7.241.2. Fecal Excretion Rate</u>	170
<u>B.7.241.3. Whole Body Retention</u>	170
<u>B.7.242. THORIUM – INJECTION OF ²²⁸Th</u>	170
<u>B.7.242.1. Urinary Excretion Rate</u>	170
<u>B.7.242.2. Fecal Excretion Rate</u>	170
<u>B.7.242.3. Whole Body Retention</u>	171
<u>B.7.243. THORIUM – INHALATION OF ²³²Th (TYPE “M”)</u>	171
<u>B.7.243.1. Urinary Excretion Rate</u>	171
<u>B.7.243.2. Fecal Excretion Rate</u>	171
<u>B.7.243.3. Whole Body Retention</u>	171
<u>B.7.243.4. Lung Retention</u>	171

B.7.244. THORIUM – INHALATION OF ^{232}Th (TYPE “S”)	172
B.7.244.1. Urinary Excretion Rate	172
B.7.244.2. Fecal Excretion Rate	172
B.7.244.3. Whole Body Retention	172
B.7.244.4. Lung Retention	172
B.7.245. THORIUM – INGESTION OF ^{232}Th ($F_1 = 0.0005$)	172
B.7.245.1. Urinary Excretion Rate	172
B.7.245.2. Fecal Excretion Rate	173
B.7.245.3. Whole Body Retention	173
B.7.246. THORIUM – INGESTION OF ^{232}Th ($F_1 = 0.0002$)	173
B.7.246.1. Urinary Excretion Rate	173
B.7.246.2. Fecal Excretion Rate	173
B.7.246.3. Whole Body Retention	173
B.7.247. THORIUM – INJECTION OF ^{232}Th	174
B.7.247.1. Urinary Excretion Rate	174
B.7.247.2. Fecal Excretion Rate	174
B.7.247.3. Whole Body Retention	174
B.7.248. THORIUM – INHALATION OF ^{234}Th (TYPE “M”)	174
B.7.248.1. Urinary Excretion Rate	174
B.7.248.2. Fecal Excretion Rate	174
B.7.248.3. Whole Body Retention	175
B.7.248.4. Lung Retention	175
B.7.249. THORIUM – INHALATION OF ^{234}Th (TYPE “S”)	175
B.7.249.1. Urinary Excretion Rate	175
B.7.249.2. Fecal Excretion Rate	175
B.7.249.3. Whole Body Retention	175
B.7.249.4. Lung Retention	175
B.7.250. THORIUM – INGESTION OF ^{234}Th ($F_1 = 0.0005$)	176
B.7.250.1. Urinary Excretion Rate	176
B.7.250.2. Fecal Excretion Rate	176
B.7.250.3. Whole Body Retention	176
B.7.251. THORIUM – INJECTION OF ^{234}Th	176
B.7.251.1. Urinary Excretion Rate	176
B.7.251.2. Fecal Excretion Rate	176
B.7.251.3. Whole Body Retention	176
B.7.252. THULIUM – INHALATION OF ^{170}Tm (TYPE “M”)	177
B.7.252.1. Urinary Excretion Rate	177
B.7.252.2. Fecal Excretion Rate	177
B.7.252.3. Whole Body Retention	177
B.7.252.4. Lung Retention	177
B.7.253. THULIUM – INGESTION OF ^{170}Tm ($F_1 = 0.0005$)	177
B.7.253.1. Urinary Excretion Rate	178
B.7.253.2. Fecal Excretion Rate	178
B.7.253.3. Whole Body Retention	178
B.7.254. THULIUM – INJECTION OF ^{170}Tm	178
B.7.254.1. Urinary Excretion Rate	178
B.7.254.2. Fecal Excretion Rate	178
B.7.254.3. Whole Body Retention	178
B.7.255. TIN – INJECTION OF ^{113}Sn	179
B.7.255.1. Urinary Excretion Rate	179
B.7.255.2. Fecal Excretion Rate	179
B.7.255.3. Whole Body Retention	179
B.7.256. URANIUM – INHALATION OF ^{232}U (TYPE “F”)	179
B.7.256.1. Urinary Excretion Rate	179
B.7.256.2. Fecal Excretion Rate	179
B.7.256.3. Whole Body Retention	180

<u>B.7.256.4. Kidney Retention</u>	180
<u>B.7.257. URANIUM – INHALATION OF ²³²U (TYPE “M”)</u>	180
<u>B.7.257.1. Urinary Excretion Rate</u>	180
<u>B.7.257.2. Fecal Excretion Rate</u>	180
<u>B.7.257.3. Whole Body Retention</u>	180
<u>B.7.257.4. Kidney Retention</u>	181
<u>B.7.257.5. Lung Retention</u>	181
<u>B.7.258. URANIUM – INHALATION OF ²³²U (TYPE “S”)</u>	181
<u>B.7.258.1. Urinary Excretion Rate</u>	181
<u>B.7.258.2. Fecal Excretion Rate</u>	181
<u>B.7.258.3. Whole Body Retention</u>	181
<u>B.7.258.4. Kidney Retention</u>	181
<u>B.7.258.5. Lung Retention</u>	182
<u>B.7.259. URANIUM – INGESTION OF ²³²U (F₁ = 0.02)</u>	182
<u>B.7.259.1. Urinary Excretion Rate</u>	182
<u>B.7.259.2. Fecal Excretion Rate</u>	182
<u>B.7.259.3. Whole Body Retention</u>	182
<u>B.7.259.4. Kidney Retention</u>	182
<u>B.7.260. URANIUM – INJECTION OF ²³²U</u>	183
<u>B.7.260.1. Urinary Excretion Rate</u>	183
<u>B.7.260.2. Fecal Excretion Rate</u>	183
<u>B.7.260.3. Whole Body Retention</u>	183
<u>B.7.260.4. Kidney Retention</u>	183
<u>B.7.261. URANIUM – INHALATION OF ²³⁴U (TYPE “F”)</u>	183
<u>B.7.261.1. Urinary Excretion Rate</u>	184
<u>B.7.261.2. Fecal Excretion Rate</u>	184
<u>B.7.261.3. Whole Body Retention</u>	184
<u>B.7.262. URANIUM – INHALATION OF ²³⁴U (TYPE “M”)</u>	184
<u>B.7.262.1. Urinary Excretion Rate</u>	184
<u>B.7.262.2. Fecal Excretion Rate</u>	184
<u>B.7.262.3. Whole Body Retention</u>	184
<u>B.7.262.4. Lung Retention</u>	185
<u>B.7.263. URANIUM – INHALATION OF ²³⁴U (TYPE “S”)</u>	185
<u>B.7.263.1. Urinary Excretion Rate</u>	185
<u>B.7.263.2. Fecal Excretion Rate</u>	185
<u>B.7.263.3. Whole Body Retention</u>	185
<u>B.7.263.4. Lung Retention</u>	185
<u>B.7.264. URANIUM – INGESTION OF ²³⁴U (F₁ = 0.02)</u>	186
<u>B.7.264.1. Urinary Excretion Rate</u>	186
<u>B.7.264.2. Fecal Excretion Rate</u>	186
<u>B.7.264.3. Whole Body Retention</u>	186
<u>B.7.265. URANIUM – INGESTION OF ²³⁴U (F₁ = 0.002)</u>	186
<u>B.7.265.1. Urinary Excretion Rate</u>	186
<u>B.7.265.2. Fecal Excretion Rate</u>	186
<u>B.7.265.3. Whole Body Retention</u>	187
<u>B.7.266. URANIUM – INJECTION OF ²³⁴U</u>	187
<u>B.7.266.1. Urinary Excretion Rate</u>	187
<u>B.7.266.2. Fecal Excretion Rate</u>	187
<u>B.7.266.3. Whole Body Retention</u>	187
<u>B.7.267. URANIUM – INHALATION OF ²³⁵U (TYPE “F”)</u>	187
<u>B.7.267.1. Urinary Excretion Rate</u>	187
<u>B.7.267.2. Fecal Excretion Rate</u>	188
<u>B.7.267.3. Whole Body Retention</u>	188
<u>B.7.268. URANIUM – INHALATION OF ²³⁵U (TYPE “M”)</u>	188
<u>B.7.268.1. Urinary Excretion Rate</u>	188
<u>B.7.268.2. Fecal Excretion Rate</u>	188

<u>B.7.268.3. Whole Body Retention</u>	188
<u>B.7.268.4. Lung Retention</u>	189
<u>B.7.269. URANIUM – INHALATION OF ²³⁵U (TYPE “S”)</u>	189
<u>B.7.269.1. Urinary Excretion Rate</u>	189
<u>B.7.269.2. Fecal Excretion Rate</u>	189
<u>B.7.269.3. Whole Body Retention</u>	189
<u>B.7.269.4. Lung Retention</u>	189
<u>B.7.270. URANIUM – INGESTION OF ²³⁵U (F₁ = 0.02)</u>	190
<u>B.7.270.1. Urinary Excretion Rate</u>	190
<u>B.7.270.2. Fecal Excretion Rate</u>	190
<u>B.7.270.3. Whole Body Retention</u>	190
<u>B.7.271. URANIUM – INGESTION OF ²³⁵U (F₁ = 0.002)</u>	190
<u>B.7.271.1. Urinary Excretion Rate</u>	190
<u>B.7.271.2. Fecal Excretion Rate</u>	190
<u>B.7.271.3. Whole Body Retention</u>	191
<u>B.7.272. URANIUM – INJECTION OF ²³⁵U</u>	191
<u>B.7.272.1. Urinary Excretion Rate</u>	191
<u>B.7.272.2. Fecal Excretion Rate</u>	191
<u>B.7.272.3. Whole Body Retention</u>	191
<u>B.7.273. URANIUM – INHALATION OF ²³⁸U (TYPE “F”)</u>	191
<u>B.7.273.1. Urinary Excretion Rate</u>	191
<u>B.7.273.2. Fecal Excretion Rate</u>	192
<u>B.7.273.3. Whole Body Retention</u>	192
<u>B.7.274. URANIUM – INHALATION OF ²³⁸U (TYPE “M”)</u>	192
<u>B.7.274.1. Urinary Excretion Rate</u>	192
<u>B.7.274.2. Fecal Excretion Rate</u>	192
<u>B.7.274.3. Whole Body Retention</u>	192
<u>B.7.274.4. Lung Retention</u>	193
<u>B.7.275. URANIUM – INHALATION OF ²³⁸U (TYPE “S”)</u>	193
<u>B.7.275.1. Urinary Excretion Rate</u>	193
<u>B.7.275.2. Fecal Excretion Rate</u>	193
<u>B.7.275.3. Whole Body Retention</u>	193
<u>B.7.275.4. Lung Retention</u>	193
<u>B.7.276. URANIUM – INGESTION OF ²³⁸U (F₁ = 0.02)</u>	194
<u>B.7.276.1. Urinary Excretion Rate</u>	194
<u>B.7.276.2. Fecal Excretion Rate</u>	194
<u>B.7.276.3. Whole Body Retention</u>	194
<u>B.7.277. URANIUM – INGESTION OF ²³⁸U (F₁ = 0.002)</u>	194
<u>B.7.277.1. Urinary Excretion Rate</u>	194
<u>B.7.277.2. Fecal Excretion Rate</u>	194
<u>B.7.277.3. Whole Body Retention</u>	195
<u>B.7.278. URANIUM – INJECTION OF ²³⁸U</u>	195
<u>B.7.278.1. Urinary Excretion Rate</u>	195
<u>B.7.278.2. Fecal Excretion Rate</u>	195
<u>B.7.278.3. Whole Body Retention</u>	195
<u>B.7.279. URANIUM – INHALATION OF ²³⁹U (TYPE “F”)</u>	195
<u>B.7.279.1. Urinary Excretion Rate</u>	195
<u>B.7.279.2. Fecal Excretion Rate</u>	196
<u>B.7.279.3. Whole Body Retention</u>	196
<u>B.7.279.4. Kidney Retention</u>	196
<u>B.7.280. URANIUM – INHALATION OF ²³⁹U (TYPE “M”)</u>	196
<u>B.7.280.1. Urinary Excretion Rate</u>	196
<u>B.7.280.2. Fecal Excretion Rate</u>	196
<u>B.7.280.3. Whole Body Retention</u>	196
<u>B.7.280.4. Kidney Retention</u>	196
<u>B.7.280.5. Lung Retention</u>	196

B.7.281. URANIUM – INHALATION OF ²³⁹ U (TYPE “S”)	196
B.7.281.1. Urinary Excretion Rate	196
B.7.281.2. Fecal Excretion Rate	196
B.7.281.3. Whole Body Retention	197
B.7.281.4. Kidney Retention	197
B.7.281.5. Lung Retention	197
B.7.282. URANIUM – INGESTION OF ²³⁹ U (F ₁ = 0.02)	197
B.7.282.1. Urinary Excretion Rate	197
B.7.282.2. Fecal Excretion Rate	197
B.7.282.3. Whole Body Retention	197
B.7.282.4. Kidney Retention	197
B.7.283. URANIUM – INJECTION OF ²³⁹ U	197
B.7.283.1. Urinary Excretion Rate	197
B.7.283.2. Fecal Excretion Rate	197
B.7.283.3. Whole Body Retention	197
B.7.283.4. Kidney Retention	197
B.7.284. YTTERBIUM – INHALATION OF ¹⁶⁹ Yb (TYPE “M”)	198
B.7.284.1. Urinary Excretion Rate	198
B.7.284.2. Fecal Excretion Rate	198
B.7.284.3. Whole Body Retention	198
B.7.284.4. Lung Retention	198
B.7.285. YTTERBIUM – INHALATION OF ¹⁶⁹ Yb (TYPE “S”)	198
B.7.285.1. Urinary Excretion Rate	198
B.7.285.2. Fecal Excretion Rate	198
B.7.285.3. Whole Body Retention	199
B.7.285.4. Lung Retention	199
B.7.286. YTTERBIUM – INGESTION OF ¹⁶⁹ Yb (F ₁ = 0.0005)	199
B.7.286.1. Urinary Excretion Rate	199
B.7.286.2. Fecal Excretion Rate	199
B.7.286.3. Whole Body Retention	199
B.7.287. YTTERBIUM – INJECTION OF ¹⁶⁹ Yb	199
B.7.287.1. Urinary Excretion Rate	200
B.7.287.2. Fecal Excretion Rate	200
B.7.287.3. Whole Body Retention	200
B.7.288. YTTRIUM – INHALATION OF ⁸⁸ Y (TYPE “M”)	200
B.7.288.1. Urinary Excretion Rate	200
B.7.288.2. Fecal Excretion Rate	200
B.7.288.3. Whole Body Retention	200
B.7.288.4. Lung Retention	201
B.7.289. YTTRIUM – INHALATION OF ⁸⁸ Y (TYPE “S”)	201
B.7.289.1. Urinary Excretion Rate	201
B.7.289.2. Fecal Excretion Rate	201
B.7.289.3. Whole Body Retention	201
B.7.289.4. Lung Retention	201
B.7.290. YTTRIUM – INGESTION OF ⁸⁸ Y (F ₁ = 0.0001)	201
B.7.290.1. Urinary Excretion Rate	202
B.7.290.2. Fecal Excretion Rate	202
B.7.290.3. Whole Body Retention	202
B.7.291. YTTRIUM – INJECTION OF ⁸⁸ Y	202
B.7.291.1. Urinary Excretion Rate	202
B.7.291.2. Fecal Excretion Rate	202
B.7.291.3. Whole Body Retention	202
B.7.292. YTTRIUM – INJECTION OF ⁹⁰ Y	202
B.7.292.1. Urinary Excretion Rate	203
B.7.292.2. Fecal Excretion Rate	203
B.7.292.3. Whole Body Retention	203

<u>B.7.293. YTTRIUM – INHALATION OF ⁹¹Y (TYPE “M”)</u>	203
<u>B.7.293.1. Urinary Excretion Rate</u>	203
<u>B.7.293.2. Fecal Excretion Rate</u>	203
<u>B.7.293.3. Whole Body Retention</u>	203
<u>B.7.293.4. Lung Retention</u>	203
<u>B.7.294. YTTRIUM – INHALATION OF ⁹¹Y (TYPE “S”)</u>	204
<u>B.7.294.1. Urinary Excretion Rate</u>	204
<u>B.7.294.2. Fecal Excretion Rate</u>	204
<u>B.7.294.3. Whole Body Retention</u>	204
<u>B.7.294.4. Lung Retention</u>	204
<u>B.7.295. YTTRIUM – INGESTION OF ⁹¹Y (F₁ = 0.0001)</u>	204
<u>B.7.295.1. Urinary Excretion Rate</u>	204
<u>B.7.295.2. Fecal Excretion Rate</u>	204
<u>B.7.295.3. Whole Body Retention</u>	205
<u>B.7.296. YTTRIUM – INJECTION OF ⁹¹Y</u>	205
<u>B.7.296.1. Urinary Excretion Rate</u>	205
<u>B.7.296.2. Fecal Excretion Rate</u>	205
<u>B.7.296.3. Whole Body Retention</u>	205
<u>B.7.297. ZINC – INJECTION OF ⁶⁵Zn</u>	205
<u>B.7.297.1. Urinary Excretion Rate</u>	205
<u>B.7.297.2. Fecal Excretion Rate</u>	205
<u>B.7.297.3. Whole Body Retention</u>	206
<u>B.7.298. ZIRCONIUM – INHALATION OF ⁹⁵Zr (TYPE “F”)</u>	206
<u>B.7.298.1. Urinary Excretion Rate</u>	206
<u>B.7.298.2. Fecal Excretion Rate</u>	206
<u>B.7.298.3. Whole Body Retention</u>	206
<u>B.7.299. ZIRCONIUM – INHALATION OF ⁹⁵Zr (TYPE “M”)</u>	206
<u>B.7.299.1. Urinary Excretion Rate</u>	206
<u>B.7.299.2. Fecal Excretion Rate</u>	207
<u>B.7.299.3. Whole Body Retention</u>	207
<u>B.7.299.4. Lung Retention</u>	207
<u>B.7.300. ZIRCONIUM – INGESTION OF ⁹⁵Zr (F₁ = 0.002)</u>	207
<u>B.7.300.1. Urinary Excretion Rate</u>	207
<u>B.7.300.2. Fecal Excretion Rate</u>	207
<u>B.7.300.3. Whole Body Retention</u>	207
<u>B.7.301. ZIRCONIUM – INJECTION OF ⁹⁵Zr</u>	208
<u>B.7.301.1. Urinary Excretion Rate</u>	208
<u>B.7.301.2. Fecal Excretion Rate</u>	208
<u>B.7.301.3. Whole Body Retention</u>	208
<u>B.8. REFERENCES</u>	209

This page intentionally blank

B.1. Quality Assurance Plan

Quality assurance of the bioassay analysis capabilities of **IMBA Professional Plus** was carried out in two parts

- By verifying that all of the implemented **bioassay functions**^(a), in conjunction with the *ICRP Publication 66* Human Respiratory Tract Model, HRTM (ICRP 1994a) and/or the *ICRP Publication 30* gastrointestinal (GI) tract model (ICRP 1979) accurately represent excretion rates and whole body/organ retention as a function of time, in accordance with currently recommended ICRP models.
- By testing all of the special bioassay analysis features incorporated in **IMBA Professional Plus**, e.g., estimation of multiple intakes and use of the maximum likelihood fitting procedure, including its application to data recorded as “less than the limit of detection” (< LOD).

The accuracy of all bioassay functions was verified by “benchmark” comparison of excretion rates and/or whole body/organ retention calculated as a function of time by **IMBA Professional Plus** against corresponding values calculated by the HPA-RPD’s “in house” **PLEIADES** internal dosimetry code. **PLEIADES** was one of the codes used by the International Commission on Radiological Protection’s (ICRP’s) Task Group on Dose Calculations (DOCAL) to calculate the excretion functions and intake retention functions (IRFs) recommended in *ICRP Publication 78* (ICRP 1997). These comparisons were carried out for every radioelement included in Version 4.0, for intravenous injection, and in many cases for inhalation and/or ingestion, and for more than one radioisotope of the element concerned.

The correct functioning of the special bioassay analysis features was tested comprehensively, including (where possible) comparison of fitted intakes against those obtained with independently written software.

B.1.1. Criteria for Accuracy of Calculated Bioassay Quantities

The criteria adopted for establishing the accuracy of **bioassay quantities**^(b) calculated by **IMBA Professional Plus** in the benchmark comparison against corresponding values calculated by **PLEIADES** were that:

- For acute intravenous injection of every radioelement, the urinary and Fecal excretion rates, whole body retention, and retention in any organ(s) of special interest calculated at fourteen test time points (from 1 d to approximately 55 y) are within $\pm 1\%$ of the corresponding values calculated by **PLEIADES**. The fourteen time points are 1 d, 2 d, 5 d, 10 d, 20 d, 50 d, 100 d, 200 d, 500 d, 1000 d, 2000 d, 5000 d, 10000 d, 20000 d.^(c)
- For acute inhalation and/or ingestion, the above bioassay quantities are ALSO within $\pm 1\%$ of the corresponding values calculated by **PLEIADES**.

^(a) See **Appendix A: Technical Basis**, Section 7.5 for descriptions of the various types of bioassay function implemented in **IMBA Professional Plus**, and their derivation.

^(b) A bioassay quantity is an excretion rate or retention of activity or mass in an organ or whole body which is measured in order to assess intake(s) of a radionuclide.

^(c) For short-lived radionuclides the number of tested time points was reduced accordingly.

B.1.2. Use of Benchmark Comparisons of Calculated Bioassay Quantities

If the bioassay quantities calculated by [IMBA Professional Plus](#) meet the above **criteria for accuracy**, it is established (for the radioelement examined) that:

1. The tested bioassay function accurately represents the excretion and or retention predicted by the currently recommended ICRP model for that element, over the whole time range of practical interest;
2. The IMBA modules correctly couple the tested bioassay function to the “input” HRTM or GI tract model, as appropriate.

B.2. Results of Benchmark Comparisons

For practical implementation, *ICRP Publication 78* (ICRP 1997) tabulated “predicted” values of excretion rates and whole body/organ retention for limited time intervals after acute inhalation and ingestion. The maximum time interval considered was 360 d (for certain long-lived radionuclides), and the predicted bioassay quantities were given to two significant figures. Such tabulated values are not adequate for the quality assurance purposes described here. To provide more comprehensive tests of the accuracy of [IMBA Professional Plus](#)’s calculations of bioassay quantities, **PLEIADES** was set up to provide all “benchmark” values to 4 significant figures.

The following sections summarize the results of benchmark comparisons of:

1. Calculated bioassay quantities for intake by injection – for all radioelements implemented in Version 4.0 (Section B.2.1).
2. Calculated bioassay quantities for intake by ingestion – for selected radionuclides implemented in Version 4.0 (Section B.2.2).
3. Calculated bioassay quantities for intake by inhalation – for selected radionuclides implemented in Version 4.0 (Section B.2.3).

Full tabulations of all calculated “benchmark” values are given in Sections B.7.1.1 through B.7.301.3.

B.2.1. Summary of “Benchmark” Results for Intake by Injection

Table B.2.1 lists (by radioelement) the maximum difference between values of bioassay quantities calculated by [IMBA Professional Plus](#) and **PLEIADES** (ICRP) for acute intake of unit activity (1 Bq) directly into the blood at time $t = 0$.

Table B.2.1. Maximum difference between bioassay quantities per unit intake by acute injection calculated by [IMBA Professional Plus](#) and PLEIADES.

No.	Element/Isotope	Maximum Difference (%) for Following Bioassay Quantity			
		Urinary Excretion Rate	Fecal Excretion Rate	Whole Body Retention	Other
1	Actinium/ ²²⁷ Ac	+0.05	+0.02	0.00	—
2	Americium/ ²⁴¹ Am	+0.09	-0.41	-0.37	—
3	Antimony/ ¹²⁵ Sb	-0.04	-0.04	-0.03	—
4	Arsenic/ ⁷⁴ As	+0.12	+0.13	+0.13	—
5	Barium/ ¹³³ Ba	-0.23	-0.05	-0.06	—
6	Barium/ ¹⁴⁰ Ba	+0.10	+0.06	+0.06	—
7	Berkelium/ ²⁴⁹ Bk	-0.04	-0.04	-0.09	—
8	Calcium ^(a) / ⁴⁵ Ca	-0.06	-0.06	-0.26	—
9	Californium/ ²⁴⁹ Cf	+0.04	+0.01	0.0	—
10	Californium/ ²⁵² Cf	+0.09	+0.09	+0.05	—
11	Carbon ^(b) / ¹⁴ C	-0.01	-0.01	—	—
12	Cerium/ ¹³⁹ Ce	-0.88	+0.36	+0.61	—
13	Cerium/ ¹⁴³ Ce	-0.89	+0.12	-0.04	—
14	Cerium/ ¹⁴⁴ Ce	-0.90	+0.12	-0.03	—
15	Cesium/ ¹³⁴ Cs	-0.06	-0.06	-0.07	—
16	Cesium/ ¹³⁷ Cs	-0.06	-0.06	-0.07	—
17	Chloride/ ³⁶ Cl	-0.16	-0.16	-0.17	—
18	Chromium/ ⁵¹ Cr	-0.18	-0.18	-0.17	—
19	Cobalt/ ⁶⁰ Co	+0.05	+0.05	+0.05	—
20	Curium/ ²⁴² Cm	+0.16	-0.41	-0.37	—
21	Curium/ ²⁴⁴ Cm	+0.10	-0.41	-0.37	—
22	Europium/ ¹⁵² Eu	+0.04	+0.04	+0.02	—
23	Hafnium/ ¹⁸¹ Hf	+0.21	+0.24	+0.22	—
24	Hydrogen ^(c) / ³ H	—	—	+0.02	—
25	Hydrogen ^(d) / ³ H	+0.04	—	+0.03	—
26	Iodine/ ¹²⁵ I	+0.21	+0.30	+0.20	+0.20 ^(d)
27	Iodine/ ¹³¹ I	+0.03	-0.19	-0.03	-0.03 ^(d)
28	Iridium/ ¹⁹² Ir	-0.01	-0.01	-0.01	—
29	Iron/ ⁵⁵ Fe	-0.21	+0.32	+0.18	—
30	Iron/ ⁵⁹ Fe	+0.25	+0.40	+0.41	—

^(a) The latest model for Ca-45 is published in ICRP Publication 71, and this is used in IMBA. PLEIADES, however, uses an older model published in ICRP Publication 30(Part 2).

^(b) Organic forms.

^(c) Inorganic (HTO)

^(d) Organic forms

31	Lanthanum/ ¹⁴⁰ La	+0.04	+0.40	+0.04	—
32	Lead ^(e) / ²¹⁰ Pb	-0.84	+0.48	—	—
33	Lutetium/ ¹⁷⁴ Lu	-0.20	-0.20	-0.10	—
34	Manganese/ ⁵⁴ Mn	+0.06	+0.05	+0.06	—
35	Mercury/ ²⁰³ Hg	-0.23	-0.23	-0.44	—
36	Molybdenum/ ⁹⁹ Mo	+0.24	+0.24	+0.48	—

Table B.2.1. (Contd).

No.	Element/Isotope	Maximum Difference (%) for Following Bioassay Quantity			
		Urinary Excretion Rate	Fecal Excretion Rate	Whole Body Retention	Other
37	Neptunium/ ²³⁷ Np	0.00	-0.32	-0.11	—
38	Neptunium/ ²³⁹ Np	-0.15	-0.34	-0.12	—
39	Nickel/ ⁶³ Ni	+0.02	+0.03	—	—
40	Niobium/ ⁹⁵ Nb	+0.02	-0.02	+0.01	—
41	Phosphorus/ ³² P	+0.08	+0.08	+0.08	—
42	Plutonium/ ²³⁸ Pu	+0.13	-0.26	+0.15	—
43	Plutonium/ ²³⁹ Pu	+0.13	-0.26	+0.15	—
44	Plutonium/ ²⁴⁰ Pu	+0.13	-0.26	+0.15	—
45	Plutonium/ ²⁴¹ Pu	+0.13	-0.26	+0.15	—
46	Polonium ^(f) / ²⁰⁸ Po	-0.02	-0.01	+0.01	—
47	Polonium ^(f) / ²⁰⁹ Po	-0.02	-0.01	+0.01	—
48	Polonium/ ²¹⁰ Po	+0.03	+0.04	+0.04	—
49	Praseodymium/ ¹⁴³ Pr	+0.06	+0.06	+0.15	—
50	Praseodymium/ ¹⁴⁷ Pr	0.00	0.00	0.00	—
51	Promethium/ ¹⁴⁷ Pm	+0.04	+0.01	—	—
52	Protactinium/ ²³¹ Pa	+0.03	-0.03	0.00	—
53	Protactinium/ ²³³ Pa	-0.13	-0.13	-0.21	—
54	Protactinium/ ²³⁴ Pa	+0.19	+0.19	+0.38	—
55	Radium ^(g) / ²²³ Ra	-0.49	-0.48	-0.44	—
56	Radium/ ²²⁶ Ra	+0.31	+0.33	+0.06	—
57	Radium/ ²²⁸ Ra	+0.31	+0.33	+0.06	—
58	Ruthenium/ ¹⁰⁶ Ru	+0.22	+0.22	+0.21	—
59	Samarium/ ¹⁵¹ Sm	+0.05	+0.01	0.00	—
60	Scandium/ ⁴⁶ Sc	-0.10	-0.10	-0.08	—
61	Silver/ ^{110m} Ag	-0.02	-0.02	-0.02	—
62	Sodium/ ²² Na	-0.27	-0.28	-0.32	—

^(f) These nuclides are not in ICRP Publication 38, and we do not therefore have any readily available radionuclide data for them. However, compatible data files were created for them from the literature.

^(e) ICRP assumes independent kinetics for this radionuclide, whereas IMBA assumes that the progeny behave the same as the parent. Any differences in calculated dose so caused are identified in the quality assurance for dose (Appendix C).

63	Strontium/ ⁸⁵ Sr	-0.02	-0.02	-0.02	—
64	Strontium/ ⁸⁹ Sr	+0.42	+0.42	+0.44	—
65	Strontium/ ⁹⁰ Sr	+0.02	+0.02	-0.02	—
66	Strontium/⁹¹Sr	-0.26	-0.26	-0.27	—
67	Sulfur ^(a) / ³⁵ S	-0.09	+0.23	-0.02	—
68	Sulfur ^(b) / ³⁵ S	-0.01	-0.01	-0.01	—
69	Tantalum/¹⁸²Ta	-0.01	-0.02	+0.03	—
70	Technetium/ ⁹⁹ Tc	-0.26	-0.25	-0.16	—
71	Tellurium^(g)/¹³¹Te	0.00	0.00	0.00	—
72	Tellurium^(g)/^{131m}Te	-0.04	-0.03	-0.03	—

^(g) ICRP assume independent kinetics for this radionuclide, whereas IMBA assumes that the progeny behave the same as the parent. Any differences in dose so caused are identified in the quality assurance (Appendix C).

^(a) Inorganic forms.

^(b) Organic forms.

Table B.2.1. (Contd).

No.	Element/Isotope	Maximum Difference (%) for Following Bioassay Quantity			
		Urinary Excretion Rate	Fecal Excretion Rate	Whole Body Retention	Other
73	Terbium/ ¹⁶⁰ Tb	+0.03	-0.01	-0.01	–
74	Thalium/ ²⁰¹ Tl	–	–	-0.02	–
75	Thalium/ ²⁰² Tl	+0.09	+0.09	+0.19	–
76	Thalium/ ²⁰⁴ Tl	+0.10	+0.09	+0.10	–
77	Thorium/ ²²⁸ Th	-0.06	-0.27	-0.18	–
78	Thorium/ ²³² Th	+0.06	+0.25	-0.18	–
79	Thorium ⁽ⁱ⁾ / ²³⁴ Th	-0.08	-0.07	-0.18	–
80	Thulium/ ¹⁷⁰ Tm	+0.04	+0.01	+0.01	–
81	Tin/ ¹¹³ Sn	-0.04	-0.04	-0.04	–
82	Uranium ⁽ⁱ⁾ / ²³² U	-0.05	+0.23	-0.03	-0.92
83	Uranium/ ²³⁴ U	-0.05	+0.23	-0.63	–
84	Uranium/ ²³⁵ U	-0.05	+0.23	-0.63	–
85	Uranium/ ²³⁸ U	-0.05	+0.23	-0.63	–
86	Uranium/ ²³⁹ U	0.00	0.00	0.00	0.00
87	Ytterbium/ ¹⁶⁹ Yb	-0.20	-0.20	-0.20	-0.41
88	Yttrium/ ⁸⁸ Y	+0.16	-0.01	-0.60	–
89	Yttrium/ ⁹⁰ Y	+0.16	+0.01	+0.01	–
90	Yttrium/ ⁹¹ Y	+0.16	+0.02	+0.53	–
91	Zinc/ ⁶⁵ Zn	-0.11	-0.11	-0.05	–
92	Zirconium/ ⁹⁵ Zr	-0.36	-0.36	-0.38	–

Overall summary of Table B.2.1.

- For ALL radioelements included in Version 4.0, the bioassay functions implemented in **IMBA Professional Plus** satisfy the < ±1% criterion for accuracy over the whole time range of interest (1 d to 20,000 d after intake) in comparison with the corresponding values calculated by **PLEIADES** (and ICRP).
- This criterion is satisfied for all tested isotopes of these radioelements, and can be considered satisfied for all individual isotopes.
- These tests show that **IMBA Professional Plus** will correctly predict urinary excretion rates, Fecal excretion rates, whole body retention and/or thyroid retention, as a function of time, after entry of the implemented radioelements into the blood (as “dissolved” or biologically complexed material).

⁽ⁱ⁾ ICRP assume independent kinetics for this radionuclide, whereas IMBA assumes that the progeny behave the same as the parent. Any differences in dose so caused are identified in the quality assurance for dose (Appendix C).

B.2.2. Summary of “Benchmark” Results for Intake by Ingestion

Table B.2.2 lists (by radioelement) the maximum difference between values of bioassay quantities calculated by **IMBA Professional Plus** and **PLEIADES** (ICRP) for acute intake of unit activity (1 Bq) directly by ingestion at time $t = 0$.

Table B.2.2. Maximum difference between bioassay quantities per unit intake by acute ingestion calculated by **IMBA Professional Plus** and PLEIADES.

No.	Element/Isotope	f ₁ Value	Maximum Difference (%) for Following Bioassay			
			Urinary Excretion Rate	Fecal Excretion Rate	Whole Body Retention	Other
1	Americium/ ²⁴¹ Am	0.0005	+0.09	+0.14	-0.29	—
2	Antimony/ ¹²⁵ Sb	0.1	-0.03	-0.04	-0.03	—
3	Arsenic/ ⁷⁴ As	0.5	+0.12	+0.13	+0.13	—
4	Barium/ ¹³³ Ba	0.1	+0.12	-0.05	-0.06	—
5	Berkelium/ ²⁴⁹ Bk	0.0005	+0.03	-0.02	-0.04	—
6	Calcium ^(a) / ⁴⁵ Ca	0.3	-0.07	-0.06	-0.26	—
7	Californium/ ²⁴⁹ Cf	0.0005	+0.03	-0.01	0.00	—
8	Cerium/ ¹³⁹ Ce	0.0005	-0.89	+0.36	+0.24	—
9	Cerium/ ¹⁴³ Ce	0.0005	-0.89	+0.10	-0.01	—
10	Cerium/ ¹⁴⁴ Ce	0.0005	-0.90	+0.12	-0.03	—
11	Cesium/ ¹³⁴ Cs	0.99	-0.06	-0.06	-0.07	—
12	Cesium/ ¹³⁷ Cs	0.99	-0.06	-0.06	-0.07	—
13	Chloride/ ³⁶ Cl	0.99	-0.16	-0.16	-0.17	—
14	Cobalt/ ⁶⁰ Co	0.1	-0.31	+0.04	+0.02	—
15	Cobalt/ ⁶⁰ Co	0.05	-0.31	-0.02	+0.01	—
16	Curium/ ²⁴² Cm	0.0005	+0.16	+0.14	-0.29	—
17	Curium/ ²⁴⁴ Cm	0.0005	+0.10	+0.13	-0.29	—
18	Hydrogen/ ³ H ^(b)	0.99	+0.03	—	+0.03	—
19	Iodine/ ¹²⁵ I	0.99	+0.20	+0.30	+0.20	+0.20 ^(c)
20	Iodine/ ¹³¹ I	0.99	+0.03	-0.19	-0.03	-0.03 ^(c)
21	Iridium/ ¹⁹² Ir	0.01	-0.01	-0.01	-0.01	—
22	Iron/ ⁵⁵ Fe	0.1	-0.21	-0.14	+0.18	—
23	Iron/ ⁵⁹ Fe	0.1	+0.25	+0.40	+0.41	—
24	Lead ^(d) / ²¹⁰ Pb	0.2	-0.84	+0.49	+0.05	—
25	Lutetium/ ¹⁷⁴ Lu	0.0005	-0.10	-0.10	-0.10	—
26	Mercury/ ²⁰³ Hg	0.99	-0.23	-0.23	-0.44	—
27	Molybdenum/ ⁹⁹ Mo	0.8	+0.24	+0.24	+0.45	—
28	Neptunium/ ²³⁷ Np	0.0005	0.00	+0.21	-0.11	—
29	Neptunium/ ²³⁹ Np	0.0005	-0.06	-0.13	-0.10	—

^(a) The latest model for Ca-45 is published in ICRP Publication 71, and this is used in IMBA. PLEIADES, however, uses an older model published in ICRP Publication 30(Part 2).

^(b) Organic forms.

^(c) Thyroid retention.

^(d) ICRP assume independent kinetics for this radionuclide, whereas IMBA assumes that the progeny behave the same as the parent. Any differences in dose so caused are identified in the quality assurance for dose (Appendix C).

Table B.2.2. (Contd).

No.	Element/Isotope	f ₁ Value	Maximum Difference (%) for Following Bioassay			
			Urinary Excretion Rate	Fecal Excretion Rate	Whole Body Retention	Other
30	Niobium/ ⁹⁵ Nb	0.01	+0.02	-0.02	+0.01	—
31	Phosphorus/ ³² P	0.8	+0.08	+0.08	+0.08	—
32	Plutonium/ ²³⁸ Pu	0.0005	+0.13	-0.25	+0.15	—
33	Plutonium/ ²³⁸ Pu	0.00001	+0.13	-0.28	+0.15	—
34	Plutonium/ ²³⁸ Pu	0.0001	+0.13	-0.27	+0.15	—
35	Plutonium/ ²³⁹ Pu	0.0005	+0.13	-0.26	+0.15	—
36	Plutonium/ ²³⁹ Pu	0.00001	+0.13	-0.28	+0.15	—
37	Plutonium/ ²³⁹ Pu	0.0001	+0.13	-0.28	+0.15	—
38	Plutonium/ ²⁴⁰ Pu	0.0005	+0.13	-0.26	+0.15	—
39	Plutonium/ ²⁴⁰ Pu	0.00001	+0.13	-0.28	+0.15	—
40	Plutonium/ ²⁴⁰ Pu	0.0001	+0.13	-0.28	+0.15	—
41	Plutonium/ ²⁴¹ Pu	0.0005	+0.13	-0.26	+0.15	—
42	Plutonium/ ²⁴¹ Pu	0.00001	+0.13	-0.28	+0.15	—
43	Plutonium/ ²⁴¹ Pu	0.0001	+0.13	-0.28	+0.15	—
44	Polonium ^(e) / ²⁰⁸ Po	0.1	-0.02	+0.01	+0.01	—
45	Polonium ^(e) / ²⁰⁹ Po	0.1	-0.02	+0.01	+0.01	—
46	Polonium/ ²¹⁰ Po	0.1	+0.03	+0.04	+0.04	—
47	Praseodymium/ ¹⁴³ Pr	0.0005	+0.06	+0.06	+0.06	—
48	Praseodymium/ ¹⁴⁷ Pr	0.0005	0.0	0.00	0.00	—
49	Protactinium/ ²³³ Pa	0.0005	-0.07	-0.06	-0.10	—
50	Protactinium/ ²³⁴ Pa	0.0005	+0.19	+0.19	+0.19	—
51	Radium ^(f) / ²²³ Ra	0.2	-0.49	-0.48	-0.45	—
52	Radium/ ²²⁶ Ra	0.2	+0.17	+0.18	+0.04	—
53	Radium/ ²²⁸ Ra	0.2	+0.32	+0.32	+0.06	—
54	Ruthenium/ ¹⁰⁶ Ru	0.05	+0.22	+0.22	+0.21	—
55	Samarium/ ¹⁵¹ Sm	0.0005	+0.03	0.00	0.00	—
56	Scandium/ ⁴⁶ Sc	0.0001	-0.06	-0.06	-0.08	—
57	Strontium/ ⁸⁵ Sr	0.3	-0.02	-0.02	-0.01	—
58	Strontium/ ⁸⁵ Sr	0.01	-0.02	-0.02	-0.01	—
59	Strontium/ ⁸⁹ Sr	0.3	+0.42	+0.43	+0.43	—
60	Strontium/ ⁸⁹ Sr	0.01	+0.21	+0.21	+0.22	—
61	Strontium/ ⁹⁰ Sr	0.3	+0.02	+0.02	+0.01	—
62	Strontium/ ⁹⁰ Sr	0.01	+0.02	+0.02	-0.01	—
63	Strontium/ ⁹¹ Sr	0.3	-0.26	-0.26	-0.27	—
64	Tantalum/ ¹⁸² Ta	0.0001	-0.02	-0.01	+0.02	—
65	Technetium/ ⁹⁹ Tc	0.8	-0.26	-0.25	-0.16	—

^(e) These nuclides are not in ICRP Publication 38, and we do not therefore have any readily available radionuclide data for them. However, compatible data files were created for them from the literature.

^(f) ICRP assume independent kinetics for this radionuclide, whereas IMBA assumes that the progeny behave the same as the parent. Any differences in dose so caused are identified in the quality assurance for dose (Appendix C).

Table B.2.2. (Contd).

No.	Element/Isotope	f ₁ Value	Maximum Difference (%) for Following Bioassay			
			Urinary Excretion Rate	Fecal Excretion Rate	Whole Body Retention	Other
66	Tellurium ^(g) / ¹³¹ Te	0.3	0.00	0.00	0.00	–
67	Tellurium ^(g) / ^{131m} Te	0.3	-0.04	-0.04	-0.04	–
68	Thallium/ ²⁰¹ Tl	0.99	–	–	-0.02	–
69	Thallium/ ²⁰² Tl	0.99	+0.08	+0.09	+0.18	–
70	Thallium/ ²⁰⁴ Tl	0.99	+0.09	+0.09	+0.10	–
71	Thorium/ ²²⁸ Th	0.0005	+0.05	+0.20	+0.11	–
72	Thorium/ ²²⁸ Th	0.0002	+0.05	-0.22	+0.08	–
73	Thorium/ ²³² Th	0.0005	+0.06	+0.26	+0.11	–
74	Thorium/ ²³² Th	0.0002	+0.06	-0.27	+0.08	–
75	Thorium ^(g) / ²³⁴ Th	0.0005	+0.02	-0.07	+0.11	–
76	Thulium/ ¹⁷⁰ Tm	0.0005	+0.02	+0.01	+0.01	–
77	Uranium ^(g) / ²³² U	0.02	-0.05	+0.23	-0.63	-0.92
78	Uranium/ ²³⁴ U	0.02	-0.05	+0.22	-0.63	–
79	Uranium/ ²³⁴ U	0.002	-0.05	+0.22	-0.63	–
80	Uranium/ ²³⁵ U	0.02	-0.05	+0.22	-0.63	–
81	Uranium/ ²³⁵ U	0.002	-0.05	+0.22	-0.63	–
82	Uranium/ ²³⁸ U	0.02	-0.05	+0.22	-0.63	–
83	Uranium/ ²³⁸ U	0.002	-0.05	+0.22	-0.63	–
84	Uranium/ ²³⁹ U	0.02	0.00	0.00	0.00	0.00
85	Ytterbium/ ¹⁶⁹ Yb	0.0005	-0.08	-0.08	-0.20	–
86	Yttrium/ ⁸⁸ Y	0.0001	+0.14	0.00	-0.60	–
87	Yttrium/ ⁹¹ Y	0.0001	+0.15	+0.01	+0.27	–
88	Zirconium/ ⁹⁵ Zr	0.002	-0.37	-0.17	-0.38	–

Overall summary of Table B.2.2.

- For ALL radioelements included in Version 4.0, the bioassay functions implemented in [IMBA Professional Plus](#), when applied in conjunction with the *ICRP Publication 30* (ICRP 1979) GI tract model, satisfy the < ±1% criterion for accuracy over the whole time range of interest (1 d to 20,000 d after intake) in comparison with the corresponding values of excretion rates and whole body/organ retention calculated by **PLEIADES** (and ICRP).
- This criterion is satisfied for all tested isotopes of these radioelements, and can be considered satisfied for all individual isotopes.
- These tests show that [IMBA Professional Plus](#) will correctly predict urinary excretion rates, Fecal excretion rates, whole body retention and/or thyroid retention, as a function of time, after intake of the implemented radioelements by ingestion.

^(g) ICRP assume independent kinetics for this radionuclide, whereas IMBA assumes that the progeny behave the same as the parent. Any differences in dose so caused are identified in the quality assurance for dose (Appendix C).

B.2.3. Summary of “Benchmark” Results for Intake by Inhalation

Table B.2.3 lists (by radionuclide) the maximum difference between values of bioassay quantities calculated by **IMBA Professional Plus** and **PLEIADES** (ICRP) for acute intake of unit activity (1 Bq) directly by inhalation at time $t = 0$.

Table B.2.3. Maximum difference between bioassay quantities per unit intake by acute inhalation calculated by **IMBA Professional Plus** and PLEIADES.

No.	Element/Isotope	Absorption Type	Maximum Difference (%) for Following Bioassay			
			Urinary Excretion Rate	Fecal Excretion Rate	Whole Body Retention	Lung Retention
1	Americium/ ²⁴¹ Am	M	+0.09	+0.08	+0.22	-0.02
2	Antimony/ ¹²⁵ Sb	F	-0.04	-0.04	-0.04	–
3	Antimony/ ¹²⁵ Sb	M	-0.02	-0.02	-0.05	-0.02
4	Arsenic/ ⁷⁴ As	M	-0.02	+0.02	+0.06	+0.06
5	Barium/ ¹³³ Ba	F	-0.24	-0.05	-0.07	–
6	Berkelium/ ²⁴⁹ Bk	M	-0.05	-0.05	-0.10	-0.03
7	Calcium ^(a) / ⁴⁵ Ca	M	-0.07	-0.07	-0.27	-0.10
8	Californium/ ²⁴⁹ Cf	M	+0.03	-0.02	-0.01	-0.02
9	Cerium/ ¹³⁹ Ce	M	-0.89	+0.35	+0.23	+0.24
10	Cerium/ ¹³⁹ Ce	S	-0.89	+0.25	+0.23	+0.24
11	Cerium/ ¹⁴³ Ce	M	-0.90	-0.03	-0.02	-0.03
12	Cerium/ ¹⁴³ Ce	S	-0.89	-0.03	-0.03	-0.03
13	Cerium/ ¹⁴⁴ Ce	M	-0.95	+0.10	-0.07	-0.03
14	Cerium/ ¹⁴⁴ Ce	S	-0.91	-0.02	-0.06	-0.05
15	Cesium/ ¹³⁴ Cs	F	-0.06	-0.07	-0.07	–
16	Cesium/ ¹³⁷ Cs	F	-0.07	-0.07	-0.07	–
17	Chlorine/ ³⁶ Cl	F	-0.16	-0.16	-0.18	–
18	Chlorine/ ³⁶ Cl	M	-0.03	-0.03	-0.02	-0.01
19	Cobalt/ ⁶⁰ Co	M	-0.31	+0.38	+0.06	+0.02
20	Cobalt/ ⁶⁰ Co	S	-0.32	+0.40	-0.01	-0.01
21	Curium/ ²⁴² Cm	M	+0.15	+0.09	+0.18	+0.05
22	Curium/ ²⁴⁴ Cm	M	-0.01	+0.10	+0.30	-0.01
23	Iodine/ ¹²⁵ I	F	+0.20	+0.29	+0.20	– ^(b)
24	Iodine/ ¹³¹ I	F	-0.03	-0.20	-0.03	– ^(c)
25	Iridium/ ¹⁹² Ir	F	-0.02	-0.02	-0.02	–
26	Iridium/ ¹⁹² Ir	M	-0.03	-0.03	-0.02	-0.05
27	Iridium/ ¹⁹² Ir	S	-0.04	-0.05	-0.08	-0.08
28	Iron/ ⁵⁵ Fe	F	-0.22	-0.15	+0.17	–
29	Iron/ ⁵⁵ Fe	M	-0.21	-0.11	-0.13	-0.04
30	Iron/ ⁵⁹ Fe	F	+0.24	+0.40	+0.40	–
31	Iron/ ⁵⁹ Fe	M	+0.21	+0.40	+0.39	+0.40

^(a) The latest model for Ca-45 is published in ICRP Publication 71, and this is used in IMBA. PLEIADES, however, uses an older model published in ICRP Publication 30(Part 2).

^(b) Maximum for thyroid retention is +0.20%.

^(c) Maximum for thyroid retention is -0.03%.

Table B.2.3. (Contd).

No.	Element/Isotope	Absorption Type	Maximum Difference (%) for Following Bioassay			
			Urinary Excretion Rate	Fecal Excretion Rate	Whole Body Retention	Lung Retention
32	Lead ^(d) / ²¹⁰ Pb	F	-0.84	+0.48	-0.05	–
33	Lutetium/ ¹⁷⁴ Lu	M	-0.11	-0.11	-0.11	-0.04
34	Lutetium/ ¹⁷⁴ Lu	S	-0.11	-0.11	-0.11	-0.21
35	Mercury/ ²⁰³ Hg	F	-0.24	-0.24	-0.45	–
36	Molybdenum/ ⁹⁹ Mo	F	+0.23	+0.23	+0.44	–
37	Neptunium/ ²³⁷ Np	M	-0.01	+0.20	+0.06	-0.01
38	Neptunium/ ²³⁹ Np	M	-0.16	-0.16	-0.13	-0.16
39	Niobium/ ⁹⁵ Nb	M	-0.02	-0.02	-0.01	-0.01
40	Niobium/ ⁹⁵ Nb	S	-0.02	-0.01	-0.01	0.01
41	Phosphorus/ ³² P	F	+0.07	+0.07	+0.08	–
42	Phosphorus/ ³² P	M	+0.07	+0.07	+0.08	+0.07
43	Plutonium/ ²³⁸ Pu	M	-0.08	-0.23	+0.22	-0.02
44	Plutonium/ ²³⁸ Pu	S	-0.06	-0.05	+0.16	-0.02
45	Plutonium/ ²³⁹ Pu	M	-0.08	-0.23	+0.22	-0.02
46	Plutonium/ ²³⁹ Pu	S	-0.05	-0.05	+0.17	-0.02
47	Plutonium/ ²⁴⁰ Pu	M	-0.08	-0.23	+0.22	-0.02
48	Plutonium/ ²⁴⁰ Pu	S	-0.06	-0.05	+0.17	-0.01
49	Plutonium/ ²⁴¹ Pu	M	-0.08	-0.23	+0.22	-0.02
50	Plutonium/ ²⁴¹ Pu	S	-0.06	-0.05	+0.17	-0.01
51	Polonium ^(e) / ²⁰⁸ Po	F	-0.02	-0.01	-0.01	–
52	Polonium/ ²⁰⁸ Po	M	-0.03	-0.01	-0.01	-0.01
53	Polonium ^(e) / ²⁰⁹ Po	F	-0.02	-0.01	-0.01	–
54	Polonium ^(e) / ²⁰⁹ Po	M	-0.02	-0.01	-0.01	-0.01
55	Polonium/ ²¹⁰ Po	F	-0.02	+0.03	+0.03	–
56	Polonium/ ²¹⁰ Po	M	+0.05	+0.06	+0.06	+0.06
57	Praseodymium/ ¹⁴³	M	+0.05	+0.05	+0.14	+0.04
58	Praseodymium/ ¹⁴³	S	+0.04	+0.05	+0.05	+0.04
59	Praseodymium/ ¹⁴⁷	M	0.00	0.00	0.00	0.00
60	Praseodymium/ ¹⁴⁷	S	0.00	0.00	0.00	0.00
61	Protactinium/ ²³³ Pa	M	-0.13	-0.12	-0.11	-0.12
62	Protactinium/ ²³³ Pa	S	-0.12	-0.12	-0.12	-0.12
63	Protactinium/ ²³⁴ Pa	M	+0.18	+0.19	+0.37	+0.18
64	Protactinium/ ²³⁴ Pa	S	+0.18	+0.19	+0.18	+0.18
65	Radium ^(d) / ²²³ Ra	M	-0.48	-0.47	-0.46	-0.47
66	Radium/ ²²⁶ Ra	M	-0.17	+0.17	+0.04	-0.02
67	Radium/ ²²⁸ Ra	M	+0.31	+0.32	+0.19	-0.01
68	Ruthenium/ ¹⁰⁶ Ru	F	+0.21	+0.21	+0.20	–
69	Ruthenium/ ¹⁰⁶ Ru	M	+0.21	+0.21	+0.20	+0.08

^(d) ICRP assume independent kinetics for this radionuclide, whereas IMBA assumes that the progeny behave the same as the parent. Any differences in dose so caused are identified in the quality assurance for dose (Appendix C).

^(e) These nuclides are not in ICRP Publication 38, and we do not therefore have any readily available radionuclide data for them. However, compatible data files were created for them from the literature.

Table B.2.3. (Contd).

No.	Element/Isotope	Absorption Type	Maximum Difference (%) for Following Bioassay			
			Urinary Excretion Rate	Fecal Excretion Rate	Whole Body Retention	Lung Retention
70	Ruthenium/ ¹⁰⁶ Ru	S	+0.22	+0.22	+0.22	+0.22
71	Samarium/ ¹⁵¹ Sm	M	+0.08	-0.02	-0.01	-0.02
72	Scandium/ ⁴⁶ Sc	S	-0.08	-0.06	-0.11	-0.11
73	Strontium/ ⁸⁵ Sr	F	-0.03	-0.03	-0.02	—
74	Strontium/ ⁸⁵ Sr	S	-0.03	-0.03	-0.02	-0.03
75	Strontium/ ⁸⁹ Sr	F	+0.42	+0.42	+0.43	—
76	Strontium/ ⁸⁹ Sr	S	+0.42	+0.42	+0.42	+0.42
77	Strontium/ ⁹⁰ Sr	F	+0.02	+0.02	-0.02	—
78	Strontium/ ⁹⁰ Sr	S	-0.01	-0.02	-0.01	-0.02
79	Strontium/ ⁹¹ Sr	F	-0.27	-0.26	-0.28	—
80	Strontium/ ⁹¹ Sr	S	-0.26	-0.27	-0.27	-0.27
81	Tantalum/ ¹⁸² Ta	M	-0.03	-0.04	-0.06	-0.09
82	Tantalum/ ¹⁸² Ta	S	-0.09	-0.09	-0.09	-0.09
83	Technetium/ ⁹⁹ Tc	F	-0.27	-0.25	-0.16	—
84	Technetium/ ⁹⁹ Tc	M	-0.16	-0.14	-0.07	-0.02
85	Tellurium ^(f) / ¹³¹ Te	F	0.00	0.00	0.00	0.00
86	Tellurium ^(f) / ¹³¹ Te	M	0.00	0.00	0.00	0.00
87	Tellurium ^(f) / ^{131m} Te	F	-0.05	-0.04	-0.04	—
88	Tellurium ^(f) / ^{131m} Te	M	-0.05	-0.05	-0.04	-0.05
89	Thallium/ ²⁰¹ Tl	F	—	—	-0.02	—
90	Thallium/ ²⁰² Tl	F	+0.08	+0.08	+0.18	—
91	Thallium/ ²⁰⁴ Tl	F	+0.09	+0.09	+0.10	—
92	Thorium/ ²²⁸ Th	M	-0.06	-0.28	-0.06	-0.02
93	Thorium/ ²²⁸ Th	S	-0.03	-0.06	-0.06	-0.04
94	Thorium/ ²³² Th	M	+0.05	-0.26	-0.04	-0.01
95	Thorium/ ²³² Th	S	-0.01	+0.08	-0.03	-0.02
96	Thorium ^(f) / ²³⁴ Th	M	-0.08	-0.05	-0.09	-0.08
97	Thorium ^(f) / ²³⁴ Th	S	-0.08	-0.08	-0.08	-0.08
98	Thulium/ ¹⁷⁰ Tm	M	+0.03	-0.02	-0.01	-0.01
99	Uranium ^(f) / ²³² U	F	-0.08	+0.22	-0.64	-0.93
100	Uranium ^(f) / ²³² U	M	-0.04	-0.03	+0.19	-0.02
101	Uranium ^(f) / ²³² U	S	-0.04	-0.02	-0.02	-0.01
102	Uranium/ ²³⁴ U	F	-0.06	+0.22	-0.64	—
103	Uranium/ ²³⁴ U	M	-0.04	-0.04	+0.19	-0.02
104	Uranium/ ²³⁴ U	S	-0.04	-0.02	-0.03	-0.02
105	Uranium/ ²³⁵ U	F	-0.06	+0.22	-0.64	—
106	Uranium/ ²³⁵ U	M	-0.04	-0.04	+0.19	-0.01
107	Uranium/ ²³⁵ U	S	-0.04	-0.02	-0.02	-0.02
108	Uranium/ ²³⁸ U	F	-0.06	+0.22	-0.64	—

^(f) ICRP assume independent kinetics for this radionuclide, whereas IMBA assumes that the progeny behave the same as the parent. Any differences in dose so caused are investigated in the quality assurance for dose (Appendix C).

Table B.2.3. (Contd).

No.	Element/Isotope	Absorption Type	Maximum Difference (%) for Following Bioassay			
			Urinary Excretion Rate	Fecal Excretion Rate	Whole Body Retention	Lung Retention
109	Uranium/ ²³⁸ U	M	-0.04	-0.04	+0.19	-0.01
110	Uranium/ ²³⁸ U	S	-0.04	-0.02	-0.02	-0.02
111	Uranium/ ²³⁹ U	F	0.00	0.00	0.00	0.00
112	Uranium/ ²³⁹ U	M	0.0	0.00	0.00	0.00
113	Uranium/ ²³⁹ U	S	0.0	0.00	0.00	0.00
114	Ytterbium/ ¹⁶⁹ Yb	M	-0.22	-0.21	-0.42	-0.22
115	Ytterbium/ ¹⁶⁹ Yb	S	-0.21	-0.22	-0.42	-0.42
116	Yttrium/ ⁸⁸ Y	M	-0.25	-0.24	-0.60	-0.24
117	Yttrium/ ⁸⁸ Y	S	-0.25	-0.48	-0.50	-0.47
118	Yttrium/ ⁹¹ Y	M	+0.15	+0.33	+0.53	+0.32
119	Yttrium/ ⁹¹ Y	S	+0.32	+0.32	+0.32	+0.32
120	Zirconium/ ⁹⁵ Zr	F	-0.37	-0.37	-0.39	—
121	Zirconium/ ⁹⁵ Zr	M	-0.37	-0.38	-0.39	-0.40

Overall summary of Table B.2.3.

- For ALL radioelements included in Version 4.0, the bioassay functions implemented in [IMBA Professional Plus](#), when applied in conjunction with the HRTM (ICRP 1994a) respiratory tract model, satisfy the < ±1% criterion for accuracy over the whole time range of interest (1 d to 20,000 d after intake) in comparison with the corresponding values of excretion rates and whole body/organ retention calculated by **PLEIADES** (and ICRP).
- This criterion is satisfied for all tested isotopes of these radioelements, and can be considered satisfied for all individual isotopes.
- These tests show that [IMBA Professional Plus](#) will correctly predict urinary excretion rates, Fecal excretion rates, whole body retention and/or thyroid retention, as a function of time, after intake of the implemented radioelements by inhalation.

B.3. Verification of Maximum Likelihood Fitting Routine

The bioassay data fitting routine (**IMBA_FIT**) incorporated in **IMBA Professional Plus** uses the **maximum likelihood method** implemented by the **IMBA** module **BNFL_FIT**. This code module was developed independently by Mark S. Peace, British Nuclear Fuels plc, Sellafield, Seascale, Cumbria CA20 1PG, UK, as part of NRPB's original "IMBA" project (Birchall et al. 1998). Also as part of the **IMBA** project, for quality assurance purposes, NRPB developed independently the additional **IMBA** module **NRPB_FIT** to implement the **least-squares fitting method**. **NRPB_FIT** is not the default module used in **IMBA Professional Plus**, since the least-squares method does not allow data recorded as "less than the limit of detection" (< LOD) to be analysed. However, when all data points are above the LOD, it can be shown that the "maximum likelihood" and "least-squares" methods are in effect identical (**Appendix A: Technical Basis** Section A.9). Therefore, for a given set of bioassay data with all values above the LOD, **NRPB_FIT** should give an identical "best estimate" of the "intake" to that given by **IMBA_FIT**.

IMBA Professional Plus includes the ability to substitute **NRPB_FIT** (the least-squares method) for **IMBA_FIT** (the maximum likelihood method) to fit bioassay data resulting from a single intake.

Tables B.3.1 and B.3.2 compare the results of fitting two sets of "real-life" data using **IMBA_FIT** and **NRPB_FIT**. The first data set is taken from IAEA (1999), and the second from James et al. (2003).

Table B.3.1. Comparison of whole body retention predicted by **IMBA_FIT** and **NRPB_FIT** for single intake of ^{60}Co by inhalation (at 2/24/1988 00:00).^(a,b)

Sample Date and Time	Measurements		IMBA_FIT Predictions		NRPB_FIT Predictions	
	Retention (Bq)	Normal Error	Retention (Bq)	χ^2	Retention (Bq)	χ^2
2/25/1988 0:00	2720	± 272.0	3336.3	5.1	3336.3	5.1
3/1/1988 0:00	1150	± 115.0	1195.9	0.2	1195.9	0.2
3/11/1988 0:00	1010	± 101.0	1007.6	0.0	1007.6	0.0
3/28/1988 0:00	790	± 79.0	828.1	0.2	828.1	0.2
5/16/1988 0:00	482	± 48.2	555.5	2.3	555.5	2.3
8/11/1988 0:00	358	± 35.8	338.0	0.3	338.0	0.3
11/29/1990 0:00	78	± 7.8	37.1	27.5	37.1	27.5
2/19/1992 0:00	35	± 3.5	20.8	16.5	20.8	16.5

Overall summary of Tables B.3.1 and B.3.2

- Tables B.3.1 and B.3.2 verify, as expected, that identical results are obtained with the **maximum likelihood fitting method** (as implemented in **IMBA Professional Plus** by **IMBA_FIT**) and the **least-squares fitting method** (**NRPB_FIT**), when all data points have explicit "real" error values associated with them.
- This is true for both normal errors (Table B.3.1) and lognormal errors (Table B.3.2) – of variable magnitude (s_g).

^(a) Data taken from Case 3 of IAEA-TECDOC-1071 (IAEA 1999) – see example case file "IAEA Case 3 – 60Co.ix".

^(b) The fitted amount of intake was identical for both fitting methods, i.e., 9,799 Bq of type 'M' ^{60}Co , with AMAD = 1 μm .

Table B.3.2. Comparison of urinary excretion rate predicted by IMBA_FIT and NRPB_FIT for single intake of ²³⁸Pu by inhalation (at t = 0).^(a)

Time Since Intake (d)	Measurements		IMBA_FIT Predictions		NRPB_FIT Predictions	
	Excretion Rate (pCi/d) ^(b)	Lognormal Error (s _g)	Excretion Rate (pCi/d)	c ²	Excretion Rate (pCi/d)	c ²
2	0.004 ^(c)	1.80	0.0018	0.0000	0.0018	0.0000
3	0.004 ^(b)	1.80	0.0025	0.0000	0.0025	0.0000
4	0.004 ^(b)	1.80	0.0033	0.0000	0.0033	0.0000
76	0.004 ^(b)	1.80	0.0518	0.0000	0.0518	0.0000
123	0.160	2.15	0.0792	0.8442	0.0792	0.8442
150	0.070	2.07	0.0946	0.1710	0.0946	0.1710
186	0.070	1.93	0.1146	0.5614	0.1146	0.5614
209	0.100	1.97	0.1270	0.1239	0.1270	0.1239
264	0.160	1.84	0.1551	0.0026	0.1551	0.0026
283	0.180	1.73	0.1643	0.0279	0.1643	0.0279
293	0.200	1.92	0.1690	0.0667	0.1690	0.0667
328	0.310	1.86	0.1848	0.6943	0.1848	0.6943
359	0.230	1.87	0.1981	0.0570	0.1981	0.0570
387	0.260	1.98	0.2093	0.1006	0.2093	0.1006
415	0.200	1.80	0.2200	0.0263	0.2200	0.0263
506	0.370	1.75	0.2508	0.4833	0.2508	0.4833
593	0.230	1.83	0.2750	0.0874	0.2750	0.0874
685	0.240	1.85	0.2959	0.1158	0.2959	0.1158
776	0.240	1.94	0.3124	0.1584	0.3124	0.1584
870	0.330	1.76	0.3258	0.0005	0.3258	0.0005
964	0.310	1.83	0.3361	0.0179	0.3361	0.0179
1048	0.350	1.89	0.3429	0.0010	0.3429	0.0010
1143	0.370	1.90	0.3484	0.0088	0.3484	0.0088
1231	0.580	1.96	0.3518	0.5523	0.3518	0.5523
1293	0.210	1.72	0.3532	0.9189	0.3532	0.9189
1481	0.430	1.91	0.3539	0.0907	0.3539	0.0907
1668	0.410	1.84	0.3504	0.0663	0.3504	0.0663
1847	0.440	1.89	0.3445	0.1478	0.3445	0.1478
2027	0.350	1.78	0.3368	0.0045	0.3368	0.0045
2123	0.160	1.73	0.3322	1.7766	0.3322	1.7766
2212	0.210	1.94	0.3278	0.4512	0.3278	0.4512
2212	0.160	1.87	0.3278	1.3124	0.3278	1.3124
2575	0.220	1.82	0.3086	0.3191	0.3086	0.3191
2689	0.280	1.75	0.3024	0.0190	0.3024	0.0190
2881	0.120	1.73	0.2923	2.6371	0.2923	2.6371
3100	0.280	1.84	0.2810	0.0000	0.2810	0.0000
3244	0.290	1.86	0.2738	0.0085	0.2738	0.0085
3446	0.270	1.72	0.2642	0.0016	0.2642	0.0016
3612	0.270	1.76	0.2567	0.0080	0.2567	0.0080
3805	0.270	1.86	0.2484	0.0180	0.2484	0.0180
3988	0.200	1.75	0.2410	0.1111	0.2410	0.1111
4329	0.180	1.81	0.2283	0.1604	0.2283	0.1604
4701	0.450	1.74	0.2159	1.7587	0.2159	1.7587
4831	0.210	1.84	0.2119	0.0002	0.2119	0.0002
5192	0.360	1.78	0.2016	1.0120	0.2016	1.0120
5560	0.270	1.71	0.1921	0.4025	0.1921	0.4025
5924	0.330	1.76	0.1837	1.0744	0.1837	1.0744
6294	0.230	1.82	0.1759	0.2006	0.1759	0.2006

^(a) Data taken from James et al. (2003) – see also example case file “USTUR0259.ix”.

^(b) Data reported in “traditional” units – 1 pCi = 2.22 disintegrations per minute.

^(c) Assumed “Limit of Detection” (LOD) – measurements < LOD were excluded from both fits. The fitted intake amount was identical for both fitting methods, *i.e.*, 1,378,600 pCi.

B.4. Fitting Multiple Intakes

The following procedure was used to test the accuracy of fitting bioassay data resulting from multiple intakes:

- Define a series of ten different intake regimes (IRs), at various times.
- Use **IMBA Professional Plus** to “predict” the resulting value of a bioassay quantity at a sufficient number of time points, *i.e.*, for more time points than the number of “unknown” intakes to be calculated.
- Copy the “predicted” values of the bioassay quantity into the “Measurement Value” column of the Bioassay Quantity data table, together with the corresponding values of “Measurement Time”.^(a)
- Run **IMBA Professional Plus** in the “Intakes – Bioassay” mode, to “back-calculate” the value of each intake from the values of the bioassay quantity.
- Compare the resulting calculated values of intake with the “known” values used to “predict” the bioassay quantity.

Table B.4.1 gives the ten hypothetical intake regimes (IRs) assumed here, in order to test **IMBA professional Plus**’s ability to analyse multiple intakes simultaneously.

Table B.4.1. Assumed intakes of ¹³⁷Cs.

Intake Regime (IR#)	Type of Intake	Time of Intake	Intake Characteristics	Intake Amount	Intake Unit
1	Inhalation - chronic	0 – 200 d	Type ‘F’; ICRP default aerosol	10.0	Bq d ⁻¹
2	Inhalation - acute	70 d	Type ‘F’; ICRP default aerosol	400.0	Bq
3	Ingestion - chronic	30 – 55 d	f ₁ = 0.1	16.0	Bq d ⁻¹
4	Inhalation - acute	150 d	Type ‘M’; ICRP default aerosol	47.5	Bq
5	Inhalation - acute	220 d	Type ‘F’; AMAD = 100 µm	527.0	Bq
6	Ingestion - chronic	250 – 290 d	f ₁ = 1	83.0	Bq d ⁻¹
7	Inhalation - acute	97 d	Type ‘F’; AMTD = 0.5 µm	8.0	Bq
8	Injection - acute	330 d	–	25.0	Bq
9	Inhalation - chronic	305 – 325 d	Type ‘S’; ICRP default aerosol	270.0	Bq d ⁻¹
10	Inhalation - acute	107 d	Type ‘F’; AMAD = 25 µm	46.0	Bq

For these ten hypothetical intake regimes, **IMBA Professional Plus** was run to “predict” the whole body retention (in Bq), at 41 evenly spaced time-points between 0 and 400 d after the start of the first chronic intake. The resulting 41 values of whole body activity were then used as “input” to calculate simultaneously the ten separate intake amounts. Table B.4.2 compares the resulting “fitted” values of whole body activity with the “input” data.

^(a) If the bioassay quantity is an excretion rate, it is also necessary to define the “collection period” over which each sample value was “predicted”.

Table B.4.2. Comparison of fitted values of whole body retention for ten hypothetical intakes of ¹³⁷Cs with simulated “input” measurements.

Measurement Time	Measured Activity	Data Type	Error ^(a) (s)	Error Type	Predicted Activity	c ^{2(b)}
0	0.00	REAL	6.0	NORMAL	0.00	0.00E+00
10	47.26	REAL	6.0	NORMAL	47.26	0.00E+00
20	86.89	REAL	6.0	NORMAL	86.89	0.00E+00
30	124.02	REAL	6.0	NORMAL	124.02	0.00E+00
40	198.63	REAL	6.0	NORMAL	198.63	4.59E-08
50	244.51	REAL	6.0	NORMAL	244.51	8.12E-08
60	255.03	REAL	6.0	NORMAL	255.03	1.53E-07
70	281.43	REAL	6.0	NORMAL	281.43	8.01E-08
80	470.79	REAL	6.0	NORMAL	470.79	1.73E-10
90	483.47	REAL	6.0	NORMAL	483.47	6.97E-10
100	498.44	REAL	6.0	NORMAL	498.44	3.84E-11
110	524.93	REAL	6.0	NORMAL	524.93	3.81E-08
120	533.72	REAL	6.0	NORMAL	533.72	1.13E-07
130	543.27	REAL	6.0	NORMAL	543.27	2.75E-09
140	552.26	REAL	6.0	NORMAL	552.26	1.71E-08
150	560.69	REAL	6.0	NORMAL	560.69	1.91E-07
160	573.89	REAL	6.0	NORMAL	573.89	1.37E-08
170	580.92	REAL	6.0	NORMAL	580.92	5.39E-07
180	587.57	REAL	6.0	NORMAL	587.57	2.04E-07
190	593.82	REAL	6.0	NORMAL	593.82	1.63E-07
200	599.71	REAL	6.0	NORMAL	599.71	1.94E-07
210	557.97	REAL	6.0	NORMAL	557.97	9.95E-08
220	523.54	REAL	6.0	NORMAL	523.54	1.97E-09
230	608.02	REAL	6.0	NORMAL	608.02	3.34E-07
240	570.00	REAL	6.0	NORMAL	570.00	6.83E-07
250	534.87	REAL	6.0	NORMAL	534.87	4.62E-07
260	1260.30	REAL	6.0	NORMAL	1260.30	1.16E-05
270	1913.60	REAL	6.0	NORMAL	1913.60	3.33E-06
280	2525.70	REAL	6.0	NORMAL	2525.70	3.80E-06
290	3100.00	REAL	6.0	NORMAL	3100.00	4.83E-05
300	2880.40	REAL	6.0	NORMAL	2880.40	4.75E-05
310	3080.30	REAL	6.0	NORMAL	3080.30	4.13E-05
320	3086.60	REAL	6.0	NORMAL	3086.60	4.61E-05
330	2707.80	REAL	6.0	NORMAL	2707.80	9.58E-06
340	2554.60	REAL	6.0	NORMAL	2554.60	4.34E-05
350	2395.40	REAL	6.0	NORMAL	2395.40	1.60E-05
360	2248.70	REAL	6.0	NORMAL	2248.60	7.59E-05
370	2112.80	REAL	6.0	NORMAL	2112.80	1.87E-05
380	1986.90	REAL	6.0	NORMAL	1986.90	3.05E-05
390	1869.80	REAL	6.0	NORMAL	1869.80	5.34E-08
400	1760.80	REAL	6.0	NORMAL	1760.80	5.71E-05

- Table B.4.2 verifies that all simulated “measured” values of whole body retention resulting from ten separate (and different) intake regimes are precisely replicated by [IMBA Professional Plus](#)’s data fitting procedure .

^(a) Provided that the absolute value of the error on each measured value is the same, the actual value has no effect on the fitted data.

^(b) The value of χ^2 is proportional to $1/\sigma^2$.

Table B.4.3 compares the ten calculated intake amounts with the values actually used to simulate the whole body activity data points.

Table B.4.3. Comparison of ten fitted and assumed ^{137}Cs intake amounts.^(a)

Intake Regime (IR#)	Intake Unit	Assumed Intake Amount	Fitted Intake Amount	Error (%)
1	Bq d ⁻¹	10.0	10.0	0.00
2	Bq	400.0	400.01	+0.0025
3	Bq d ⁻¹	16.0	15.999	-0.0063
4	Bq	47.5	47.528	+0.059
5	Bq	527.0	527.01	+0.0090
6	Bq d ⁻¹	83.0	82.999	-0.0012
7	Bq	8.0	7.9863	-0.171
8	Bq	25.0	24.992	-0.032
9	Bq d ⁻¹	270.0	269.99	-0.0037
10	Bq	46.0	46.006	+0.013

- Table B.4.3 verifies that all ten of the originally “assumed” intake amounts are precisely re-constructed by [IMBA Professional Plus](#)’s analysis of the simulated whole body activity data.

Figure B.4.1 shows the simulated data, the corresponding “predicted” value at each time point (solid black lines joining each fitted point value) and the predicted bioassay quantity as a “pseudo-continuous” function of time (solid green curve).^(b)

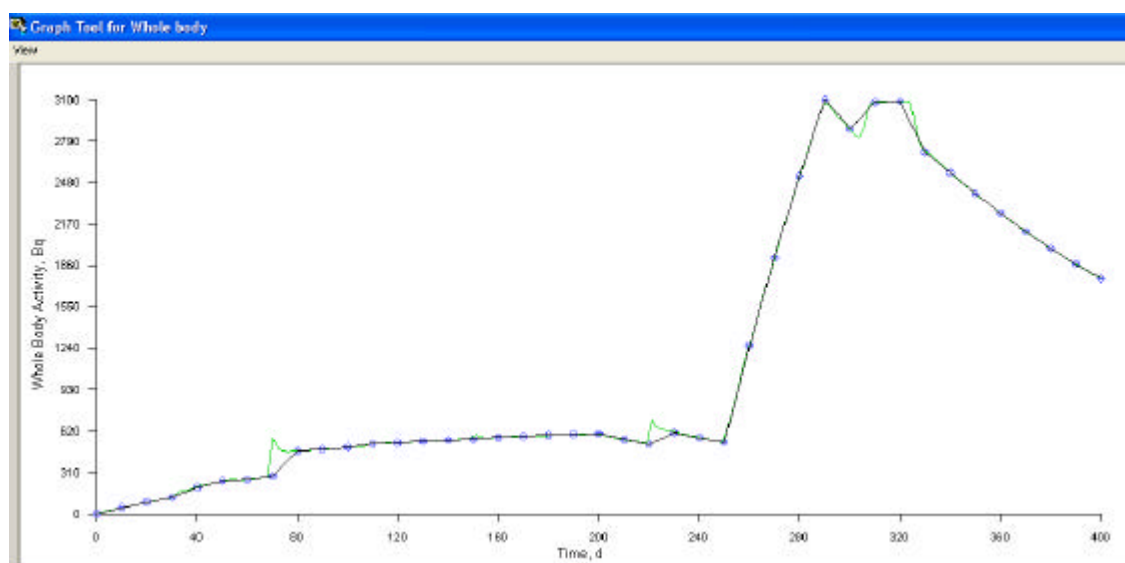


Figure B.4.1. [IMBA Professional Plus](#) graph of the hypothetical whole body activity data (o), “fitted” point values (joined by —), and “predicted” bioassay function (—), for the test case of ten intakes of ^{137}Cs .

^(a) “Fitted” intake amounts are calculated by [IMBA Professional Plus](#) from the simulated “input” measurements of whole body activity shown in Table B.4.2, for the ten intake regimes defined in Table B.4.1.

^(b) The “pseudo-continuous” function (solid green curve) was obtained by calculating the value of the bioassay function at 200 time points (the maximum number allowed in [IMBA Professional Plus](#)).

B.5. Fitting Multiple Bioassay Quantities

The procedure followed in the previous section, to test the accuracy of fitting bioassay data resulting from multiple intakes, was extended to verify **IMBA Professional Plus** ability to fit more than one data set simultaneously. In addition to simulating the “whole body activity” data set given in Table B.4.1, **IMBA Professional Plus** was run to “predict” the resulting value of both urinary and Fecal excretion rates, for the same series of 41 time points. **IMBA Professional Plus** was then run in the ‘Intakes → Bioassay’ mode, to “back-calculate” the amounts of all ten intakes using each of the three different bioassay quantities (whole body activity, urinary excretion rate, and Fecal excretion rate), in turn. Finally, **IMBA Professional Plus** was run to calculate the amounts of all ten intakes using the simulated data for all three bioassay quantities simultaneously. The same absolute error ($\sigma = 6.0$; normal distribution) was assumed for all data points.

Table B.5.1 compares the ten calculated intake amounts resulting from use of each individual bioassay data set with the values resulting from simultaneous fitting of all three data sets.

Table B.5.1. Comparison of ten fitted and assumed ^{137}Cs intake amounts obtained from different bioassay data sets.^(a)

Intake Regime (IR#)	Intake Unit	Fitted Intake Amount Using Following Data Set(s)			
		Whole Body Activity	Urinary Excretion Rate	Fecal Excretion Rate	All 3 Bioassay Data Sets
1	Bq d ⁻¹	10.0	10.0	10.0	10.0
2	Bq	400.01	400.01	400.0	400.01
3	Bq d ⁻¹	15.999	16.0	16.0	16.0
4	Bq	47.528	47.462	47.496	47.537
5	Bq	527.01	527.04	527.0	527.01
6	Bq d ⁻¹	82.999	82.999	83.001	82.999
7	Bq	7.9863	7.991	7.9967	7.998
8	Bq	24.992	25.02	25.027	24.992
9	Bq d ⁻¹	269.99	269.81	269.99	269.99
10	Bq	46.006	45.991	45.997	46.006

- Table B.5.1 verifies that all ten of the originally “assumed” intake amounts are precisely re-constructed by **IMBA Professional Plus**’s analysis of all three simulated bioassay data sets, individually or in combination.

Figures B.5.1 and B.5.2 show, respectively, the simulated urinary and Fecal excretion rate data, the corresponding “predicted” value for each time point (solid black lines joining each fitted point value) and the predicted bioassay quantity as a “pseudo-continuous” function of time (solid green curve).^(b) The simulated whole body activity data is shown in Figure B.4.1.

^(a) “Fitted” intake amounts are calculated by **IMBA Professional Plus** from the simulated “input” measurements of whole body activity, urinary excretion rate, and/or Fecal excretion rate, for the ten intake regimes defined in Table B.4.1.

^(b) The “pseudo-continuous” function (solid green curve) was obtained by calculating the value of the bioassay function at 200 time points (the maximum number allowed in **IMBA Professional Plus**).

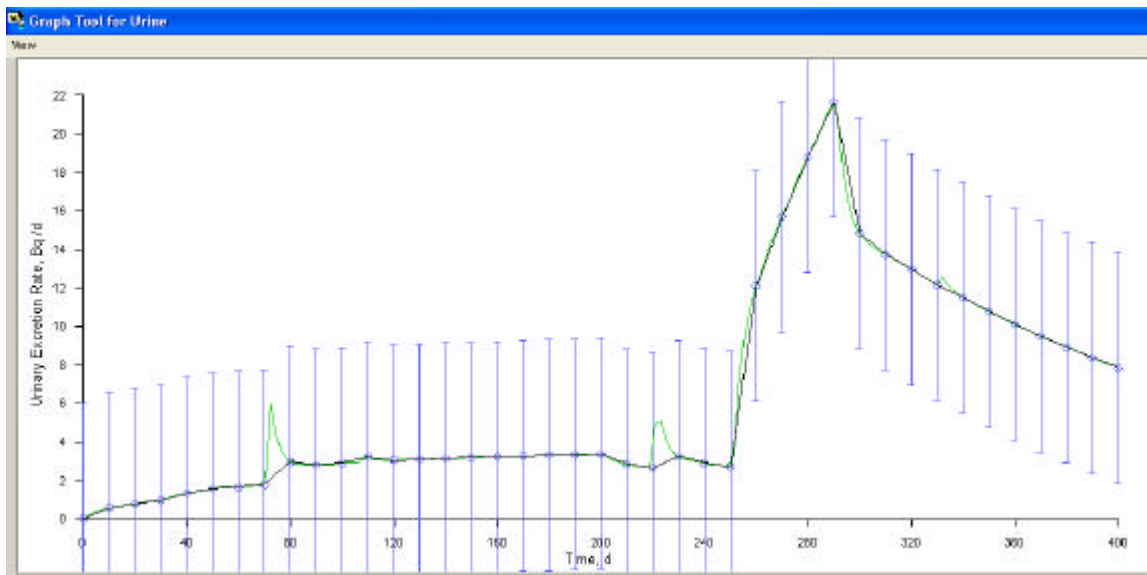


Figure B.5.1. IMBA Professional Plus 's graph of the hypothetical urinary excretion data (o), "fitted" point values (joined by —), "predicted" bioassay function (---), and assumed error bars ($\sigma = 6.0$), for the test case of ten intakes of ^{137}Cs .

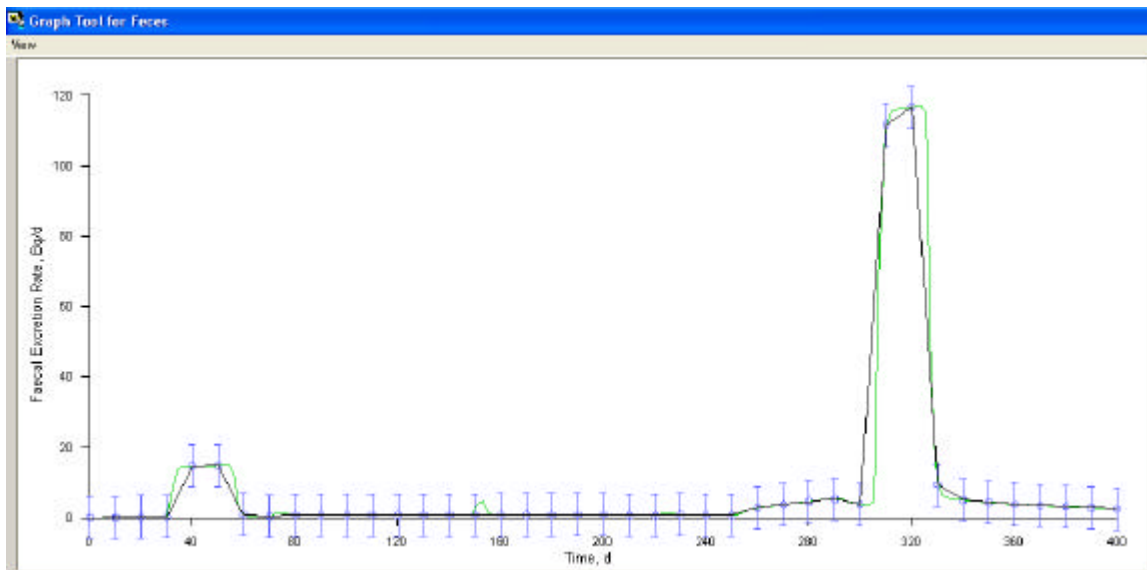


Figure B.5.2. IMBA Professional Plus 's graph of the hypothetical Fecal excretion data (o), "fitted" point values (joined by —), "predicted" bioassay function (---), and assumed error bars ($\sigma = 6.0$), for the test case of ten intakes of ^{137}Cs .

B.6. Validation of IMBA-FIT's Use of < LOD Data

Marsh et al. (2002) examined the ability of **IMBA-FIT** (i.e., the **IMBA** module **BNFL_FIT**) to analyse data sets containing measured values reported as “less than the limit of detection” (< LOD). This was done by using Monte Carlo simulations to test whether the implemented **maximum likelihood method** provides unbiased estimates of intake, and to investigate the “efficiency” of the method. The efficiency reflects the precision of a single estimate.

The procedure used by Marsh et al. was as follows:

1. Generate an 'ideal' data set

A modified version of LUDEP (LUNG Dose Evaluation Program – Jarvis et al. 1996) was used to calculate a urinary excretion data set for an acute inhalation of 1000 Bq of ^{239}Pu (Type S; 5 μm AMAD; Reference (light) worker; $f_1 = 10^{-5}$; ICRP Publication 78 urinary excretion function for plutonium – ICRP 1997). One hundred values of the daily excretion rate were calculated at times between 10 and 109 days after intake. This LUDEP data set was regarded as 'ideal', as measurement uncertainty and variability were not simulated.

2. Superimpose random error on 'ideal' data set

To simulate uncertainty and variability on each urinary excretion measurement, random scatter was added to each of the data points from the LUDEP data set. It was assumed that each data value was lognormally distributed about the true value, with a given geometric standard deviation (σ_g). In other words, it was assumed that the median was equal to the actual value in the LUDEP data set. By randomly selecting a value from the assumed lognormal distribution, a known amount of scatter was effectively added to each of the data points.

3. Impose a limit of detection

An arbitrary limit of detection (LOD) value was selected and imposed on the data set. If a data value was below the LOD value, it was represented by the LOD value, and reported as being below that value. In other words, it was reported as being a “< LOD” data point.

4. Estimate intake

The fitting module requires a measurement uncertainty, σ_g , for each data point. Thus, for an assumed value of σ_g' , the IMBA fitting module was used to estimate the intake (Figure B.6.1).

Figure B.5.1 shows the fit to a simulated data set that resulted in an estimated intake of 983 Bq, where the actual intake was 1,000 Bq, the fraction of < LOD data was 47%, the assumed σ_g' was 1.8, and the actual σ_g of the superimposed scatter was 1.8.

Steps 2 to 4 were repeated for 5,000 runs, each run producing a single estimate of intake. A frequency distribution of the intake estimates was thus produced (Figure B.6.2). The sample mean value, $\bar{x}$, and the sample standard deviation, s , of this distribution were determined. In this study, if the actual intake was within three standard errors of $\bar{x}$, then $\bar{x}$ was assumed to be an unbiased estimator of the actual intake. If the estimate is unbiased, then there is a 99.7% probability that the confidence interval ($\bar{x} \pm 3$ standard errors) will contain the true intake (1,000 Bq). In other words, there is then only a 0.3% probability of reporting a false bias if the estimate is unbiased. If s is small, the method for estimating the intake is efficient.

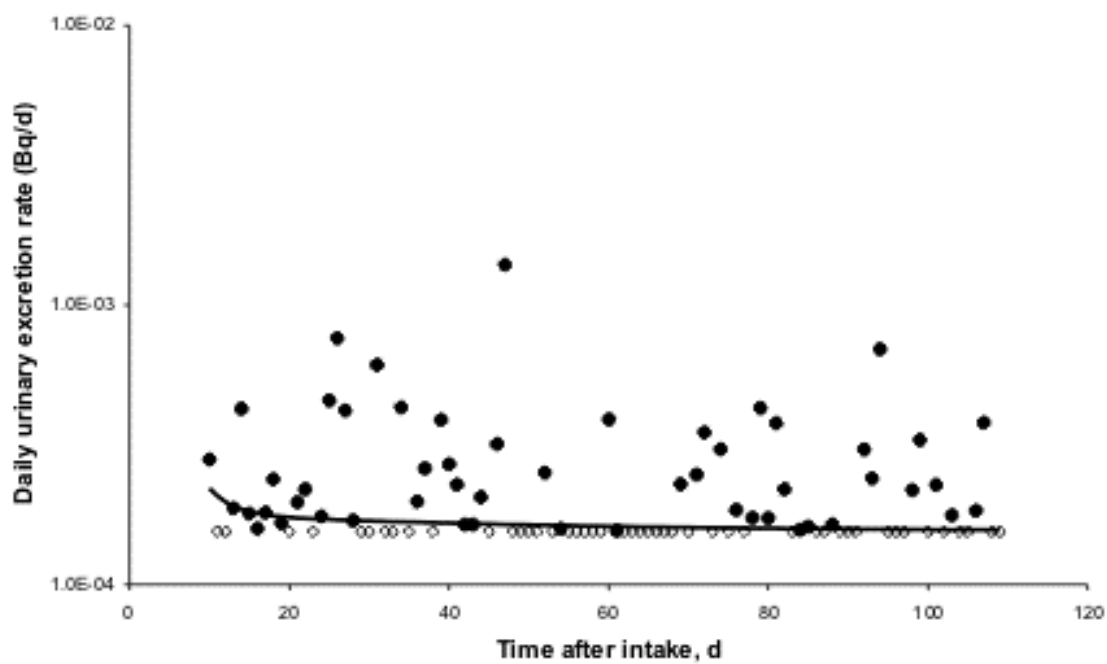


Figure B.6.1. Model fit to a simulated data set of urinary excretion rates for an acute inhalation of plutonium.^(a)

^(a) Symbols '•' represent positive data values, whereas symbols 'o' are equal to the LOD and represent values reported as < LOD.

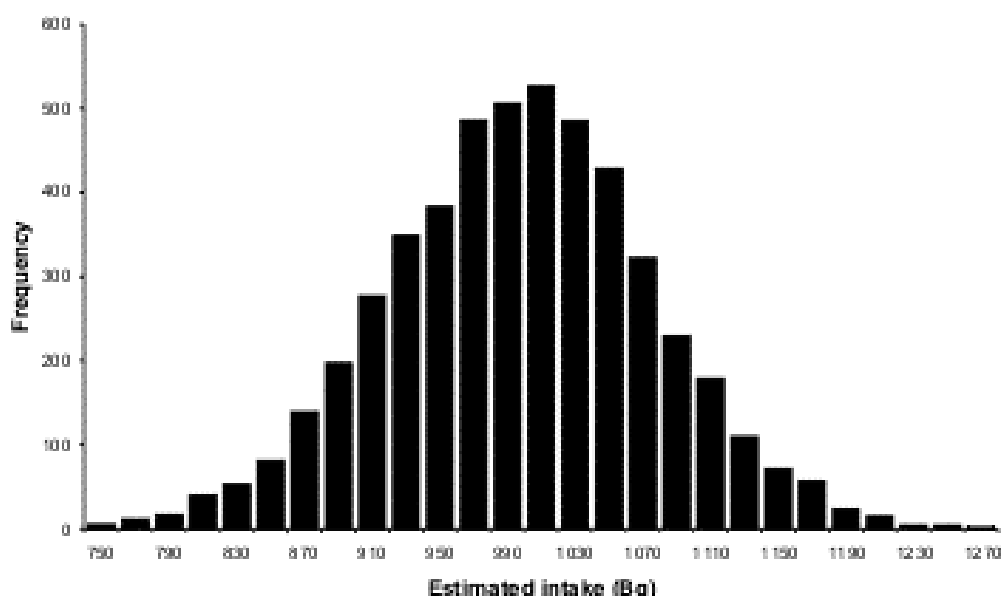


Figure B.6.2. Frequency distribution of the estimated intakes.^(a)

Table B.6.1 gives the results of the Monte Carlo simulations for data sets with increasing numbers of < LOD data points, where the σ_g of the scatter was varied. In each case the actual intake was 1,000 Bq and the assumed value of σ_g' was 1.8. The uncertainties given in Table B.6.1 represent three standard errors.

Table B.6.1 verifies that the **IMBA_FIT** fitting module gives unbiased estimates of intake when there are no < LOD data, irrespective of whether the assumed σ_g' equals the actual σ_g . When $\sigma_g' = \sigma_g$, the **maximum likelihood method** gives unbiased estimates, even for data sets containing a large fraction of < LOD data (75% of values < LOD).

Table B.6.1. Parameters of the frequency distribution of estimated intakes.^(b,c,d)

% of < LOD Data	Actual σ_g , of Scatter		
	1.4	1.8	2.4
0	$\bar{x} = \mathbf{1000.5 \pm 1.4}$ s = 34	$\bar{x} = \mathbf{1001.0 \pm 2.5}$ s = 59	$\bar{x} = \mathbf{1003.6 \pm 3.9}$ s = 89
< 30	$\bar{x} = 973.5 \pm 1.6$ s = 38	$\bar{x} = \mathbf{1001.8 \pm 2.6}$ s = 62	$\bar{x} = 1004.9 \pm 3.7$ s = 87
25 - 65	$\bar{x} = 898.6 \pm 1.9$ s = 46	$\bar{x} = \mathbf{1000.5 \pm 2.7}$ s = 64	$\bar{x} = 1127.3 \pm 3.8$ s = 90
60 - 95	$\bar{x} = 772.4 \pm 2.4$ s = 56	$\bar{x} = \mathbf{996.9 \pm 3.3}$ s = 78	$\bar{x} = 1307.9 \pm 4.9$ s = 115

^(a) Assumed $\sigma_g' = 1.8$, σ_g of the scatter = 1.8, percent of < LOD data = 30-60%, actual intake = 1000 Bq. Sample mean = 1000.5 $\pm$ 2.7 Bq at the 99.7% confidence interval.

^(b) Different geometric standard deviations of the scatter and increasing percentages of < LOD values define the data sets.

^(c) Values in bold show that the maximum likelihood method gives unbiased estimates.

^(d) Number of estimated intakes = 5,000; true mean = 1,000 Bq; assumed $\sigma_g' = 1.8$; uncertainties quoted represent three standard errors.

The **maximum likelihood method** gives biased estimates of intake when the assumed σ_g' is different from the actual σ_g , and $< \text{LOD}$ data are present. If σ_g is smaller than assumed, intakes tend to be underestimated, as the fraction of data $< \text{LOD}$ increases. Conversely, if σ_g is larger than assumed, the intakes tend to be overestimated in a similar manner. For radiation protection purposes, it can be seen from Table B.6.1 that the method provides a good estimate of the true intake even when the number of $< \text{LOD}$ data is large. For example, there is a 95% probability that an estimated intake will fall between $950 < x < 1300$ (for 25 to 65% of values $< \text{LOD}$; σ_g of scatter = 2.4; assumed $\sigma_g' = 1.8$) when the true intake is 1,000 Bq.

Table B.6.1 also shows that the efficiency (or the precision) of an estimated intake decreases (*i.e.*, s becomes larger) for:

- data sets with an increasing fraction of $< \text{LOD}$ data;
- data sets containing data with larger uncertainties, *i.e.*, larger σ_g of scatter.

B.7. Listing of Bioassay Function Benchmarks

Sections B.7.1 through B.7.301 tabulate all calculated values of the Bioassay Quantity, by radioelement and route of intake: for all the nuclides implemented in [IMBA Professional Plus](#) Version 4.0. The Bioassay Quantity refers to unit (acute) intake at time $t = 0$. It is either the fractional rate of excretion (with unit d^{-1}) at time t , or the fractional retention (dimensionless) at time t , as appropriate.

B.7.1. Actinium – Injection of ^{227}Ac

Maximum difference for **Urine**: **+0.05%**.

Maximum difference for **Feces**: **+0.02%**.

Maximum difference for **Whole Body**: **0.00%**.

B.7.1.1. Urinary Excretion Rate

TIME (d)	IMBA (d^{-1})	PLEIADES (d^{-1})	Difference (%)
1	4.573E-02	4.573E-02	0.00
2	3.806E-03	3.804E-03	0.05
5	1.587E-05	1.587E-05	0.00
10	1.494E-05	1.494E-05	0.00
20	1.492E-05	1.492E-05	0.00
50	1.486E-05	1.486E-05	-0.01
100	1.477E-05	1.477E-05	-0.01
200	1.458E-05	1.458E-05	0.00
500	1.404E-05	1.404E-05	0.00
1,000	1.318E-05	1.318E-05	0.00
2,000	1.162E-05	1.162E-05	-0.01
5,000	7.960E-06	7.960E-06	-0.01
10,000	4.255E-06	4.255E-06	0.00

20,000	1.233E-06	1.233E-06	0.00
Maximum:			0.05

B.7.1.2. Fecal Excretion Rate

TIME (d)	IMBA (d^{-1})	PLEIADES (d^{-1})	Difference (%)
1	1.140E-02	1.140E-02	0.00
2	1.931E-02	1.931E-02	0.01
5	1.932E-03	1.931E-03	0.02
10	2.857E-05	2.857E-05	0.00
20	1.492E-05	1.492E-05	-0.01
50	1.486E-05	1.486E-05	-0.01
100	1.477E-05	1.477E-05	-0.01
200	1.458E-05	1.458E-05	0.00
500	1.404E-05	1.404E-05	-0.01
1,000	1.318E-05	1.318E-05	-0.01
2,000	1.162E-05	1.162E-05	0.00

5,000	7.960E-06	7.961E-06	0.00
10,000	4.255E-06	4.255E-06	0.00
20,000	1.233E-06	1.233E-06	0.00
Maximum:			0.02

B.7.1.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.428E-01	9.428E-01	0.00
2	9.196E-01	9.196E-01	0.00
5	9.011E-01	9.011E-01	0.00
10	8.994E-01	8.994E-01	0.00
20	8.983E-01	8.983E-01	0.00
50	8.951E-01	8.951E-01	0.00

100	8.897E-01	8.897E-01	0.00
200	8.791E-01	8.791E-01	0.00
500	8.479E-01	8.479E-01	0.00
1,000	7.984E-01	7.984E-01	0.00
2,000	7.080E-01	7.080E-01	0.00
5,000	4.944E-01	4.944E-01	0.00
10,000	2.728E-01	2.728E-01	0.00
Maximum:			0.00

B.7.2. Americium – Inhalation of ²⁴¹Am (type “M”)

Maximum difference for **Urine**: **+0.09%**.

Maximum difference for **Feces**: **+0.08%**.

Maximum difference for **Whole Body**: **+0.22%**.

Maximum difference for **Lungs**: **-0.02%**.

B.7.2.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.774E-03	1.774E-03	-0.01
2	2.319E-04	2.319E-04	-0.01
5	7.176E-05	7.176E-05	0.00
10	4.859E-05	4.860E-05	-0.01
20	3.318E-05	3.318E-05	-0.02
50	2.034E-05	2.034E-05	0.00
100	1.492E-05	1.493E-05	-0.02
200	1.032E-05	1.031E-05	0.01
500	5.683E-06	5.684E-06	-0.02
1,000	3.788E-06	3.787E-06	0.02
2,000	2.427E-06	2.424E-06	0.09
5,000	1.209E-06	1.209E-06	0.03
10,000	7.177E-07	7.173E-07	0.06
20,000	4.395E-07	4.398E-07	-0.08
Maximum:			0.09

B.7.2.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.084E-01	1.084E-01	-0.01
2	1.548E-01	1.548E-01	-0.01
5	1.330E-02	1.330E-02	-0.01
10	5.745E-04	5.746E-04	-0.01
20	3.672E-04	3.673E-04	-0.01
50	1.663E-04	1.663E-04	-0.02
100	5.384E-05	5.384E-05	-0.01
200	1.395E-05	1.396E-05	-0.01
500	3.423E-06	3.423E-06	0.00
1,000	1.439E-06	1.438E-06	0.02
2,000	8.130E-07	8.128E-07	0.02
5,000	3.650E-07	3.647E-07	0.08
10,000	2.101E-07	2.102E-07	-0.02
20,000	1.275E-07	1.275E-07	0.03
Maximum:			0.08

B.7.2.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.954E-01	4.954E-01	-0.01
2	2.618E-01	2.617E-01	0.02
5	9.144E-02	9.145E-02	0.00
10	7.866E-02	7.877E-02	-0.13
20	7.407E-02	7.413E-02	-0.08
50	6.595E-02	6.591E-02	0.05
100	6.029E-02	6.022E-02	0.11
200	5.636E-02	5.629E-02	0.11
500	5.193E-02	5.198E-02	-0.09
1,000	4.848E-02	4.856E-02	-0.16
2,000	4.434E-02	4.429E-02	0.12
5,000	3.716E-02	3.720E-02	-0.13
10,000	3.052E-02	3.055E-02	-0.11
20,000	2.233E-02	2.228E-02	0.22
Maximum:			0.22

B.7.2.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.763E-02	5.763E-02	-0.01
2	5.594E-02	5.594E-02	-0.01
5	5.336E-02	5.337E-02	-0.01
10	4.966E-02	4.966E-02	-0.01
20	4.341E-02	4.341E-02	-0.01
50	3.092E-02	3.092E-02	-0.01
100	2.022E-02	2.023E-02	-0.02
200	1.055E-02	1.055E-02	-0.01
500	1.816E-03	1.816E-03	-0.01
1,000	1.012E-04	1.013E-04	-0.02
2,000	3.604E-07	3.604E-07	-0.01
5,000	4.569E-14	N/A	N/A
10,000	4.028E-25	N/A	N/A
Maximum:			-0.02

B.7.3. Americium – Ingestion of ²⁴¹Am (f₁ = 0.0005)

Maximum difference for **Urine**: +0.09%.

Maximum difference for **Feces**: +0.14%.

Maximum difference for **Whole Body**: -0.29%.

B.7.3.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.964E-05	2.964E-05	0.00
2	4.588E-06	4.588E-06	0.00
5	9.460E-07	9.459E-07	0.01
10	4.912E-07	4.912E-07	0.00
20	2.303E-07	2.303E-07	-0.01
50	7.688E-08	7.685E-08	0.04
100	5.820E-08	5.822E-08	-0.03
200	4.801E-08	4.799E-08	0.05

500	3.805E-08	3.806E-08	-0.03
1,000	2.903E-08	2.901E-08	0.05
2,000	1.907E-08	1.905E-08	0.09
5,000	9.694E-09	9.689E-09	0.04
10,000	5.792E-09	5.789E-09	0.06
20,000	3.558E-09	3.560E-09	-0.06
Maximum:			0.09

B.7.3.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.823E-01	2.823E-01	0.00
2	3.889E-01	3.889E-01	0.00
5	3.140E-02	3.140E-02	0.00
10	2.195E-04	2.195E-04	0.00
20	3.366E-08	3.362E-08	0.14
50	2.206E-08	2.205E-08	0.03
100	2.019E-08	2.020E-08	-0.06
200	1.798E-08	1.798E-08	-0.01
500	1.434E-08	1.433E-08	0.03
1,000	1.045E-08	1.044E-08	0.04
2,000	6.347E-09	6.345E-09	0.03
5,000	2.922E-09	2.919E-09	0.09
10,000	1.696E-09	1.696E-09	-0.01
20,000	1.032E-09	1.032E-09	0.04
Maximum:			0.14

B.7.3.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.177E-01	7.177E-01	0.00
2	3.288E-01	3.288E-01	0.00
5	1.919E-02	1.919E-02	0.00
10	5.777E-04	5.793E-04	-0.29
20	4.472E-04	4.480E-04	-0.18
50	4.444E-04	4.437E-04	0.17
100	4.403E-04	4.393E-04	0.22
200	4.326E-04	4.320E-04	0.14
500	4.134E-04	4.140E-04	-0.14
1,000	3.898E-04	3.904E-04	-0.14
2,000	3.578E-04	3.572E-04	0.14
5,000	3.005E-04	3.009E-04	-0.13
10,000	2.471E-04	2.474E-04	-0.10
Maximum:			-0.29

B.7.4. Americium – Injection of ²⁴¹Am

Maximum difference for **Urine**: **+0.09%**.

Maximum difference for **Feces**: **-0.41%**.

Maximum difference for **Whole Body**: **-0.37%**.

B.7.4.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.221E-02	6.221E-02	0.00
2	7.465E-03	7.465E-03	0.00
5	1.790E-03	1.789E-03	0.01
10	9.650E-04	9.650E-04	0.00
20	4.542E-04	4.542E-04	-0.01
50	1.533E-04	1.533E-04	0.04
100	1.163E-04	1.164E-04	-0.03
200	9.600E-05	9.595E-05	0.05
500	7.609E-05	7.612E-05	-0.03
1,000	5.805E-05	5.802E-05	0.05
2,000	3.814E-05	3.811E-05	0.09
5,000	1.939E-05	1.938E-05	0.05
10,000	1.158E-05	1.158E-05	0.06
20,000	7.115E-06	7.119E-06	-0.06
Maximum:			0.09

B.7.4.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.7380E-03	3.7330E-03	0.12
2	4.4390E-03	4.4260E-03	0.28
5	6.3390E-04	6.3590E-04	-0.32
10	5.6730E-05	5.6970E-05	-0.41
20	4.7350E-05	4.7270E-05	0.17

50	4.4100E-05	4.4100E-05	0.00
100	4.0370E-05	4.0410E-05	-0.09
200	3.5960E-05	3.5970E-05	-0.04
500	2.8670E-05	2.8670E-05	0.00
1,000	2.0890E-05	2.0890E-05	0.01
2,000	1.2690E-05	1.2690E-05	0.01
5,000	5.8440E-06	5.8400E-06	0.07
10,000	3.3910E-06	3.3920E-06	-0.03
20,000	2.0650E-06	2.0640E-06	0.02
Maximum:			-0.41

B.7.4.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.328E-01	9.341E-01	-0.14
2	9.246E-01	9.222E-01	0.27
5	9.096E-01	9.095E-01	0.02
10	8.995E-01	9.028E-01	-0.37
20	8.943E-01	8.959E-01	-0.18
50	8.888E-01	8.873E-01	0.17
100	8.805E-01	8.785E-01	0.22
200	8.651E-01	8.639E-01	0.14
500	8.268E-01	8.279E-01	-0.14
1,000	7.796E-01	7.807E-01	-0.14
2,000	7.155E-01	7.145E-01	0.15
5,000	6.010E-01	6.018E-01	-0.12
10,000	4.942E-01	4.947E-01	-0.10
Maximum:			-0.37

B.7.5. Antimony – Inhalation of ¹²⁵Sb (type “F”)

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.04%.

Maximum difference for **Whole Body**: -0.04%.

B.7.5.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.628E-02	5.629E-02	-0.01
2	2.306E-02	2.305E-02	0.01
5	1.309E-02	1.309E-02	0.00
10	6.583E-03	6.584E-03	-0.01
20	1.720E-03	1.721E-03	-0.03
50	1.177E-04	1.177E-04	-0.02
100	6.403E-05	6.403E-05	0.00
200	3.044E-05	3.045E-05	-0.01
500	3.867E-06	3.869E-06	-0.04
1,000	6.520E-07	6.520E-07	0.00
2,000	2.570E-07	2.570E-07	0.01
5,000	2.168E-08	2.168E-08	0.00
10,000	3.517E-10	3.518E-10	-0.02
20,000	9.259E-14	N/A	N/A
Maximum:			-0.04

B.7.5.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.475E-02	5.476E-02	0.00
2	7.665E-02	7.665E-02	0.00
5	9.822E-03	9.822E-03	0.00
10	2.079E-03	2.079E-03	-0.01
20	5.278E-04	5.280E-04	-0.03

50	3.115E-05	3.116E-05	-0.03
100	1.617E-05	1.617E-05	0.00
200	7.686E-06	7.687E-06	-0.01
500	9.745E-07	9.749E-07	-0.04
1,000	1.632E-07	1.632E-07	-0.01
2,000	6.426E-08	6.425E-08	0.01
5,000	5.420E-09	5.420E-09	0.00
10,000	8.794E-11	8.796E-11	-0.02
20,000	2.315E-14	N/A	N/A
Maximum:			-0.04

B.7.5.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.942E-01	4.942E-01	0.00
2	3.155E-01	3.155E-01	-0.01
5	1.553E-01	1.553E-01	-0.02
10	9.135E-02	9.137E-02	-0.02
20	4.677E-02	4.679E-02	-0.02
50	2.832E-02	2.832E-02	-0.01
100	2.240E-02	2.240E-02	-0.01
200	1.549E-02	1.549E-02	-0.02
500	8.514E-03	8.515E-03	-0.01
1,000	5.294E-03	5.295E-03	-0.01
2,000	2.317E-03	2.317E-03	-0.02
5,000	1.954E-04	1.955E-04	-0.03
10,000	3.171E-06	3.172E-06	-0.04
Maximum:			-0.04

B.7.6. Antimony – Inhalation of ¹²⁵Sb (type “M”)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.05%.

Maximum difference for **Lungs**: -0.02%.

B.7.6.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.968E-03	5.969E-03	-0.01
2	2.553E-03	2.553E-03	0.01
5	1.509E-03	1.509E-03	0.00
10	8.498E-04	8.498E-04	-0.01
20	3.422E-04	3.423E-04	-0.02
50	1.310E-04	1.310E-04	-0.01
100	8.242E-05	8.243E-05	-0.01
200	4.160E-05	4.160E-05	-0.01
500	6.453E-06	6.454E-06	-0.02
1,000	3.954E-07	3.955E-07	-0.02

2,000	5.709E-08	5.708E-08	0.00
5,000	4.773E-09	4.774E-09	-0.01
10,000	7.745E-11	7.747E-11	-0.02
20,000	2.039E-14	N/A	N/A
Maximum:			-0.02

B.7.6.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.078E-01	1.078E-01	-0.01
2	1.536E-01	1.536E-01	-0.01
5	1.356E-02	1.356E-02	0.00
10	8.126E-04	8.126E-04	-0.01

20	4.505E-04	4.506E-04	-0.02
50	1.889E-04	1.890E-04	-0.02
100	6.766E-05	6.767E-05	-0.01
200	2.024E-05	2.024E-05	-0.01
500	2.673E-06	2.673E-06	-0.02
1,000	1.369E-07	1.369E-07	-0.02
2,000	1.432E-08	1.432E-08	0.00
5,000	1.194E-09	1.194E-09	-0.01
10,000	1.937E-11	1.937E-11	-0.02
20,000	5.099E-15	N/A	N/A
Maximum:			-0.02

B.7.6.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.914E-01	4.915E-01	0.00
2	2.563E-01	2.563E-01	0.00
5	8.100E-02	8.101E-02	-0.01
10	6.155E-02	6.156E-02	-0.02
20	5.039E-02	5.040E-02	-0.01
50	3.531E-02	3.532E-02	-0.01
100	2.352E-02	2.352E-02	-0.01
200	1.280E-02	1.280E-02	-0.02
500	3.321E-03	3.322E-03	-0.02
1,000	1.229E-03	1.229E-03	-0.02

2,000	5.103E-04	5.104E-04	-0.02
5,000	4.304E-05	4.305E-05	-0.03
10,000	6.984E-07	6.987E-07	-0.05
20,000	1.839E-10	N/A	N/A
Maximum:			-0.05

B.7.6.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.759E-02	5.759E-02	-0.01
2	5.586E-02	5.587E-02	-0.01
5	5.318E-02	5.319E-02	-0.01
10	4.932E-02	4.932E-02	-0.01
20	4.282E-02	4.282E-02	-0.01
50	2.988E-02	2.989E-02	-0.01
100	1.889E-02	1.890E-02	-0.01
200	9.204E-03	9.205E-03	-0.01
500	1.292E-03	1.292E-03	-0.02
1,000	5.123E-05	5.124E-05	-0.01
2,000	9.227E-08	9.228E-08	-0.02
5,000	1.516E-15	N/A	N/A
10,000	4.433E-28	N/A	N/A
Maximum:			-0.02

B.7.7. Antimony – Ingestion of ¹²⁵Sb (f₁ = 0.1)

Maximum difference for **Urine**: -0.03%.

Maximum difference for **Feces**: -0.04%.

Maximum difference for **Whole Body**: -0.03%.

B.7.7.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.658E-02	1.658E-02	0.00
2	8.632E-03	8.630E-03	0.02
5	4.453E-03	4.453E-03	0.01
10	2.239E-03	2.239E-03	0.00
20	5.843E-04	5.845E-04	-0.03
50	3.933E-05	3.933E-05	-0.01
100	2.129E-05	2.129E-05	0.01
200	1.012E-05	1.012E-05	-0.01
500	1.286E-06	1.286E-06	-0.03
1,000	2.166E-07	2.166E-07	0.00
2,000	8.535E-08	8.534E-08	0.01
5,000	7.199E-09	7.199E-09	0.00
10,000	1.168E-10	1.168E-10	-0.01
20,000	3.075E-14	N/A	N/A
Maximum:			-0.03

B.7.7.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.613E-01	2.613E-01	0.00
2	3.501E-01	3.500E-01	0.00
5	2.911E-02	2.911E-02	0.00
10	8.865E-04	8.865E-04	0.00
20	1.794E-04	1.794E-04	-0.02

50	1.042E-05	1.042E-05	-0.02
100	5.377E-06	5.377E-06	0.01
200	2.556E-06	2.556E-06	-0.01
500	3.240E-07	3.241E-07	-0.04
1,000	5.421E-08	5.421E-08	0.00
2,000	2.134E-08	2.134E-08	0.01
5,000	1.800E-09	1.800E-09	0.00
10,000	2.921E-11	2.921E-11	-0.01
20,000	7.689E-15	N/A	N/A
Maximum:			-0.04

B.7.7.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.214E-01	7.214E-01	0.00
2	3.623E-01	3.623E-01	0.00
5	6.714E-02	6.715E-02	-0.01
10	3.091E-02	3.091E-02	-0.02
20	1.566E-02	1.566E-02	-0.02
50	9.414E-03	9.415E-03	-0.01
100	7.443E-03	7.444E-03	-0.01
200	5.148E-03	5.148E-03	-0.01
500	2.828E-03	2.828E-03	-0.01
1,000	1.759E-03	1.759E-03	0.00
2,000	7.695E-04	7.695E-04	-0.01
5,000	6.491E-05	6.492E-05	-0.02
10,000	1.053E-06	1.054E-06	-0.03
Maximum:			-0.03

B.7.8. Antimony – Injection of ¹²⁵Sb

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.04%.

Maximum difference for **Whole Body**: -0.03%.

B.7.8.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.891E-01	1.891E-01	0.00
2	7.562E-02	7.561E-02	0.02
5	4.336E-02	4.336E-02	0.01
10	2.181E-02	2.181E-02	0.00
20	5.699E-03	5.700E-03	-0.03
50	3.907E-04	3.907E-04	-0.01
100	2.126E-04	2.126E-04	0.01
200	1.011E-04	1.011E-04	-0.01
500	1.284E-05	1.285E-05	-0.04
1,000	2.166E-06	2.165E-06	0.00
2,000	8.535E-07	8.534E-07	0.01
5,000	7.199E-08	7.199E-08	0.00
10,000	1.168E-09	1.168E-09	-0.02
20,000	3.075E-13	N/A	N/A
Maximum:			-0.04

B.7.8.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.053E-02	1.053E-02	0.00
2	2.305E-02	2.305E-02	0.01
5	1.412E-02	1.412E-02	0.02
10	6.759E-03	6.759E-03	0.00
20	1.749E-03	1.749E-03	-0.03

50	1.034E-04	1.034E-04	-0.02
100	5.370E-05	5.370E-05	0.01
200	2.552E-05	2.552E-05	-0.01
500	3.236E-06	3.237E-06	-0.04
1,000	5.420E-07	5.420E-07	0.00
2,000	2.134E-07	2.134E-07	0.02
5,000	1.800E-08	1.800E-08	0.01
10,000	2.921E-10	2.921E-10	-0.01
20,000	7.689E-14	N/A	N/A
Maximum:			-0.04

B.7.8.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.997E-01	7.997E-01	0.00
2	7.004E-01	7.005E-01	0.00
5	4.961E-01	4.961E-01	-0.01
10	3.027E-01	3.028E-01	-0.02
20	1.552E-01	1.552E-01	-0.02
50	9.405E-02	9.405E-02	-0.01
100	7.438E-02	7.439E-02	-0.01
200	5.145E-02	5.146E-02	-0.01
500	2.828E-02	2.828E-02	-0.01
1,000	1.758E-02	1.758E-02	-0.01
2,000	7.695E-03	7.695E-03	-0.01
5,000	6.491E-04	6.492E-04	-0.02
10,000	1.053E-05	1.054E-05	-0.03
Maximum:			-0.03

B.7.9. Arsenic – Inhalation of ⁷⁴As (type “M”)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: +0.02%.

Maximum difference for **Whole Body**: +0.06%.

Maximum difference for **Lungs**: +0.06%.

B.7.9.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.73E-03	5.73E-03	-0.02
2	1.87E-03	1.87E-03	-0.01
5	4.51E-04	4.51E-04	-0.01
10	2.11E-04	2.11E-04	-0.02
20	9.40E-05	9.41E-05	-0.02
50	1.35E-05	1.35E-05	-0.01
100	1.10E-06	1.10E-06	-0.01
200	1.13E-08	1.13E-08	0
500	1.60E-14	N/A	N/A
1,000	3.01E-24	N/A	N/A
2,000	1.22E-43	N/A	N/A
Maximum:			-0.02

B.7.9.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.05E-01	1.05E-01	-0.01
2	1.46E-01	1.46E-01	0
5	1.18E-02	1.18E-02	0
10	6.24E-04	6.24E-04	-0.01
20	2.66E-04	2.66E-04	-0.01
50	3.70E-05	3.70E-05	-0.01
100	2.13E-06	2.13E-06	0
200	1.60E-08	1.60E-08	0.02
500	2.12E-14	N/A	N/A
1,000	3.88E-24	N/A	N/A
2,000	1.47E-43	N/A	N/A
Maximum:			+0.02

B.7.9.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.71E-01	4.71E-01	0
2	2.33E-01	2.33E-01	0
5	6.13E-02	6.14E-02	-0.01
10	3.92E-02	3.92E-02	-0.01
20	2.23E-02	2.23E-02	-0.01
50	4.68E-03	4.68E-03	-0.01
100	4.29E-04	4.29E-04	0
200	4.50E-06	4.50E-06	0.02
500	6.39E-12	6.39E-12	0.06
1,000	1.20E-21	N/A	N/A
2,000	4.87E-41	N/A	N/A
Maximum:			+0.06

B.7.9.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.54E-02	5.54E-02	-0.01
2	5.17E-02	5.17E-02	-0.01
5	4.39E-02	4.39E-02	-0.01
10	3.36E-02	3.36E-02	-0.01
20	1.99E-02	1.99E-02	-0.01
50	4.39E-03	4.39E-03	-0.01
100	4.08E-04	4.08E-04	0
200	4.30E-06	4.30E-06	0.02
500	6.10E-12	6.09E-12	0.06
1,000	1.14E-21	N/A	N/A
2,000	4.58E-41	N/A	N/A
Maximum:			+0.06

B.7.10. Arsenic – Ingestion of ⁷⁴As (f₁ = 0.5)

Maximum difference for **Urine**: +0.12%.

Maximum difference for **Feces**: +0.13%.

Maximum difference for **Whole Body**: +0.13%.

B.7.10.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.38E-02	9.38E-02	-0.01
2	3.57E-02	3.57E-02	0
5	6.82E-03	6.82E-03	0
10	2.53E-03	2.53E-03	-0.01
20	8.34E-04	8.34E-04	0
50	3.23E-05	3.23E-05	0.02
100	1.44E-07	1.44E-07	0.05
200	2.83E-12	2.83E-12	0.12
500	2.17E-26	N/A	N/A
Maximum:			+0.12

10	3.12E-03	3.12E-03	0
20	9.27E-04	9.27E-04	0
50	3.59E-05	3.59E-05	0.03
100	1.60E-07	1.59E-07	0.06
200	3.14E-12	3.14E-12	0.13
500	2.41E-26	N/A	N/A
Maximum:			+0.13

B.7.10.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.72E-01	1.72E-01	0
2	2.20E-01	2.20E-01	0
5	2.68E-02	2.68E-02	0

B.7.10.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.97E-01	6.96E-01	0
2	4.15E-01	4.15E-01	0
5	1.46E-01	1.46E-01	0
10	7.29E-02	7.29E-02	0.01
20	2.45E-02	2.45E-02	0.01
50	9.51E-04	9.51E-04	0.03
100	4.22E-06	4.22E-06	0.07
200	8.32E-11	8.31E-11	0.13
500	6.37E-25	N/A	N/A
Maximum:			+0.13

B.7.11. Arsenic – Injection of ⁷⁴As

Maximum difference for **Urine**: +0.12 %

Maximum difference for **Feces**: +0.13%.

Maximum difference for **Whole Body**: +0.13%.

B.7.11.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.02E-01	2.02E-01	-0.01
2	6.31E-02	6.31E-02	0
5	1.31E-02	1.31E-02	0
10	5.01E-03	5.01E-03	-0.01

20	1.65E-03	1.65E-03	0
50	6.41E-05	6.41E-05	0.02
100	2.85E-07	2.84E-07	0.05
200	5.61E-12	5.60E-12	0.12
500	4.30E-26	N/A	N/A
Maximum:			+0.12

B.7.11.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.51E-02	4.51E-02	-0.01
2	9.27E-02	9.27E-02	0
5	2.83E-02	2.83E-02	0
10	6.01E-03	6.01E-03	0
20	1.84E-03	1.84E-03	0
50	7.12E-05	7.12E-05	0.03
100	3.16E-07	3.16E-07	0.06
200	6.23E-12	6.23E-12	0.13
500	4.77E-26	N/A	N/A
Maximum:			+0.13

B.7.11.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.15E-01	7.15E-01	0
2	5.32E-01	5.32E-01	0
5	2.73E-01	2.73E-01	0.01
10	1.44E-01	1.44E-01	0
20	4.86E-02	4.86E-02	0.01
50	1.89E-03	1.89E-03	0.03
100	8.37E-06	8.37E-06	0.07
200	1.65E-10	1.65E-10	0.13
500	1.26E-24	N/A	N/A
Maximum:			+0.13

B.7.12. Barium – Inhalation of ¹³³Ba (type “F”)

Maximum difference for **Urine**: -0.24%.

Maximum difference for **Feces**: -0.05%.

Maximum difference for **Whole Body**: -0.07%.

B.7.12.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.71E-02	1.71E-02	-0.01
2	2.92E-03	2.92E-03	-0.01
5	9.65E-04	9.65E-04	0
10	1.73E-04	1.73E-04	0
20	2.48E-05	2.48E-05	-0.03
50	1.50E-05	1.50E-05	-0.02
100	8.63E-06	8.63E-06	0.01
200	3.01E-06	3.01E-06	0.04
500	4.24E-07	4.25E-07	-0.12
1,000	2.55E-07	2.55E-07	-0.08
2,000	1.44E-07	1.44E-07	0.11
5,000	3.07E-08	3.07E-08	0.01
10,000	4.44E-09	4.45E-09	-0.24
20,000	2.83E-10	2.83E-10	0.19
Maximum:			-0.24

B.7.12.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.83E-02	9.84E-02	0
2	1.33E-01	1.33E-01	-0.01
5	2.38E-02	2.38E-02	0
10	2.86E-03	2.86E-03	-0.01
20	2.58E-04	2.58E-04	-0.01

50	1.37E-04	1.37E-04	-0.01
100	7.89E-05	7.89E-05	-0.01
200	2.75E-05	2.75E-05	-0.01
500	3.84E-06	3.84E-06	-0.01
1,000	2.30E-06	2.30E-06	-0.01
2,000	1.30E-06	1.30E-06	-0.01
5,000	2.76E-07	2.76E-07	-0.02
10,000	4.01E-08	4.01E-08	-0.03
20,000	2.54E-09	2.54E-09	-0.05
Maximum:			-0.05

B.7.12.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.90E-01	4.90E-01	-0.01
2	2.75E-01	2.75E-01	0
5	8.22E-02	8.22E-02	0
10	4.17E-02	4.17E-02	-0.01
20	3.33E-02	3.34E-02	-0.01
50	2.76E-02	2.76E-02	-0.01
100	2.16E-02	2.16E-02	0.01
200	1.60E-02	1.60E-02	-0.01
500	1.19E-02	1.19E-02	-0.04
1,000	9.42E-03	9.42E-03	0.01
2,000	6.13E-03	6.13E-03	0.04
5,000	2.04E-03	2.04E-03	-0.07
10,000	4.75E-04	4.75E-04	-0.05
Maximum:			-0.07

B.7.13. Barium – Ingestion of ¹³³Ba (f₁ = 0.1)

Maximum difference for **Urine**: +0.12%.

Maximum difference for **Feces**: -0.05%.

Maximum difference for **Whole Body**: -0.06%.

B.7.13.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.41E-03	5.41E-03	0
2	1.09E-03	1.09E-03	0
5	3.42E-04	3.41E-04	0
10	6.09E-05	6.09E-05	0.01
20	8.33E-06	8.33E-06	-0.02
50	4.99E-06	4.99E-06	-0.01
100	2.87E-06	2.87E-06	0.01
200	1.00E-06	1.00E-06	0.04
500	1.41E-07	1.41E-07	-0.11
1,000	8.47E-08	8.47E-08	-0.07
2,000	4.79E-08	4.79E-08	0.12
5,000	1.02E-08	1.02E-08	0.01
10,000	1.48E-09	1.48E-09	-0.23
20,000	9.41E-11	9.39E-11	0.2
Maximum:			+0.12

B.7.13.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.72E-01	2.72E-01	0
2	3.70E-01	3.70E-01	0
5	3.42E-02	3.42E-02	0
10	1.19E-03	1.19E-03	0
20	8.72E-05	8.72E-05	0
50	4.56E-05	4.56E-05	0

100	2.63E-05	2.63E-05	0
200	9.15E-06	9.15E-06	0
500	1.28E-06	1.28E-06	0
1,000	7.63E-07	7.63E-07	0
2,000	4.31E-07	4.31E-07	0
5,000	9.17E-08	9.17E-08	-0.01
10,000	1.33E-08	1.33E-08	-0.02
20,000	8.45E-10	8.45E-10	-0.05
Maximum:			-0.05

B.7.13.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.22E-01	7.22E-01	0
2	3.51E-01	3.51E-01	0
5	4.29E-02	4.29E-02	0
10	1.41E-02	1.41E-02	0
20	1.11E-02	1.11E-02	0
50	9.19E-03	9.19E-03	0
100	7.19E-03	7.19E-03	0.01
200	5.30E-03	5.30E-03	0
500	3.95E-03	3.95E-03	-0.04
1,000	3.13E-03	3.13E-03	0.01
2,000	2.04E-03	2.04E-03	0.05
5,000	6.79E-04	6.79E-04	-0.06
10,000	1.58E-04	1.58E-04	-0.05
20,000	7.22E-01	7.22E-01	0
Maximum:			-0.06

B.7.14. Barium – Injection of ¹³³Ba

Maximum difference for **Urine**: -0.23%.

Maximum difference for **Feces**: -0.05%.

Maximum difference for **Whole Body**: -0.06%.

B.7.14.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.70E-02	5.70E-02	0
2	9.58E-03	9.58E-03	0
5	3.18E-03	3.18E-03	0
10	5.72E-04	5.72E-04	0.01
20	8.22E-05	8.22E-05	-0.02
50	4.98E-05	4.98E-05	-0.01
100	2.87E-05	2.86E-05	0.01
200	1.00E-05	1.00E-05	0.04
500	1.41E-06	1.41E-06	-0.11
1,000	8.47E-07	8.47E-07	-0.07
2,000	4.79E-07	4.79E-07	0.12
5,000	1.02E-07	1.02E-07	0.01
10,000	1.48E-08	1.48E-08	-0.23
20,000	9.41E-10	9.39E-10	0.2
Maximum:			-0.23

B.7.14.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.59E-01	1.59E-01	0
2	2.10E-01	2.10E-01	0
5	5.99E-02	5.99E-02	0
10	9.31E-03	9.31E-03	0
20	8.54E-04	8.54E-04	0
50	4.55E-04	4.55E-04	0
100	2.62E-04	2.62E-04	0
200	9.13E-05	9.13E-05	0
500	1.28E-05	1.28E-05	0
1,000	7.63E-06	7.63E-06	0
2,000	4.31E-06	4.31E-06	-0.01
5,000	9.17E-07	9.17E-07	-0.01
10,000	1.33E-07	1.33E-07	-0.02
20,000	8.45E-09	8.45E-09	-0.05
Maximum:			-0.05

B.7.14.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.84E-01	7.84E-01	-0.01
2	5.64E-01	5.64E-01	0.01
5	2.53E-01	2.53E-01	0
10	1.38E-01	1.38E-01	-0.01
20	1.11E-01	1.11E-01	-0.01
50	9.18E-02	9.18E-02	0

100	7.18E-02	7.18E-02	0.02
200	5.30E-02	5.30E-02	0
500	3.95E-02	3.95E-02	-0.04
1,000	3.13E-02	3.13E-02	0.01
2,000	2.04E-02	2.04E-02	0.05
5,000	6.79E-03	6.79E-03	-0.06
10,000	1.58E-03	1.58E-03	-0.04
Maximum:			-0.06

B.7.15. Barium – Injection of ¹⁴⁰Ba

Maximum difference for **Urine**: **+0.10%**.

Maximum difference for **Feces**: **+0.06%**.

Maximum difference for **Whole Body**: **+0.06%**.

B.7.15.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.400E-02	5.400E-02	0.00
2	8.595E-03	8.595E-03	0.00
5	2.427E-03	2.427E-03	0.00
10	3.328E-04	3.327E-04	0.02
20	2.777E-05	2.778E-05	-0.01
50	3.305E-06	3.305E-06	0.00
100	1.265E-07	1.264E-07	0.05
200	1.948E-10	1.946E-10	0.10
500	2.361E-18	N/A	N/A
1,000	2.376E-30	N/A	N/A
Maximum:			0.10

20	2.888E-04	2.888E-04	0.01
50	3.024E-05	3.023E-05	0.01
100	1.156E-06	1.156E-06	0.03
200	1.778E-09	1.777E-09	0.06
500	2.135E-17	N/A	N/A
1,000	2.141E-29	N/A	N/A
Maximum:			0.06

B.7.15.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.423E-01	7.423E-01	-0.01
2	5.057E-01	5.057E-01	0.01
5	1.932E-01	1.932E-01	0.00
10	8.040E-02	8.040E-02	0.00
20	3.743E-02	3.743E-02	0.00
50	6.098E-03	6.097E-03	0.02
100	3.169E-04	3.168E-04	0.04
200	1.032E-06	1.032E-06	0.06
500	6.621E-14	N/A	N/A
1,000	8.777E-26	N/A	N/A
Maximum:			0.06

B.7.15.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.507E-01	1.507E-01	0.00
2	1.887E-01	1.887E-01	0.00
5	4.564E-02	4.564E-02	0.00
10	5.413E-03	5.413E-03	0.00

B.7.16. Berkelium – Inhalation of ²⁴⁹Bk (type “M”)

Maximum difference for **Urine**: **-0.05%**.

Maximum difference for **Feces**: **-0.05%**.

Maximum difference for **Whole Body**: **-0.1%**.

Maximum difference for **Lungs**: **-0.03%**.

B.7.16.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.30E-03	1.30E-03	-0.01
2	1.24E-04	1.24E-04	0.03
5	1.41E-05	1.41E-05	-0.01
10	1.30E-05	1.30E-05	-0.01
20	1.13E-05	1.13E-05	-0.01
50	7.85E-06	7.85E-06	-0.01
100	4.98E-06	4.98E-06	-0.01
200	2.54E-06	2.54E-06	-0.01
500	6.34E-07	6.34E-07	-0.02
1,000	1.64E-07	1.64E-07	-0.02
2,000	1.73E-08	1.73E-08	-0.03
5,000	2.16E-11	2.16E-11	-0.05
10,000	3.16E-16	N/A	N/A
20,000	7.16E-26	N/A	N/A
Maximum:			-0.05

B.7.16.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.08E-01	1.08E-01	-0.01
2	1.55E-01	1.55E-01	-0.01
5	1.32E-02	1.32E-02	0
10	5.71E-04	5.71E-04	-0.01
20	3.59E-04	3.59E-04	-0.01
50	1.54E-04	1.54E-04	-0.02
100	4.58E-05	4.58E-05	-0.01
200	9.88E-06	9.88E-06	-0.01
500	1.14E-06	1.14E-06	-0.02
1,000	1.72E-07	1.72E-07	-0.02
2,000	1.73E-08	1.73E-08	-0.03
5,000	2.16E-11	2.16E-11	-0.05
10,000	3.16E-16	N/A	N/A
20,000	7.16E-26	N/A	N/A
Maximum:			-0.05

B.7.16.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.95E-01	4.95E-01	0
2	2.61E-01	2.61E-01	0
5	9.02E-02	9.02E-02	-0.01
10	7.70E-02	7.70E-02	-0.01
20	7.11E-02	7.11E-02	-0.01
50	5.95E-02	5.95E-02	-0.01
100	4.90E-02	4.90E-02	-0.01
200	3.73E-02	3.73E-02	-0.01
500	1.85E-02	1.85E-02	-0.01
1,000	6.06E-03	6.06E-03	-0.02
2,000	6.58E-04	6.58E-04	-0.03
5,000	8.49E-07	8.49E-07	-0.05
10,000	1.31E-11	1.31E-11	-0.1
Maximum:			-0.1

B.7.16.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.75E-02	5.75E-02	-0.01
2	5.57E-02	5.57E-02	-0.01
5	5.28E-02	5.28E-02	-0.01
10	4.86E-02	4.86E-02	-0.01
20	4.16E-02	4.16E-02	-0.01
50	2.78E-02	2.78E-02	-0.02
100	1.63E-02	1.63E-02	-0.01
200	6.85E-03	6.85E-03	-0.02
500	6.16E-04	6.16E-04	-0.02
1,000	1.17E-05	1.17E-05	-0.02
2,000	4.78E-09	4.78E-09	-0.03
5,000	9.24E-19	N/A	N/A
10,000	1.65E-34	N/A	N/A
Maximum:			-0.03

B.7.17. Berkelium – Ingestion of ²⁴⁹Bk (f₁ = 0.0005)

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.04%.

B.7.17.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.07E-05	2.07E-05	0
2	3.84E-06	3.84E-06	0.03
5	1.29E-08	1.29E-08	0.01
10	1.18E-08	1.18E-08	0

20	1.16E-08	1.16E-08	0
50	1.08E-08	1.08E-08	0
100	9.69E-09	9.69E-09	0
200	7.75E-09	7.75E-09	0
500	3.97E-09	3.97E-09	-0.01
1,000	1.30E-09	1.30E-09	-0.01
2,000	1.40E-10	1.40E-10	-0.02
5,000	1.74E-13	N/A	N/A

10,000	2.55E-18	N/A	N/A
20,000	5.79E-28	N/A	N/A
Maximum:		+0.03	

B.7.17.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.82E-01	2.82E-01	0
2	3.87E-01	3.87E-01	0
5	3.11E-02	3.11E-02	0
10	2.15E-04	2.15E-04	0
20	2.11E-08	2.11E-08	0
50	1.08E-08	1.08E-08	0
100	9.69E-09	9.69E-09	0
200	7.75E-09	7.75E-09	0
500	3.97E-09	3.97E-09	-0.01
1,000	1.30E-09	1.30E-09	-0.01
2,000	1.40E-10	1.40E-10	-0.02
5,000	1.74E-13	N/A	N/A
10,000	2.55E-18	N/A	N/A
20,000	5.79E-28	N/A	N/A

Maximum:	-0.02
----------	-------

B.7.17.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.16E-01	7.16E-01	0
2	3.27E-01	3.27E-01	0
5	1.90E-02	1.90E-02	0
10	5.66E-04	5.66E-04	0
20	4.31E-04	4.31E-04	0
50	4.03E-04	4.03E-04	0
100	3.61E-04	3.61E-04	0
200	2.89E-04	2.89E-04	0
500	1.48E-04	1.48E-04	0
1,000	4.89E-05	4.89E-05	-0.01
2,000	5.32E-06	5.32E-06	-0.02
5,000	6.86E-09	6.87E-09	-0.04
10,000	1.06E-13	N/A	N/A
Maximum:		-0.04	

B.7.18. Berkelium – Injection of ²⁴⁹Bk

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.04%.

Maximum difference for **Whole Body**: -0.09%.

B.7.18.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.56E-02	4.56E-02	0
2	3.80E-03	3.80E-03	0.04
5	2.49E-05	2.49E-05	0
10	2.37E-05	2.37E-05	0
20	2.32E-05	2.32E-05	0
50	2.17E-05	2.17E-05	0
100	1.94E-05	1.94E-05	-0.01
200	1.55E-05	1.55E-05	0
500	7.93E-06	7.93E-06	-0.01
1,000	2.60E-06	2.60E-06	-0.01
2,000	2.79E-07	2.79E-07	-0.02
5,000	3.48E-10	3.48E-10	-0.04
10,000	5.11E-15	N/A	N/A
20,000	1.16E-24	N/A	N/A
Maximum:		-0.04	

B.7.18.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.14E-02	1.14E-02	0
2	1.92E-02	1.92E-02	0
5	1.92E-03	1.92E-03	0.01
10	3.70E-05	3.70E-05	0
20	2.32E-05	2.32E-05	0

50	2.17E-05	2.17E-05	-0.01
100	1.94E-05	1.94E-05	-0.01
200	1.55E-05	1.55E-05	-0.01
500	7.93E-06	7.93E-06	-0.01
1,000	2.60E-06	2.60E-06	-0.01
2,000	2.79E-07	2.79E-07	-0.02
5,000	3.48E-10	3.48E-10	-0.04
10,000	5.11E-15	N/A	N/A
20,000	1.16E-24	N/A	N/A
Maximum:		-0.04	

B.7.18.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.41E-01	9.41E-01	0
2	9.16E-01	9.16E-01	0
5	8.92E-01	8.92E-01	0
10	8.81E-01	8.81E-01	0
20	8.61E-01	8.61E-01	0
50	8.06E-01	8.06E-01	0
100	7.21E-01	7.21E-01	0
200	5.78E-01	5.78E-01	0
500	2.97E-01	2.97E-01	0
1,000	9.79E-02	9.79E-02	-0.01
2,000	1.06E-02	1.06E-02	-0.02
5,000	1.37E-05	1.37E-05	-0.04
10,000	2.12E-10	2.12E-10	-0.09
Maximum:		-0.09	

B.7.19. Calcium – Inhalation of ⁴⁵Ca (type “M”)

Maximum difference for **Urine**: -0.07%.

Maximum difference for **Feces**: -0.07%.

Maximum difference for **Whole Body**: -0.27%.

Maximum difference for **Lungs**: -0.1%.

B.7.19.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.26E-03	2.26E-03	-0.01
2	9.53E-04	9.53E-04	-0.02
5	5.16E-04	5.16E-04	-0.02
10	3.23E-04	3.23E-04	-0.01
20	1.84E-04	1.84E-04	-0.02
50	6.83E-05	6.83E-05	-0.02
100	3.25E-05	3.25E-05	-0.03
200	1.21E-05	1.22E-05	-0.03
500	8.92E-07	8.92E-07	-0.03
1,000	2.99E-08	2.99E-08	-0.03
2,000	2.49E-10	2.49E-10	-0.07
5,000	3.11E-16	N/A	N/A
10,000	7.73E-26	N/A	N/A
20,000	1.12E-44	N/A	N/A
Maximum:			-0.07

B.7.19.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.08E-01	1.08E-01	-0.01
2	1.54E-01	1.54E-01	0
5	1.35E-02	1.35E-02	0
10	8.18E-04	8.19E-04	-0.01
20	4.81E-04	4.81E-04	-0.01
50	1.84E-04	1.84E-04	-0.02
100	5.77E-05	5.77E-05	-0.02
200	1.40E-05	1.40E-05	-0.02
500	8.51E-07	8.51E-07	-0.03
1,000	2.35E-08	2.35E-08	-0.02
2,000	1.87E-10	1.87E-10	-0.07
5,000	2.33E-16	N/A	N/A
10,000	5.80E-26	N/A	N/A
20,000	8.41E-45	N/A	N/A
Maximum:			-0.07

B.7.19.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.93E-01	4.93E-01	0
2	2.57E-01	2.57E-01	-0.01
5	8.41E-02	8.41E-02	-0.01
10	6.69E-02	6.69E-02	-0.02
20	5.60E-02	5.60E-02	-0.01
50	3.80E-02	3.80E-02	-0.02
100	2.41E-02	2.41E-02	-0.01
200	1.19E-02	1.19E-02	-0.02
500	2.21E-03	2.21E-03	-0.04
1,000	2.13E-04	2.13E-04	-0.06
2,000	2.49E-06	2.49E-06	-0.11
5,000	4.68E-12	4.69E-12	-0.27
10,000	1.71E-21	N/A	N/A
Maximum:			-0.27

B.7.19.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.74E-02	5.74E-02	-0.01
2	5.55E-02	5.55E-02	-0.01
5	5.22E-02	5.23E-02	-0.01
10	4.76E-02	4.76E-02	-0.01
20	3.99E-02	3.99E-02	-0.01
50	2.50E-02	2.50E-02	-0.02
100	1.32E-02	1.32E-02	-0.02
200	4.51E-03	4.51E-03	-0.02
500	2.17E-04	2.17E-04	-0.04
1,000	1.45E-06	1.45E-06	-0.06
2,000	7.36E-11	7.37E-11	-0.1
5,000	2.73E-23	N/A	N/A
10,000	1.43E-43	N/A	N/A
Maximum:			-0.1

B.7.20. Calcium – Ingestion of ⁴⁵Ca (f₁ = 0.3)

Maximum difference for **Urine**: -0.07%.

Maximum difference for **Feces**: -0.06%.

Maximum difference for **Whole Body**: -0.26%.

B.7.20.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.18E-02	2.18E-02	-0.01
2	1.05E-02	1.05E-02	-0.01

5	5.10E-03	5.10E-03	-0.01
10	2.84E-03	2.84E-03	-0.01
20	1.28E-03	1.28E-03	-0.01
50	1.87E-04	1.87E-04	-0.01
100	4.43E-05	4.43E-05	-0.01
200	1.73E-05	1.73E-05	-0.01

500	1.80E-06	1.80E-06	0
1,000	1.19E-07	1.19E-07	-0.02
2,000	1.18E-09	1.18E-09	-0.07
5,000	1.48E-15	N/A	N/A
10,000	3.73E-25	N/A	N/A
20,000	5.47E-44	N/A	N/A
Maximum:			-0.07

B.7.20.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.16E-01	2.16E-01	0
2	2.74E-01	2.74E-01	0
5	2.56E-02	2.56E-02	0
10	2.63E-03	2.63E-03	0
20	1.07E-03	1.07E-03	0
50	1.51E-04	1.51E-04	0
100	3.37E-05	3.37E-05	0
200	1.31E-05	1.31E-05	0
500	1.35E-06	1.35E-06	0
1,000	8.95E-08	8.95E-08	-0.01
2,000	8.82E-10	8.83E-10	-0.06
5,000	1.11E-15	N/A	N/A

10,000	2.80E-25	N/A	N/A
20,000	4.06E-44	N/A	N/A
Maximum:			-0.06

B.7.20.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.58E-01	7.58E-01	0
2	4.71E-01	4.71E-01	-0.01
5	2.24E-01	2.24E-01	0.01
10	1.74E-01	1.74E-01	-0.01
20	1.33E-01	1.33E-01	0.01
50	9.07E-02	9.07E-02	-0.01
100	6.69E-02	6.69E-02	0
200	3.98E-02	3.98E-02	-0.01
500	9.59E-03	9.59E-03	-0.03
1,000	1.01E-03	1.01E-03	-0.05
2,000	1.19E-05	1.20E-05	-0.1
5,000	2.26E-11	2.26E-11	-0.26
10,000	8.28E-21	N/A	N/A
Maximum:			-0.26

B.7.21. Calcium – Injection of ⁴⁵Ca

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.06%.

Maximum difference for **Whole Body**: -0.26%.

B.7.21.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.96E-02	7.96E-02	-0.01
2	3.26E-02	3.26E-02	-0.01
5	1.66E-02	1.66E-02	-0.01
10	9.34E-03	9.34E-03	-0.01
20	4.21E-03	4.21E-03	-0.01
50	6.20E-04	6.20E-04	-0.01
100	1.48E-04	1.48E-04	-0.01
200	5.77E-05	5.77E-05	-0.01
500	5.99E-06	5.99E-06	0
1,000	3.97E-07	3.98E-07	-0.02
2,000	3.92E-09	3.92E-09	-0.06
5,000	4.94E-15	N/A	N/A
10,000	1.24E-24	N/A	N/A
20,000	1.82E-43	N/A	N/A
Maximum:			-0.06

B.7.21.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.52E-02	1.52E-02	0
2	2.84E-02	2.84E-02	0
5	1.69E-02	1.69E-02	0
10	8.18E-03	8.18E-03	0
20	3.51E-03	3.51E-03	0

50	5.01E-04	5.01E-04	0
100	1.12E-04	1.12E-04	0
200	4.35E-05	4.35E-05	0
500	4.51E-06	4.51E-06	0
1,000	2.98E-07	2.98E-07	-0.01
2,000	2.94E-09	2.94E-09	-0.06
5,000	3.71E-15	N/A	N/A
10,000	9.32E-25	N/A	N/A
20,000	1.37E-43	N/A	N/A
Maximum:			-0.06

B.7.21.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.01E-01	9.01E-01	0.01
2	8.36E-01	8.36E-01	-0.01
5	7.02E-01	7.02E-01	0
10	5.77E-01	5.77E-01	-0.01
20	4.43E-01	4.43E-01	0.01
50	3.02E-01	3.02E-01	-0.01
100	2.23E-01	2.23E-01	0
200	1.33E-01	1.33E-01	-0.01
500	3.20E-02	3.20E-02	-0.03
1,000	3.37E-03	3.37E-03	-0.05
2,000	3.98E-05	3.98E-05	-0.1
5,000	7.52E-11	7.54E-11	-0.26
10,000	2.76E-20	N/A	N/A
Maximum:			-0.26

B.7.22. Californium – Inhalation of ²⁴⁹Cf (type “M”)

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.01%.

Maximum difference for **Lungs**: -0.02%.

B.7.22.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.30E-03	1.30E-03	-0.01
2	1.25E-04	1.25E-04	0.03
5	1.43E-05	1.43E-05	-0.01
10	1.33E-05	1.33E-05	-0.01
20	1.18E-05	1.18E-05	-0.01
50	8.74E-06	8.74E-06	-0.01
100	6.18E-06	6.18E-06	-0.01
200	3.91E-06	3.91E-06	-0.01
500	1.87E-06	1.87E-06	-0.01
1,000	1.42E-06	1.42E-06	-0.01
2,000	1.30E-06	1.30E-06	-0.01
5,000	1.06E-06	1.06E-06	-0.01
10,000	7.64E-07	7.64E-07	-0.01
20,000	4.19E-07	4.19E-07	-0.01
Maximum:			0.03

B.7.22.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.09E-01	1.09E-01	0
2	1.55E-01	1.55E-01	0
5	1.34E-02	1.34E-02	0
10	5.83E-04	5.84E-04	-0.01
20	3.75E-04	3.75E-04	-0.01
50	1.71E-04	1.71E-04	-0.02
100	5.69E-05	5.69E-05	-0.01
200	1.52E-05	1.52E-05	-0.02
500	3.35E-06	3.36E-06	-0.01
1,000	1.50E-06	1.50E-06	-0.01
2,000	1.30E-06	1.30E-06	-0.02
5,000	1.06E-06	1.06E-06	-0.01
10,000	7.64E-07	7.64E-07	-0.01
20,000	4.19E-07	4.19E-07	-0.01
Maximum:			-0.02

B.7.22.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.96E-01	4.96E-01	0
2	2.62E-01	2.62E-01	0
5	9.12E-02	9.12E-02	-0.01
10	7.87E-02	7.87E-02	-0.01
20	7.42E-02	7.42E-02	-0.01
50	6.63E-02	6.63E-02	-0.01
100	6.09E-02	6.09E-02	-0.01
200	5.75E-02	5.75E-02	-0.01
500	5.45E-02	5.45E-02	-0.01
1,000	5.26E-02	5.26E-02	-0.01
2,000	4.96E-02	4.96E-02	-0.01
5,000	4.18E-02	4.18E-02	-0.01
10,000	3.17E-02	3.17E-02	-0.01
Maximum:			-0.01

B.7.22.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.76E-02	5.76E-02	-0.01
2	5.59E-02	5.59E-02	-0.01
5	5.34E-02	5.34E-02	-0.01
10	4.97E-02	4.97E-02	-0.01
20	4.34E-02	4.34E-02	-0.01
50	3.09E-02	3.09E-02	-0.01
100	2.02E-02	2.02E-02	-0.02
200	1.06E-02	1.06E-02	-0.02
500	1.82E-03	1.82E-03	-0.01
1,000	1.01E-04	1.01E-04	-0.01
2,000	3.60E-07	3.60E-07	-0.01
5,000	4.55E-14	N/A	N/A
10,000	3.99E-25	N/A	N/A
Maximum:			-0.02

B.7.23. Californium – Ingestion of ²⁴⁹Cf (f₁ = 0.0005)

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: 0.0%

B.7.23.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.08E-05	2.08E-05	0
2	3.86E-06	3.85E-06	0.03
5	1.31E-08	1.31E-08	0.01
10	1.21E-08	1.21E-08	0
20	1.21E-08	1.21E-08	0
50	1.21E-08	1.21E-08	0
100	1.20E-08	1.20E-08	-0.01
200	1.19E-08	1.19E-08	0
500	1.17E-08	1.17E-08	-0.01
1,000	1.13E-08	1.13E-08	-0.01
2,000	1.05E-08	1.05E-08	0
5,000	8.56E-09	8.56E-09	0
10,000	6.18E-09	6.17E-09	0
20,000	3.39E-09	3.39E-09	0.01
Maximum:			0.03

B.7.23.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.82E-01	2.82E-01	0
2	3.89E-01	3.89E-01	0
5	3.14E-02	3.14E-02	0
10	2.20E-04	2.20E-04	0
20	2.21E-08	2.21E-08	0

50	1.21E-08	1.21E-08	-0.01
100	1.20E-08	1.20E-08	-0.01
200	1.19E-08	1.19E-08	0
500	1.17E-08	1.17E-08	-0.01
1,000	1.13E-08	1.13E-08	-0.01
2,000	1.05E-08	1.05E-08	0
5,000	8.56E-09	8.56E-09	0
10,000	6.18E-09	6.18E-09	0
20,000	3.39E-09	3.39E-09	0
Maximum:			-0.01

B.7.23.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.18E-01	7.18E-01	0
2	3.29E-01	3.29E-01	0
5	1.92E-02	1.92E-02	0
10	5.78E-04	5.78E-04	0
20	4.50E-04	4.50E-04	0
50	4.49E-04	4.49E-04	0
100	4.48E-04	4.48E-04	0
200	4.45E-04	4.45E-04	0
500	4.37E-04	4.37E-04	0
1,000	4.25E-04	4.25E-04	0
2,000	4.01E-04	4.01E-04	0
5,000	3.38E-04	3.38E-04	0
10,000	2.57E-04	2.57E-04	0
Maximum:			0

B.7.24. Californium – Injection of ²⁴⁹Cf

Maximum difference for **Urine**: +0.04%.

Maximum difference for **Feces**: +0.01%.

Maximum difference for **Whole Body**: 0.0%.

B.7.24.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.57E-02	4.57E-02	0
2	3.82E-03	3.81E-03	0.04
5	2.51E-05	2.51E-05	0
10	2.42E-05	2.42E-05	0
20	2.42E-05	2.42E-05	0
50	2.41E-05	2.41E-05	0
100	2.40E-05	2.40E-05	0
200	2.39E-05	2.39E-05	0
500	2.34E-05	2.34E-05	0
1,000	2.26E-05	2.26E-05	0
2,000	2.10E-05	2.10E-05	0
5,000	1.71E-05	1.71E-05	0
10,000	1.24E-05	1.24E-05	0
20,000	6.78E-06	6.78E-06	0.01
Maximum:			+0.04

B.7.24.2. Fecal Excretion Rate

TIME	IMBA	PLEIADES	Difference
------	------	----------	------------

(d)	(d ⁻¹)	(d ⁻¹)	(%)
1	1.14E-02	1.14E-02	-0.01
2	1.93E-02	1.93E-02	0
5	1.94E-03	1.94E-03	0.01
10	3.78E-05	3.78E-05	0
20	2.42E-05	2.42E-05	0
50	2.41E-05	2.41E-05	0
100	2.41E-05	2.41E-05	0
200	2.39E-05	2.39E-05	0
500	2.34E-05	2.34E-05	0
1,000	2.26E-05	2.26E-05	0
2,000	2.10E-05	2.10E-05	0
5,000	1.71E-05	1.71E-05	0
10,000	1.24E-05	1.24E-05	0
20,000	6.78E-06	6.78E-06	0.01
Maximum:			+0.01

B.7.24.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.43E-01	9.43E-01	0
2	9.20E-01	9.20E-01	0

5	9.01E-01	9.01E-01	0
10	9.00E-01	9.00E-01	0
20	9.00E-01	9.00E-01	0
50	8.98E-01	8.98E-01	0
100	8.95E-01	8.95E-01	0
200	8.90E-01	8.90E-01	0
500	8.74E-01	8.74E-01	0

1,000	8.49E-01	8.49E-01	0
2,000	8.01E-01	8.01E-01	0
5,000	6.75E-01	6.75E-01	0
10,000	5.13E-01	5.13E-01	0
Maximum:			0

B.7.25. Californium – Injection of ²⁵²Cf

Maximum difference for **Urine**: +0.09%.

Maximum difference for **Feces**: +0.09%.

Maximum difference for **Whole Body**: +0.05%.

B.7.25.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.571E-02	4.571E-02	0.00
2	3.810E-03	3.809E-03	0.04
5	2.504E-05	2.504E-05	0.00
10	2.403E-05	2.403E-05	0.00
20	2.384E-05	2.384E-05	0.00
50	2.328E-05	2.328E-05	0.00
100	2.238E-05	2.239E-05	0.00
200	2.069E-05	2.069E-05	0.00
500	1.635E-05	1.635E-05	0.00
1,000	1.104E-05	1.104E-05	0.01
2,000	5.038E-06	5.038E-06	0.01
5,000	4.811E-07	4.809E-07	0.02
10,000	9.747E-09	9.742E-09	0.05
20,000	4.222E-12	4.218E-12	0.09
Maximum:			0.09

B.7.25.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.140E-02	1.140E-02	-0.01
2	1.929E-02	1.929E-02	0.00
5	1.934E-03	1.934E-03	0.01
10	3.757E-05	3.757E-05	0.00
20	2.384E-05	2.384E-05	0.00
50	2.328E-05	2.328E-05	0.00

100	2.239E-05	2.239E-05	0.00
200	2.070E-05	2.070E-05	0.00
500	1.635E-05	1.635E-05	0.00
1,000	1.104E-05	1.104E-05	0.00
2,000	5.039E-06	5.038E-06	0.01
5,000	4.811E-07	4.810E-07	0.02
10,000	9.748E-09	9.743E-09	0.05
20,000	4.222E-12	4.218E-12	0.09
Maximum:			0.09

B.7.25.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.422E-01	9.422E-01	0.00
2	9.184E-01	9.184E-01	0.00
5	8.982E-01	8.982E-01	0.00
10	8.936E-01	8.936E-01	0.00
20	8.867E-01	8.867E-01	0.00
50	8.664E-01	8.664E-01	0.00
100	8.335E-01	8.335E-01	0.00
200	7.714E-01	7.714E-01	0.00
500	6.117E-01	6.117E-01	0.00
1,000	4.156E-01	4.156E-01	0.00
2,000	1.919E-01	1.919E-01	0.01
5,000	1.897E-02	1.896E-02	0.02
10,000	4.051E-04	4.049E-04	0.05
Maximum:			0.05

B.7.26. Carbon – Injection of ¹⁴C (Organic)

Maximum difference for **Urine**: -0.01%.

Maximum difference for **Feces**: -0.01%.

B.7.26.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.680E-04	1.680E-04	-0.01
2	2.756E-04	2.756E-04	0.00
5	2.692E-04	2.692E-04	0.00
10	2.469E-04	2.469E-04	0.00

20	2.076E-04	2.076E-04	0.00
50	1.234E-04	1.234E-04	0.00
100	5.190E-05	5.190E-05	0.00
200	9.174E-06	9.174E-06	0.00
500	5.067E-08	5.067E-08	0.01
1,000	8.747E-12	N/A	N/A
2,000	2.606E-19	N/A	N/A
5,000	6.890E-42	N/A	N/A
Maximum:			-0.01

B.7.26.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.010E-05	3.011E-05	-0.01
2	1.732E-04	1.732E-04	-0.01
5	3.705E-04	3.705E-04	0.00
10	3.545E-04	3.545E-04	0.00
20	2.982E-04	2.982E-04	0.00
50	1.773E-04	1.773E-04	0.00

100	7.455E-05	7.455E-05	0.00
200	1.318E-05	1.318E-05	0.00
500	7.279E-08	7.279E-08	0.01
1,000	1.256E-11	N/A	N/A
2,000	3.743E-19	N/A	N/A
5,000	9.899E-42	N/A	N/A
Maximum:			-0.01

B.7.27. Cerium – Inhalation of ¹³⁹Ce (type “M”)

Maximum difference for **Urine**: -0.89%.

Maximum difference for **Feces**: +0.35%.

Maximum difference for **Whole Body**: +0.23%.

Maximum difference for **Lungs**: +0.24%.

B.7.27.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.21E-07	3.24E-07	-0.89
2	5.41E-07	5.46E-07	-0.89
5	5.64E-07	5.69E-07	-0.89
10	5.74E-07	5.79E-07	-0.89
20	5.86E-07	5.91E-07	-0.89
50	5.86E-07	5.91E-07	-0.88
100	5.25E-07	5.30E-07	-0.88
200	3.64E-07	3.67E-07	-0.87
500	8.73E-08	8.80E-08	-0.83
1,000	6.56E-09	6.61E-09	-0.77
2,000	3.51E-11	3.54E-11	-0.65
5,000	5.36E-18	N/A	N/A
10,000	2.34E-29	N/A	N/A
Maximum:			-0.89

B.7.27.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.95E-01	4.95E-01	0
2	2.61E-01	2.61E-01	0
5	9.18E-02	9.18E-02	-0.01
10	7.77E-02	7.77E-02	-0.01
20	7.00E-02	7.00E-02	-0.01
50	5.43E-02	5.43E-02	0
100	3.92E-02	3.92E-02	0
200	2.25E-02	2.25E-02	0.01
500	4.60E-03	4.59E-03	0.05
1,000	3.35E-04	3.35E-04	0.11
2,000	1.79E-06	1.79E-06	0.23
5,000	2.73E-13	N/A	N/A
10,000	1.19E-24	N/A	N/A
Maximum:			+0.23

B.7.27.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.08E-01	1.08E-01	0
2	1.53E-01	1.53E-01	0
5	1.30E-02	1.30E-02	0
10	5.47E-04	5.47E-04	-0.01
20	3.33E-04	3.33E-04	-0.01
50	1.32E-04	1.32E-04	0
100	3.54E-05	3.54E-05	0.02
200	7.43E-06	7.43E-06	0.07
500	9.14E-07	9.12E-07	0.16
1,000	6.01E-08	6.00E-08	0.23
2,000	3.19E-10	3.18E-10	0.35
5,000	4.87E-17	N/A	N/A
10,000	2.12E-28	N/A	N/A
Maximum:			+0.35

B.7.27.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.73E-02	5.74E-02	-0.01
2	5.54E-02	5.54E-02	-0.01
5	5.20E-02	5.20E-02	-0.01
10	4.72E-02	4.72E-02	-0.01
20	3.93E-02	3.93E-02	-0.01
50	2.40E-02	2.40E-02	-0.01
100	1.22E-02	1.22E-02	0
200	3.86E-03	3.86E-03	0.01
500	1.47E-04	1.47E-04	0.05
1,000	6.62E-07	6.62E-07	0.11
2,000	1.54E-11	1.54E-11	0.24
5,000	5.48E-25	N/A	N/A
Maximum:			+0.24

B.7.28. Cerium – Inhalation of ¹³⁹Ce (type “S”)

Maximum difference for **Urine**: -0.89%.

Maximum difference for **Feces**: +0.25%.

Maximum difference for **Whole Body**: +0.23%.

Maximum difference for **Lungs**: +0.24%.

B.7.28.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.81E-09	4.86E-09	-0.89
2	9.25E-09	9.33E-09	-0.89
5	9.88E-09	9.97E-09	-0.89
10	1.02E-08	1.03E-08	-0.88
20	1.07E-08	1.08E-08	-0.89
50	1.15E-08	1.16E-08	-0.88
100	1.12E-08	1.13E-08	-0.88
200	9.07E-09	9.15E-09	-0.87
500	3.15E-09	3.17E-09	-0.83
1,000	3.47E-10	3.49E-10	-0.77
2,000	2.66E-12	2.67E-12	-0.65
5,000	6.04E-19	N/A	N/A
10,000	3.85E-30	N/A	N/A
Maximum:			-0.89

B.7.28.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.14E-01	1.14E-01	0
2	1.62E-01	1.62E-01	-0.01
5	1.37E-02	1.37E-02	0
10	6.16E-04	6.16E-04	-0.01
20	3.97E-04	3.97E-04	-0.01
50	1.77E-04	1.77E-04	-0.01
100	5.50E-05	5.50E-05	0
200	1.22E-05	1.22E-05	0.02
500	1.56E-06	1.56E-06	0.05
1,000	7.53E-08	7.52E-08	0.12
2,000	1.89E-10	1.89E-10	0.25
5,000	9.10E-18	N/A	N/A
10,000	4.32E-29	N/A	N/A
Maximum:			+0.25

B.7.28.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.89E-01	4.89E-01	0
2	2.47E-01	2.47E-01	0
5	7.10E-02	7.10E-02	-0.01
10	5.67E-02	5.67E-02	-0.01
20	4.95E-02	4.95E-02	-0.01
50	3.51E-02	3.52E-02	-0.01
100	2.30E-02	2.30E-02	0
200	1.20E-02	1.20E-02	0.01
500	2.07E-03	2.07E-03	0.05
1,000	1.18E-04	1.18E-04	0.11
2,000	4.51E-07	4.50E-07	0.23
5,000	5.88E-14	N/A	N/A
10,000	3.29E-25	N/A	N/A
Maximum:			+0.23

B.7.28.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.40E-02	6.40E-02	-0.01
2	6.21E-02	6.21E-02	-0.01
5	5.92E-02	5.92E-02	-0.01
10	5.50E-02	5.51E-02	-0.01
20	4.81E-02	4.81E-02	-0.01
50	3.41E-02	3.41E-02	-0.01
100	2.22E-02	2.22E-02	0
200	1.14E-02	1.14E-02	0.01
500	1.89E-03	1.89E-03	0.05
1,000	9.87E-05	9.86E-05	0.11
2,000	3.09E-07	3.08E-07	0.24
5,000	2.66E-14	N/A	N/A
10,000	1.23E-25	N/A	N/A
Maximum:			+0.24

B.7.29. Cerium – Ingestion of ¹³⁹Ce (f₁ = 0.0005)

Maximum difference for **Urine**: -0.89%.

Maximum difference for **Feces**: +0.36%.

Maximum difference for **Whole Body**: +0.24%.

B.7.29.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.99E-09	4.02E-09	-0.89
2	9.16E-09	9.24E-09	-0.88
5	9.56E-09	9.65E-09	-0.88
10	9.32E-09	9.40E-09	-0.88
20	8.84E-09	8.92E-09	-0.88

50	7.56E-09	7.62E-09	-0.87
100	5.82E-09	5.87E-09	-0.87
200	3.45E-09	3.48E-09	-0.86
500	7.18E-10	7.23E-10	-0.82
1,000	5.25E-11	5.29E-11	-0.76
2,000	2.80E-13	N/A	N/A
5,000	4.28E-20	N/A	N/A
10,000	1.86E-31	N/A	N/A
Maximum:			-0.89

B.7.29.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.81E-01	2.81E-01	0
2	3.85E-01	3.85E-01	0
5	3.06E-02	3.06E-02	0
10	2.09E-04	2.09E-04	0
20	8.94E-08	8.93E-08	0.11
50	6.87E-08	6.86E-08	0.13
100	5.29E-08	5.28E-08	0.13
200	3.14E-08	3.13E-08	0.14
500	6.53E-09	6.51E-09	0.18
1,000	4.77E-10	4.76E-10	0.24
2,000	2.55E-12	2.54E-12	0.36
5,000	3.89E-19	N/A	N/A
10,000	1.70E-30	N/A	N/A
Maximum:			+0.36

B.7.29.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.14E-01	7.14E-01	0
2	3.26E-01	3.26E-01	0
5	1.88E-02	1.88E-02	0
10	5.96E-04	5.96E-04	0
20	4.51E-04	4.51E-04	0
50	3.85E-04	3.85E-04	0
100	2.96E-04	2.96E-04	0.01
200	1.76E-04	1.76E-04	0.03
500	3.66E-05	3.65E-05	0.06
1,000	2.67E-06	2.67E-06	0.12
2,000	1.43E-08	1.43E-08	0.24
5,000	2.18E-15	N/A	N/A
10,000	9.50E-27	N/A	N/A
Maximum:			+0.24

B.7.30. Cerium – Injection of ¹³⁹Ce

Maximum difference for **Urine**: -0.88%.

Maximum difference for **Feces**: +0.36%.

Maximum difference for **Whole Body**: +0.61%.

B.7.30.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.14E-05	1.15E-05	-0.88
2	1.89E-05	1.91E-05	-0.88
5	1.91E-05	1.93E-05	-0.88
10	1.86E-05	1.88E-05	-0.88
20	1.77E-05	1.78E-05	-0.88
50	1.51E-05	1.52E-05	-0.88
100	1.16E-05	1.17E-05	-0.87
200	6.89E-06	6.95E-06	-0.86
500	1.44E-06	1.45E-06	-0.82
1,000	1.05E-07	1.06E-07	-0.76
2,000	5.61E-10	5.64E-10	-0.64
5,000	8.56E-17	N/A	N/A
10,000	3.73E-28	N/A	N/A
Maximum:			-0.88

B.7.30.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.33E-05	1.33E-05	0.11
2	7.64E-05	7.63E-05	0.12
5	1.67E-04	1.67E-04	0.12
10	1.69E-04	1.69E-04	0.12
20	1.61E-04	1.61E-04	0.13

50	1.37E-04	1.37E-04	0.13
100	1.06E-04	1.06E-04	0.14
200	6.27E-05	6.26E-05	0.14
500	1.31E-05	1.30E-05	0.18
1,000	9.54E-07	9.52E-07	0.24
2,000	5.10E-09	5.08E-09	0.36
5,000	7.78E-16	N/A	N/A
10,000	3.39E-27	N/A	N/A
Maximum:			+0.36

B.7.30.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.95E-01	9.95E-01	0
2	9.90E-01	9.90E-01	0
5	9.75E-01	9.75E-01	0
10	9.49E-01	9.49E-01	0
20	9.01E-01	9.01E-01	0
50	7.70E-01	7.70E-01	0.01
100	5.93E-01	5.93E-01	0.01
200	3.51E-01	3.51E-01	0.02
500	7.31E-02	7.31E-02	0.06
1,000	5.35E-03	5.34E-03	0.12
2,000	2.86E-05	2.85E-05	0.24
5,000	4.36E-12	4.33E-12	0.61
10,000	1.90E-23	N/A	N/A
Maximum:			+0.61

B.7.31. Cerium – Inhalation of ¹⁴³Ce (type “M”)

Maximum difference for **Urine**: -0.9%.

Maximum difference for **Feces**: -0.03%.

Maximum difference for **Whole Body**: -0.02%.

Maximum difference for **Lungs**: -0.03%.

B.7.31.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.95E-07	1.97E-07	-0.9
2	1.99E-07	2.01E-07	-0.89
5	4.65E-08	4.69E-08	-0.89
10	3.90E-09	3.94E-09	-0.9
20	2.71E-11	2.74E-11	-0.9
50	8.52E-18	N/A	N/A
100	1.11E-28	N/A	N/A
Maximum:			-0.9

B.7.31.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.54E-02	6.54E-02	-0.01
2	5.64E-02	5.64E-02	-0.01
5	1.07E-03	1.07E-03	0
10	3.72E-06	3.72E-06	-0.02
20	1.54E-08	1.54E-08	-0.03
50	1.92E-15	N/A	N/A
100	7.49E-27	N/A	N/A
Maximum:			-0.03

B.7.31.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.00E-01	3.00E-01	0
2	9.63E-02	9.63E-02	0
5	7.57E-03	7.57E-03	-0.01
10	5.28E-04	5.28E-04	-0.02
20	3.24E-06	3.24E-06	-0.02
50	7.90E-13	N/A	N/A
100	8.29E-24	N/A	N/A
200	1.40E-45	N/A	N/A
Maximum:			-0.02

B.7.31.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.48E-02	3.48E-02	-0.01
2	2.04E-02	2.04E-02	-0.01
5	4.29E-03	4.29E-03	-0.02
10	3.21E-04	3.21E-04	-0.02
20	1.82E-06	1.82E-06	-0.03
50	3.50E-13	N/A	N/A
100	2.59E-24	N/A	N/A
Maximum:			-0.03

B.7.32. Cerium – Inhalation of ¹⁴³Ce (type “S”)

Maximum difference for **Urine**: -0.89%.

Maximum difference for **Feces**: -0.03%.

Maximum difference for **Whole Body**: -0.03%.

Maximum difference for **Lungs**: -0.03%.

B.7.32.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.92E-09	2.95E-09	-0.89
2	3.41E-09	3.44E-09	-0.89
5	8.15E-10	8.22E-10	-0.89
10	6.94E-11	7.01E-11	-0.89
20	4.96E-13	N/A	N/A
50	1.67E-19	N/A	N/A
100	2.38E-30	N/A	N/A
Maximum:			-0.89

B.7.32.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.89E-02	6.89E-02	-0.01
2	5.95E-02	5.95E-02	-0.01
5	1.13E-03	1.13E-03	0
10	4.19E-06	4.19E-06	-0.02
20	1.84E-08	1.84E-08	-0.03
50	2.58E-15	N/A	N/A
100	1.16E-26	N/A	N/A
Maximum:			-0.03

B.7.32.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.97E-01	2.97E-01	0
2	9.11E-02	9.11E-02	0
5	5.86E-03	5.86E-03	-0.02
10	3.86E-04	3.86E-04	-0.02
20	2.29E-06	2.29E-06	-0.03
50	5.11E-13	N/A	N/A
100	4.86E-24	N/A	N/A
Maximum:			-0.03

B.7.32.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.88E-02	3.88E-02	-0.01
2	2.29E-02	2.29E-02	-0.01
5	4.88E-03	4.88E-03	-0.02
10	3.74E-04	3.74E-04	-0.02
20	2.22E-06	2.22E-06	-0.03
50	4.96E-13	N/A	N/A
100	4.69E-24	N/A	N/A
Maximum:			-0.03

B.7.33. Cerium – Ingestion of ^{143}Ce ($f_1 = 0.0005$)

Maximum difference for **Urine**: -0.89%.

Maximum difference for **Feces**: +0.1%.

Maximum difference for **Whole Body**: -0.01%.

B.7.33.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.42E-09	2.44E-09	-0.89
2	3.38E-09	3.41E-09	-0.88
5	7.89E-10	7.96E-10	-0.88
10	6.34E-11	6.39E-11	-0.89
20	4.09E-13	N/A	N/A
50	1.10E-19	N/A	N/A
100	1.23E-30	N/A	N/A
Maximum:			-0.89

B.7.33.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.71E-01	1.71E-01	0
2	1.42E-01	1.42E-01	0

5	2.53E-03	2.53E-03	0
10	1.42E-06	1.42E-06	0
20	4.14E-12	4.13E-12	0.1
50	1.00E-18	N/A	N/A
100	1.12E-29	N/A	N/A
Maximum:			+0.1

B.7.33.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.34E-01	4.34E-01	0
2	1.20E-01	1.20E-01	0
5	1.55E-03	1.55E-03	0
10	4.06E-06	4.06E-06	-0.01
20	2.08E-08	2.08E-08	-0.01
50	5.60E-15	N/A	N/A
100	6.27E-26	N/A	N/A
Maximum:			-0.01

B.7.34. Cerium – Injection of ^{143}Ce

Maximum difference for **Urine**: -0.89%.

Maximum difference for **Feces**: +0.12%.

Maximum difference for **Whole Body**: -0.04%.

B.7.34.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.94E-06	7.00E-06	-0.89
2	6.96E-06	7.03E-06	-0.88
5	1.58E-06	1.59E-06	-0.88
10	1.27E-07	1.28E-07	-0.89
20	8.18E-10	8.25E-10	-0.89
50	2.20E-16	N/A	N/A
100	2.46E-27	N/A	N/A
Maximum:			-0.89

B.7.34.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.06E-06	8.05E-06	0.11
2	2.82E-05	2.81E-05	0.12
5	1.38E-05	1.38E-05	0.12

10	1.15E-06	1.15E-06	0.11
20	7.44E-09	7.43E-09	0.11
50	2.00E-15	N/A	N/A
100	2.24E-26	N/A	N/A
Maximum:			+0.12

B.7.34.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.04E-01	6.04E-01	0
2	3.65E-01	3.65E-01	0
5	8.04E-02	8.04E-02	0
10	6.46E-03	6.46E-03	-0.01
20	4.17E-05	4.17E-05	-0.01
50	1.12E-11	1.12E-11	-0.04
100	1.26E-22	N/A	N/A
200	1.54E-44	N/A	N/A
Maximum:			-0.04

B.7.35. Cerium – Inhalation of ¹⁴⁴Ce (type “M”)

Maximum difference for **Urine**: -0.95%.

Maximum difference for **Feces**: +0.10%.

Maximum difference for **Whole Body**: -0.07%.

Maximum difference for **Lungs**: -0.03%.

B.7.35.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.218E-07	3.247E-07	-0.89
2	5.436E-07	5.484E-07	-0.89
5	5.709E-07	5.760E-07	-0.89
10	5.885E-07	5.938E-07	-0.89
20	6.173E-07	6.229E-07	-0.89
50	6.668E-07	6.728E-07	-0.89
100	6.811E-07	6.873E-07	-0.89
200	6.121E-07	6.176E-07	-0.89
500	3.195E-07	3.224E-07	-0.90
1,000	8.793E-08	8.873E-08	-0.90
2,000	6.311E-09	6.369E-09	-0.92
5,000	2.320E-12	2.342E-12	-0.95
10,000	4.378E-18	N/A	N/A
20,000	1.558E-29	N/A	N/A
Maximum:			-0.95

B.7.35.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.080E-01	1.080E-01	0.00
2	1.539E-01	1.539E-01	0.00
5	1.312E-02	1.312E-02	0.00
10	5.610E-04	5.611E-04	-0.01
20	3.511E-04	3.511E-04	-0.01
50	1.499E-04	1.499E-04	-0.01
100	4.586E-05	4.586E-05	0.00
200	1.249E-05	1.249E-05	0.04
500	3.345E-06	3.342E-06	0.09
1,000	8.061E-07	8.053E-07	0.10
2,000	5.739E-08	5.734E-08	0.09
5,000	2.110E-11	2.109E-11	0.05
10,000	3.981E-17	N/A	N/A
20,000	1.417E-28	N/A	N/A
Maximum:			0.10

B.7.35.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.961E-01	4.961E-01	0.00
2	2.627E-01	2.627E-01	0.00
5	9.295E-02	9.296E-02	-0.01
10	7.973E-02	7.974E-02	-0.01
20	7.375E-02	7.376E-02	-0.01
50	6.186E-02	6.187E-02	-0.01
100	5.080E-02	5.080E-02	-0.01
200	3.776E-02	3.776E-02	-0.01
500	1.683E-02	1.683E-02	-0.02
1,000	4.490E-03	4.491E-03	-0.02
2,000	3.216E-04	3.217E-04	-0.04
5,000	1.182E-07	1.183E-07	-0.07
10,000	2.231E-13	N/A	N/A
20,000	7.942E-25	N/A	N/A
Maximum:			-0.07

B.7.35.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.749E-02	5.749E-02	-0.01
2	5.566E-02	5.567E-02	-0.01
5	5.272E-02	5.272E-02	-0.01
10	4.846E-02	4.847E-02	-0.01
20	4.134E-02	4.135E-02	-0.01
50	2.738E-02	2.738E-02	-0.01
100	1.586E-02	1.586E-02	-0.01
200	6.483E-03	6.484E-03	-0.01
500	5.378E-04	5.379E-04	-0.02
1,000	8.880E-06	8.882E-06	-0.02
2,000	2.773E-09	2.773E-09	-0.03
5,000	2.372E-19	N/A	N/A
10,000	1.086E-35	N/A	N/A
Maximum:			-0.03

B.7.36. Cerium – Inhalation of ¹⁴⁴Ce (type “S”)

Maximum difference for **Urine**: -0.91%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.06%.

Maximum difference for **Lungs**: -0.05%.

B.7.36.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.824E-09	4.867E-09	-0.89
2	9.293E-09	9.376E-09	-0.89
5	1.001E-08	1.010E-08	-0.89
10	1.048E-08	1.057E-08	-0.89
20	1.130E-08	1.140E-08	-0.89
50	1.304E-08	1.316E-08	-0.89
100	1.455E-08	1.468E-08	-0.89
200	1.524E-08	1.537E-08	-0.90
500	1.152E-08	1.163E-08	-0.89
1,000	4.645E-09	4.687E-09	-0.90
2,000	4.774E-10	4.818E-10	-0.91
5,000	2.616E-13	N/A	N/A
10,000	7.223E-19	N/A	N/A
20,000	4.815E-30	N/A	N/A
Maximum:			-0.91

B.7.36.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.138E-01	1.138E-01	-0.01
2	1.623E-01	1.623E-01	-0.01
5	1.389E-02	1.389E-02	0.00
10	6.322E-04	6.323E-04	-0.01
20	4.183E-04	4.184E-04	-0.02
50	2.019E-04	2.019E-04	-0.02
100	7.123E-05	7.124E-05	-0.01
200	2.042E-05	2.042E-05	-0.01
500	5.700E-06	5.701E-06	-0.01
1,000	1.009E-06	1.009E-06	-0.02
2,000	3.396E-08	3.397E-08	-0.01
5,000	3.940E-12	3.940E-12	0.01
10,000	8.101E-18	N/A	N/A
20,000	4.813E-29	N/A	N/A
Maximum:			-0.02

B.7.36.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.904E-01	4.904E-01	0.00
2	2.485E-01	2.485E-01	0.00
5	7.193E-02	7.194E-02	-0.01
10	5.823E-02	5.824E-02	-0.01
20	5.211E-02	5.212E-02	-0.01
50	4.001E-02	4.002E-02	-0.01
100	2.975E-02	2.975E-02	-0.01
200	2.011E-02	2.011E-02	-0.01
500	7.571E-03	7.573E-03	-0.02
1,000	1.578E-03	1.578E-03	-0.02
2,000	8.113E-05	8.115E-05	-0.03
5,000	2.545E-08	2.546E-08	-0.06
10,000	6.169E-14	N/A	N/A
20,000	3.974E-25	N/A	N/A
Maximum:			-0.06

B.7.36.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.412E-02	6.413E-02	-0.01
2	6.239E-02	6.240E-02	-0.01
5	5.996E-02	5.997E-02	-0.01
10	5.649E-02	5.650E-02	-0.01
20	5.061E-02	5.062E-02	-0.01
50	3.882E-02	3.882E-02	-0.01
100	2.873E-02	2.873E-02	-0.01
200	1.917E-02	1.918E-02	-0.02
500	6.918E-03	6.919E-03	-0.02
1,000	1.324E-03	1.324E-03	-0.02
2,000	5.550E-05	5.551E-05	-0.03
5,000	1.150E-08	1.150E-08	-0.05
10,000	2.299E-14	N/A	N/A
Maximum:			-0.05

B.7.37. Cerium – Ingestion of ¹⁴⁴Ce (f₁ = 0.0005)

Maximum difference for **Urine**: -0.90%.

Maximum difference for **Feces**: +0.12%.

Maximum difference for **Whole Body**: -0.03%.

B.7.37.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.998E-09	4.033E-09	-0.89
2	9.209E-09	9.291E-09	-0.88
5	9.687E-09	9.772E-09	-0.88
10	9.560E-09	9.645E-09	-0.88
20	9.311E-09	9.394E-09	-0.88
50	8.603E-09	8.679E-09	-0.88
100	7.541E-09	7.608E-09	-0.88
200	5.793E-09	5.845E-09	-0.88
500	2.627E-09	2.651E-09	-0.88
1,000	7.031E-10	7.095E-10	-0.89
2,000	5.037E-11	5.083E-11	-0.90

5,000	1.852E-14	N/A	N/A
10,000	3.494E-20	N/A	N/A
20,000	1.244E-31	N/A	N/A
Maximum:			-0.90

B.7.37.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.816E-01	2.816E-01	0.00
2	3.870E-01	3.870E-01	0.00
5	3.102E-02	3.102E-02	0.00
10	2.143E-04	2.143E-04	0.00
20	9.417E-08	9.407E-08	0.11
50	7.823E-08	7.814E-08	0.12
100	6.857E-08	6.849E-08	0.12

200	5.268E-08	5.262E-08	0.12
500	2.389E-08	2.386E-08	0.11
1,000	6.394E-09	6.387E-09	0.11
2,000	4.581E-10	4.576E-10	0.10
5,000	1.684E-13	N/A	N/A
10,000	3.178E-19	N/A	N/A
20,000	1.131E-30	N/A	N/A
Maximum:			0.12

B.7.37.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.160E-01	7.160E-01	0.00

2	3.273E-01	3.273E-01	0.00
5	1.900E-02	1.900E-02	0.00
10	6.119E-04	6.119E-04	0.00
20	4.745E-04	4.745E-04	0.00
50	4.384E-04	4.384E-04	0.00
100	3.843E-04	3.843E-04	0.00
200	2.952E-04	2.952E-04	0.00
500	1.339E-04	1.339E-04	-0.01
1,000	3.583E-05	3.584E-05	-0.01
2,000	2.567E-06	2.568E-06	-0.03
5,000	9.438E-10	N/A	N/A
10,000	1.781E-15	N/A	N/A
Maximum:			-0.03

B.7.38. Cerium – Injection of ¹⁴⁴Ce

Maximum difference for **Urine**: -0.94%.

Maximum difference for **Feces**: +0.12%.

Maximum difference for **Whole Body**: -0.06%.

B.7.38.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.146E-05	1.156E-05	-0.89
2	1.899E-05	1.916E-05	-0.88
5	1.937E-05	1.954E-05	-0.88
10	1.912E-05	1.929E-05	-0.88
20	1.862E-05	1.879E-05	-0.88
50	1.721E-05	1.736E-05	-0.88
100	1.508E-05	1.521E-05	-0.88
200	1.159E-05	1.169E-05	-0.88
500	5.254E-06	5.301E-06	-0.89
1,000	1.406E-06	1.419E-06	-0.89
2,000	1.007E-07	1.017E-07	-0.90
5,000	3.704E-11	3.739E-11	-0.94
10,000	6.988E-17	N/A	N/A
20,000	2.488E-28	N/A	N/A
Maximum:			-0.94

B.7.38.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.331E-05	1.329E-05	0.11
2	7.681E-05	7.672E-05	0.12
5	1.692E-04	1.690E-04	0.12
10	1.738E-04	1.736E-04	0.12
20	1.693E-04	1.691E-04	0.12

50	1.565E-04	1.563E-04	0.12
100	1.371E-04	1.370E-04	0.12
200	1.054E-04	1.052E-04	0.12
500	4.778E-05	4.772E-05	0.12
1,000	1.279E-05	1.277E-05	0.11
2,000	9.161E-07	9.152E-07	0.10
5,000	3.368E-10	3.366E-10	0.06
10,000	6.355E-16	N/A	N/A
20,000	2.262E-27	N/A	N/A
Maximum:			0.12

B.7.38.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.975E-01	9.975E-01	0.00
2	9.950E-01	9.950E-01	0.00
5	9.873E-01	9.872E-01	0.00
10	9.743E-01	9.743E-01	0.00
20	9.490E-01	9.490E-01	0.00
50	8.768E-01	8.768E-01	0.00
100	7.685E-01	7.686E-01	0.00
200	5.905E-01	5.905E-01	0.00
500	2.678E-01	2.678E-01	-0.01
1,000	7.166E-02	7.167E-02	-0.01
2,000	5.134E-03	5.135E-03	-0.03
5,000	1.888E-06	1.889E-06	-0.06
10,000	3.561E-12	N/A	N/A
Maximum:			-0.06

B.7.39. Cesium – Inhalation of ¹³⁴Cs (type “F”)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.07%.

Maximum difference for **Whole Body**: -0.07%.

B.7.39.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.860E-03	7.861E-03	-0.02
2	1.105E-02	1.105E-02	-0.01
5	5.424E-03	5.424E-03	0.00
10	2.618E-03	2.618E-03	0.00
20	1.911E-03	1.911E-03	0.00
50	1.524E-03	1.524E-03	0.00
100	1.062E-03	1.062E-03	0.00
200	5.158E-04	5.158E-04	-0.01
500	5.909E-05	5.910E-05	-0.02
1,000	1.597E-06	1.597E-06	-0.03
2,000	1.166E-09	1.166E-09	-0.06
5,000	4.536E-19	N/A	N/A
10,000	9.410E-35	N/A	N/A
Maximum:			-0.06

B.7.39.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.639E-04	9.640E-04	-0.01
2	2.105E-03	2.105E-03	-0.01
5	1.882E-03	1.882E-03	0.00
10	7.806E-04	7.806E-04	0.00
20	4.859E-04	4.859E-04	0.00

50	3.846E-04	3.846E-04	0.00
100	2.680E-04	2.680E-04	0.00
200	1.302E-04	1.302E-04	-0.01
500	1.491E-05	1.491E-05	-0.02
1,000	4.029E-07	4.030E-07	-0.03
2,000	2.941E-10	2.943E-10	-0.07
5,000	1.145E-19	N/A	N/A
10,000	2.375E-35	N/A	N/A
Maximum:			-0.07

B.7.39.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.962E-01	5.962E-01	0.00
2	5.040E-01	5.040E-01	0.00
5	4.317E-01	4.318E-01	-0.01
10	4.051E-01	4.052E-01	-0.01
20	3.750E-01	3.751E-01	-0.01
50	3.019E-01	3.020E-01	-0.01
100	2.104E-01	2.104E-01	-0.01
200	1.022E-01	1.022E-01	-0.01
500	1.171E-02	1.171E-02	-0.03
1,000	3.163E-04	3.164E-04	-0.04
2,000	2.309E-07	2.311E-07	-0.07
5,000	8.987E-17	N/A	N/A
10,000	1.864E-32	N/A	N/A
Maximum:			-0.07

B.7.40. Cesium – Ingestion of ¹³⁴Cs (f₁ = 0.99)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.06%.

Maximum difference for **Whole Body**: -0.07%.

B.7.40.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.577E-02	1.577E-02	-0.01
2	2.290E-02	2.290E-02	0.00
5	1.126E-02	1.126E-02	0.00
10	5.418E-03	5.418E-03	0.01
20	3.949E-03	3.949E-03	0.00
50	3.150E-03	3.150E-03	0.00
100	2.195E-03	2.195E-03	0.00
200	1.066E-03	1.066E-03	0.00
500	1.221E-04	1.221E-04	-0.01
1,000	3.300E-06	3.301E-06	-0.03
2,000	2.409E-09	2.411E-09	-0.06
5,000	9.375E-19	N/A	N/A
10,000	1.945E-34	N/A	N/A
Maximum:			-0.06

B.7.40.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.075E-03	4.075E-03	0.00
2	6.407E-03	6.407E-03	0.00
5	4.056E-03	4.056E-03	0.00
10	1.618E-03	1.618E-03	0.01
20	1.004E-03	1.004E-03	0.01
50	7.948E-04	7.948E-04	0.00
100	5.539E-04	5.539E-04	0.00
200	2.690E-04	2.690E-04	0.00
500	3.082E-05	3.082E-05	-0.01
1,000	8.327E-07	8.329E-07	-0.03
2,000	6.079E-10	6.083E-10	-0.06
5,000	2.366E-19	N/A	N/A
10,000	4.907E-35	N/A	N/A
Maximum:			-0.06

B.7.40.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.792E-01	9.792E-01	0.00
2	9.490E-01	9.490E-01	0.00

5	8.878E-01	8.878E-01	0.00
10	8.373E-01	8.373E-01	0.00
20	7.751E-01	7.751E-01	0.00
50	6.240E-01	6.240E-01	0.00
100	4.349E-01	4.349E-01	0.00
200	2.112E-01	2.112E-01	-0.01
500	2.419E-02	2.420E-02	-0.02

1,000	6.537E-04	6.540E-04	-0.03
2,000	4.773E-07	4.776E-07	-0.07
5,000	1.857E-16	N/A	N/A
10,000	3.853E-32	N/A	N/A
Maximum:			-0.07

B.7.41. Cesium – Injection of ¹³⁴Cs

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.06%.

Maximum difference for **Whole Body**: -0.07%.

B.7.41.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.699E-02	1.699E-02	-0.01
2	2.297E-02	2.297E-02	0.00
5	1.126E-02	1.126E-02	0.00
10	5.454E-03	5.453E-03	0.01
20	3.988E-03	3.987E-03	0.01
50	3.181E-03	3.181E-03	0.00
100	2.217E-03	2.217E-03	0.00
200	1.077E-03	1.077E-03	0.00
500	1.233E-04	1.233E-04	-0.01
1,000	3.332E-06	3.333E-06	-0.03
2,000	2.433E-09	2.434E-09	-0.06
5,000	9.468E-19	N/A	N/A
10,000	1.964E-34	N/A	N/A
Maximum:			-0.06

B.7.41.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.624E-04	5.625E-04	-0.01
2	2.944E-03	2.944E-03	-0.01
5	3.804E-03	3.804E-03	0.00

10	1.624E-03	1.624E-03	0.01
20	1.014E-03	1.014E-03	0.01
50	8.026E-04	8.026E-04	0.00
100	5.593E-04	5.593E-04	0.00
200	2.717E-04	2.717E-04	0.00
500	3.112E-05	3.112E-05	-0.01
1,000	8.408E-07	8.411E-07	-0.03
2,000	6.139E-10	6.143E-10	-0.06
5,000	2.389E-19	N/A	N/A
10,000	4.956E-35	N/A	N/A
Maximum:			-0.06

B.7.41.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.815E-01	9.815E-01	0.00
2	9.547E-01	9.547E-01	0.00
5	8.961E-01	8.961E-01	0.00
10	8.455E-01	8.455E-01	0.00
20	7.827E-01	7.827E-01	0.00
50	6.301E-01	6.302E-01	0.00
100	4.391E-01	4.392E-01	0.00
200	2.133E-01	2.133E-01	-0.01
500	2.443E-02	2.444E-02	-0.02
1,000	6.602E-04	6.604E-04	-0.03
2,000	4.820E-07	4.823E-07	-0.07
5,000	1.876E-16	N/A	N/A
10,000	3.891E-32	N/A	N/A
Maximum:			-0.07

B.7.42. Cesium – Inhalation of ¹³⁷Cs (type “F”)

Maximum difference for **Urine**: -0.07%.

Maximum difference for **Feces**: -0.07%.

Maximum difference for **Whole Body**: -0.07%.

B.7.42.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.867E-03	7.868E-03	-0.02
2	1.107E-02	1.107E-02	-0.01

5	5.447E-03	5.447E-03	0.00
10	2.640E-03	2.640E-03	0.00
20	1.944E-03	1.944E-03	0.00
50	1.591E-03	1.591E-03	0.00
100	1.157E-03	1.157E-03	0.00
200	6.123E-04	6.124E-04	-0.01

500	9.073E-05	9.075E-05	-0.02
1,000	3.764E-06	3.766E-06	-0.04
2,000	6.480E-09	6.484E-09	-0.07
5,000	3.305E-17	N/A	N/A
10,000	4.995E-31	N/A	N/A
Maximum:			-0.07

B.7.42.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.647E-04	9.648E-04	-0.01
2	2.108E-03	2.108E-03	-0.01
5	1.891E-03	1.891E-03	0.00
10	7.873E-04	7.873E-04	0.00
20	4.943E-04	4.943E-04	0.00
50	4.014E-04	4.014E-04	0.00
100	2.920E-04	2.920E-04	0.00
200	1.545E-04	1.545E-04	0.00
500	2.290E-05	2.290E-05	-0.02
1,000	9.499E-07	9.502E-07	-0.03
2,000	1.635E-09	1.636E-09	-0.07
5,000	8.340E-18	N/A	N/A

10,000	1.260E-31	N/A	N/A
Maximum:			-0.07

B.7.42.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.967E-01	5.968E-01	0.00
2	5.048E-01	5.048E-01	0.00
5	4.336E-01	4.336E-01	-0.01
10	4.086E-01	4.086E-01	-0.01
20	3.815E-01	3.816E-01	-0.01
50	3.152E-01	3.152E-01	-0.01
100	2.293E-01	2.293E-01	-0.01
200	1.213E-01	1.213E-01	-0.02
500	1.798E-02	1.798E-02	-0.02
1,000	7.458E-04	7.461E-04	-0.04
2,000	1.284E-06	1.285E-06	-0.07
5,000	6.548E-15	N/A	N/A
10,000	9.896E-29	N/A	N/A
Maximum:			-0.07

B.7.43. Cesium – Ingestion of ¹³⁷Cs (f₁ = 0.99)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.06%.

Maximum difference for **Whole Body**: -0.07%.

B.7.43.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.578E-02	1.578E-02	-0.01
2	2.294E-02	2.294E-02	0.00
5	1.130E-02	1.130E-02	0.00
10	5.465E-03	5.465E-03	0.01
20	4.018E-03	4.017E-03	0.01
50	3.288E-03	3.288E-03	0.00
100	2.392E-03	2.392E-03	0.00
200	1.266E-03	1.266E-03	-0.01
500	1.875E-04	1.875E-04	-0.01
1,000	7.780E-06	7.782E-06	-0.03
2,000	1.339E-08	1.340E-08	-0.06
5,000	6.831E-17	N/A	N/A
10,000	1.032E-30	N/A	N/A
Maximum:			-0.06

B.7.43.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.079E-03	4.079E-03	0.00
2	6.418E-03	6.418E-03	0.00
5	4.073E-03	4.073E-03	0.00
10	1.632E-03	1.632E-03	0.01
20	1.022E-03	1.022E-03	0.00

50	8.296E-04	8.296E-04	0.00
100	6.035E-04	6.035E-04	0.00
200	3.193E-04	3.193E-04	0.00
500	4.732E-05	4.732E-05	-0.01
1,000	1.963E-06	1.964E-06	-0.03
2,000	3.379E-09	3.381E-09	-0.06
5,000	1.724E-17	N/A	N/A
10,000	2.605E-31	N/A	N/A
Maximum:			-0.06

B.7.43.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.801E-01	9.801E-01	0.00
2	9.507E-01	9.507E-01	0.00
5	8.917E-01	8.917E-01	0.00
10	8.445E-01	8.445E-01	0.00
20	7.885E-01	7.885E-01	0.00
50	6.514E-01	6.514E-01	0.00
100	4.738E-01	4.738E-01	0.00
200	2.507E-01	2.507E-01	0.00
500	3.715E-02	3.716E-02	-0.02
1,000	1.541E-03	1.542E-03	-0.04
2,000	2.653E-06	2.655E-06	-0.07
5,000	1.353E-14	N/A	N/A
10,000	2.045E-28	N/A	N/A
Maximum:			-0.07

B.7.44. Cesium – Injection of ¹³⁷Cs

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.06%.

Maximum difference for **Whole Body**: -0.07%.

B.7.44.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.701E-02	1.701E-02	-0.01
2	2.301E-02	2.301E-02	0.00
5	1.131E-02	1.131E-02	0.00
10	5.501E-03	5.500E-03	0.01
20	4.057E-03	4.056E-03	0.01
50	3.320E-03	3.320E-03	0.00
100	2.415E-03	2.415E-03	0.00
200	1.278E-03	1.278E-03	0.00
500	1.894E-04	1.894E-04	-0.01
1,000	7.856E-06	7.859E-06	-0.03
2,000	1.352E-08	1.353E-08	-0.06
5,000	6.898E-17	N/A	N/A
10,000	1.043E-30	N/A	N/A
Maximum:			-0.06

B.7.44.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.629E-04	5.629E-04	-0.01
2	2.949E-03	2.949E-03	-0.01
5	3.820E-03	3.820E-03	0.00
10	1.638E-03	1.638E-03	0.00
20	1.032E-03	1.031E-03	0.00
50	8.378E-04	8.377E-04	0.00

100	6.094E-04	6.094E-04	0.00
200	3.225E-04	3.225E-04	0.00
500	4.778E-05	4.779E-05	-0.01
1,000	1.983E-06	1.983E-06	-0.03
2,000	3.413E-09	3.415E-09	-0.06
5,000	1.741E-17	N/A	N/A
10,000	2.631E-31	N/A	N/A
Maximum:			-0.06

B.7.44.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.824E-01	9.824E-01	0.00
2	9.564E-01	9.563E-01	0.00
5	8.999E-01	8.999E-01	0.00
10	8.528E-01	8.527E-01	0.00
20	7.963E-01	7.963E-01	0.00
50	6.578E-01	6.578E-01	0.00
100	4.785E-01	4.785E-01	0.00
200	2.532E-01	2.532E-01	-0.01
500	3.752E-02	3.752E-02	-0.02
1,000	1.557E-03	1.557E-03	-0.03
2,000	2.679E-06	2.681E-06	-0.07
5,000	1.367E-14	N/A	N/A
10,000	2.065E-28	N/A	N/A
Maximum:			-0.07

B.7.45. Chlorine – Inhalation of ³⁶Cl (type “F”)

Maximum difference for **Urine**: -0.16%.

Maximum difference for **Feces**: -0.16%.

Maximum difference for **Whole Body**: -0.18%.

B.7.45.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.81E-02	1.81E-02	0
2	2.96E-02	2.96E-02	0
5	2.49E-02	2.49E-02	0
10	1.76E-02	1.76E-02	0
20	8.80E-03	8.80E-03	-0.01
50	1.10E-03	1.10E-03	-0.04
100	3.44E-05	3.44E-05	-0.08
200	3.36E-08	3.36E-08	-0.16
500	3.12E-17	N/A	N/A
1,000	2.78E-32	N/A	N/A
Maximum:			-0.16

B.7.45.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.36E-04	7.36E-04	0
2	8.56E-04	8.56E-04	0
5	3.15E-04	3.15E-04	0
10	1.96E-04	1.96E-04	0
20	9.77E-05	9.77E-05	-0.01
50	1.22E-05	1.22E-05	-0.03
100	3.82E-07	3.82E-07	-0.07
200	3.73E-10	3.73E-10	-0.16
500	3.47E-19	N/A	N/A
1,000	3.08E-34	N/A	N/A
Maximum:			-0.16

B.7.45.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.87E-01	5.87E-01	0
2	4.78E-01	4.78E-01	-0.01
5	3.53E-01	3.53E-01	-0.01
10	2.48E-01	2.48E-01	-0.01
20	1.24E-01	1.24E-01	-0.02

50	1.55E-02	1.55E-02	-0.04
100	4.84E-04	4.84E-04	-0.09
200	4.73E-07	4.73E-07	-0.18
500	4.40E-16	N/A	N/A
1,000	3.91E-31	N/A	N/A
Maximum:			-0.18

B.7.46. Chlorine – Inhalation of ³⁶Cl (type “M”)

Maximum difference for **Urine**: -0.03%.

Maximum difference for **Feces**: -0.03%.

Maximum difference for **Whole Body**: -0.02%.

Maximum difference for **Lungs**: -0.01%.

B.7.46.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.50E-02	1.50E-02	0
2	2.59E-02	2.59E-02	0.01
5	2.20E-02	2.20E-02	0
10	1.58E-02	1.58E-02	0
20	8.21E-03	8.21E-03	-0.01
50	1.36E-03	1.36E-03	-0.03
100	2.16E-04	2.16E-04	-0.03
200	7.12E-05	7.12E-05	-0.02
500	1.16E-05	1.16E-05	-0.01
1,000	6.38E-07	6.38E-07	-0.01
2,000	2.22E-09	2.22E-09	-0.01
5,000	2.71E-16	N/A	N/A
10,000	2.47E-27	N/A	N/A
Maximum:			-0.03

B.7.46.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.89E-01	5.89E-01	0
2	4.83E-01	4.83E-01	-0.01
5	3.67E-01	3.67E-01	-0.01
10	2.73E-01	2.73E-01	-0.01
20	1.60E-01	1.60E-01	-0.02
50	5.05E-02	5.05E-02	-0.02
100	2.35E-02	2.35E-02	-0.02
200	1.17E-02	1.17E-02	-0.01
500	2.01E-03	2.01E-03	-0.01
1,000	1.13E-04	1.13E-04	-0.01
2,000	4.05E-07	4.05E-07	-0.02
5,000	5.33E-14	N/A	N/A
10,000	4.93E-25	N/A	N/A
Maximum:			-0.02

B.7.46.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.40E-03	1.40E-03	0
2	1.55E-03	1.55E-03	0
5	3.43E-04	3.43E-04	0
10	1.80E-04	1.80E-04	0
20	9.42E-05	9.42E-05	-0.01
50	1.64E-05	1.64E-05	-0.03
100	2.73E-06	2.73E-06	-0.02
200	8.32E-07	8.32E-07	-0.01
500	1.31E-07	1.31E-07	-0.02
1,000	7.19E-09	7.19E-09	-0.01
2,000	2.43E-11	2.43E-11	-0.01
5,000	2.80E-18	N/A	N/A
10,000	2.52E-29	N/A	N/A
Maximum:			-0.03

B.7.46.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.76E-02	5.76E-02	-0.01
2	5.59E-02	5.59E-02	-0.01
5	5.34E-02	5.34E-02	-0.01
10	4.97E-02	4.97E-02	-0.01
20	4.34E-02	4.34E-02	-0.01
50	3.09E-02	3.09E-02	-0.01
100	2.02E-02	2.02E-02	-0.01
200	1.06E-02	1.06E-02	-0.01
500	1.82E-03	1.82E-03	-0.01
1,000	1.02E-04	1.02E-04	-0.01
2,000	3.64E-07	3.64E-07	-0.01
5,000	4.67E-14	N/A	N/A
10,000	4.21E-25	N/A	N/A
Maximum:			-0.01

B.7.47. Chlorine – Ingestion of ³⁶Cl (f₁ = 0.99)

Maximum difference for **Urine**: -0.16%.

Maximum difference for **Feces**: -0.16%.

Maximum difference for **Whole Body**: -0.17%.

B.7.47.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.62E-02	3.62E-02	0
2	6.12E-02	6.12E-02	0.01
5	5.15E-02	5.15E-02	0.01
10	3.64E-02	3.64E-02	0.01
20	1.82E-02	1.82E-02	-0.01
50	2.28E-03	2.28E-03	-0.03
100	7.11E-05	7.11E-05	-0.07
200	6.94E-08	6.95E-08	-0.16
500	6.46E-17	N/A	N/A
1,000	5.74E-32	N/A	N/A
Maximum:			-0.16

B.7.47.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.63E-03	3.63E-03	0
2	3.87E-03	3.87E-03	0
5	8.06E-04	8.06E-04	0.01
10	4.06E-04	4.06E-04	0.01

20	2.02E-04	2.02E-04	0
50	2.53E-05	2.53E-05	-0.03
100	7.90E-07	7.90E-07	-0.07
200	7.71E-10	7.73E-10	-0.16
500	7.18E-19	N/A	N/A
1,000	6.38E-34	N/A	N/A
Maximum:			-0.16

B.7.47.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.60E-01	9.60E-01	0
2	8.95E-01	8.95E-01	0
5	7.25E-01	7.25E-01	0
10	5.13E-01	5.13E-01	-0.01
20	2.56E-01	2.56E-01	-0.02
50	3.21E-02	3.21E-02	-0.04
100	1.00E-03	1.00E-03	-0.08
200	9.78E-07	9.80E-07	-0.17
500	9.11E-16	N/A	N/A
1,000	8.09E-31	N/A	N/A
Maximum:			-0.17

B.7.48. Chlorine – Injection of ³⁶Cl

Maximum difference for **Urine**: -0.16%.

Maximum difference for **Feces**: -0.16%.

Maximum difference for **Whole Body**: -0.17%.

B.7.48.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.92E-02	3.92E-02	0.01
2	6.19E-02	6.19E-02	0.01
5	5.18E-02	5.18E-02	0.01
10	3.67E-02	3.67E-02	0
20	1.83E-02	1.83E-02	0
50	2.29E-03	2.29E-03	-0.03
100	7.16E-05	7.16E-05	-0.07
200	6.99E-08	7.00E-08	-0.16
500	6.51E-17	N/A	N/A
1,000	5.78E-32	N/A	N/A
Maximum:			-0.16

B.7.48.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.05E-05	5.05E-05	0
2	2.85E-04	2.85E-04	0.01
5	5.47E-04	5.47E-04	0.01
10	4.07E-04	4.07E-04	0.01

20	2.04E-04	2.04E-04	0
50	2.55E-05	2.55E-05	-0.03
100	7.95E-07	7.96E-07	-0.07
200	7.77E-10	7.78E-10	-0.16
500	7.23E-19	N/A	N/A
1,000	6.42E-34	N/A	N/A
Maximum:			-0.16

B.7.48.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.61E-01	9.61E-01	0
2	8.99E-01	8.99E-01	0
5	7.30E-01	7.30E-01	0
10	5.16E-01	5.16E-01	-0.01
20	2.58E-01	2.58E-01	-0.02
50	3.23E-02	3.23E-02	-0.04
100	1.01E-03	1.01E-03	-0.09
200	9.85E-07	9.87E-07	-0.17
500	9.17E-16	N/A	N/A
1,000	8.15E-31	N/A	N/A
Maximum:			-0.17

B.7.49. Chromium – Injection of ⁵¹Cr

Maximum difference for **Urine**: -0.18%.

Maximum difference for **Feces**: -0.18%.

Maximum difference for **Whole Body**: **-0.17%**.

B.7.49.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.140E-01	1.140E-01	0.01
2	4.783E-02	4.783E-02	0.00
5	1.468E-02	1.468E-02	0.00
10	7.412E-03	7.413E-03	0.00
20	2.192E-03	2.192E-03	-0.02
50	2.320E-04	2.320E-04	-0.02
100	3.906E-05	3.908E-05	-0.03
200	1.400E-06	1.401E-06	-0.07
500	9.819E-11	9.836E-11	-0.18
1,000	1.202E-16	N/A	N/A
2,000	7.982E-28	N/A	N/A
Maximum:			-0.18

B.7.49.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.346E-02	2.346E-02	0.02
2	5.608E-02	5.608E-02	0.01
5	2.356E-02	2.356E-02	0.00
10	8.779E-03	8.779E-03	0.00

20	2.518E-03	2.518E-03	-0.02
50	2.393E-04	2.394E-04	-0.03
100	3.955E-05	3.957E-05	-0.03
200	1.417E-06	1.418E-06	-0.07
500	9.892E-11	9.909E-11	-0.18
1,000	1.204E-16	N/A	N/A
2,000	7.990E-28	N/A	N/A
Maximum:			-0.18

B.7.49.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.378E-01	8.378E-01	0.00
2	7.132E-01	7.132E-01	0.00
5	5.026E-01	5.026E-01	-0.01
10	3.383E-01	3.384E-01	-0.01
20	1.882E-01	1.882E-01	-0.02
50	6.128E-02	6.129E-02	-0.02
100	1.255E-02	1.255E-02	-0.04
200	5.926E-04	5.930E-04	-0.07
500	1.426E-07	1.429E-07	-0.17
1,000	3.401E-13	N/A	N/A
2,000	2.303E-24	N/A	N/A
Maximum:			-0.17

B.7.50. Cobalt – Inhalation of ⁶⁰Co (type “M”)

Maximum difference for **Urine**: **-0.31%**.

Maximum difference for **Feces**: **+0.38%**.

Maximum difference for **Whole Body**: **-0.01%**.

Maximum difference for **Lungs**: **-0.01%**.

B.7.50.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.965E-02	1.972E-02	-0.31
2	9.162E-03	9.188E-03	-0.29
5	1.687E-03	1.688E-03	-0.05
10	9.961E-04	9.966E-04	-0.05
20	4.721E-04	4.725E-04	-0.10
50	1.806E-04	1.809E-04	-0.15
100	1.093E-04	1.095E-04	-0.15
200	5.432E-05	5.440E-05	-0.15
500	1.123E-05	1.124E-05	-0.11
1,000	2.684E-06	2.685E-06	-0.02
2,000	6.960E-07	6.960E-07	0.00
5,000	1.753E-08	1.753E-08	0.00
10,000	3.803E-11	3.803E-11	0.00
20,000	1.789E-16	N/A	N/A
Maximum:			-0.31

B.7.50.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.007E-01	1.006E-01	0.00
2	1.402E-01	1.402E-01	0.02

5	1.234E-02	1.233E-02	0.06
10	7.025E-04	7.020E-04	0.06
20	4.110E-04	4.106E-04	0.08
50	1.745E-04	1.743E-04	0.13
100	6.241E-05	6.227E-05	0.23
200	1.859E-05	1.852E-05	0.38
500	3.001E-06	2.990E-06	0.36
1,000	4.955E-07	4.951E-07	0.08
2,000	1.162E-07	1.163E-07	-0.02
5,000	2.926E-09	2.927E-09	-0.03
10,000	6.346E-12	6.348E-12	-0.02
20,000	2.986E-17	N/A	N/A
Maximum:			0.38

B.7.50.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.851E-01	4.850E-01	0.01
2	2.569E-01	2.569E-01	0.01
5	9.071E-02	9.072E-02	-0.01
10	7.195E-02	7.196E-02	-0.01
20	6.009E-02	6.010E-02	-0.01
50	4.365E-02	4.366E-02	-0.01
100	3.085E-02	3.085E-02	-0.01
200	1.892E-02	1.892E-02	-0.01
500	7.446E-03	7.447E-03	-0.01

1,000	3.263E-03	3.263E-03	-0.01
2,000	9.360E-04	9.361E-04	-0.01
5,000	2.360E-05	2.360E-05	-0.01
10,000	5.119E-08	5.120E-08	-0.01
20,000	2.408E-13	N/A	N/A
Maximum:			-0.01

B.7.50.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.761E-02	5.761E-02	-0.01
2	5.590E-02	5.590E-02	-0.01

5	5.327E-02	5.327E-02	-0.01
10	4.948E-02	4.949E-02	-0.01
20	4.310E-02	4.310E-02	-0.01
50	3.037E-02	3.038E-02	-0.01
100	1.952E-02	1.952E-02	-0.01
200	9.823E-03	9.824E-03	-0.01
500	1.520E-03	1.520E-03	-0.01
1,000	7.093E-05	7.093E-05	-0.01
2,000	1.769E-07	1.769E-07	-0.01
5,000	7.710E-15	N/A	N/A
10,000	1.147E-26	N/A	N/A
Maximum:			-0.01

B.7.51. Cobalt – Inhalation of ⁶⁰Co (type “S”)

Maximum difference for **Urine**: -0.32%.

Maximum difference for **Feces**: +0.40%.

Maximum difference for **Whole Body**: +0.06%.

Maximum difference for **Lungs**: +0.02%.

B.7.51.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.657E-03	5.675E-03	-0.32
2	3.136E-03	3.145E-03	-0.29
5	5.021E-04	5.023E-04	-0.04
10	2.765E-04	2.765E-04	-0.02
20	1.113E-04	1.114E-04	-0.06
50	2.767E-05	2.769E-05	-0.09
100	1.449E-05	1.450E-05	-0.08
200	7.004E-06	7.011E-06	-0.11
500	3.236E-06	3.240E-06	-0.13
1,000	1.742E-06	1.744E-06	-0.12
2,000	5.653E-07	5.659E-07	-0.12
5,000	4.243E-08	4.249E-08	-0.14
10,000	2.397E-09	2.400E-09	-0.14
20,000	1.504E-11	1.506E-11	-0.11
Maximum:			-0.32

B.7.51.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.099E-01	1.099E-01	0.00
2	1.551E-01	1.551E-01	0.00
5	1.341E-02	1.341E-02	0.02
10	6.673E-04	6.674E-04	0.00
20	4.354E-04	4.354E-04	-0.01
50	2.175E-04	2.175E-04	0.00
100	8.563E-05	8.563E-05	0.00
200	3.039E-05	3.038E-05	0.01
500	1.557E-05	1.557E-05	0.01
1,000	7.628E-06	7.626E-06	0.02
2,000	1.890E-06	1.890E-06	0.03
5,000	5.533E-08	5.527E-08	0.11
10,000	1.939E-09	1.934E-09	0.22
20,000	7.114E-12	7.085E-12	0.40
Maximum:			0.40

B.7.51.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.898E-01	4.898E-01	0.00
2	2.528E-01	2.528E-01	0.00
5	8.007E-02	8.008E-02	-0.01
10	6.531E-02	6.531E-02	-0.01
20	5.837E-02	5.837E-02	-0.01
50	4.709E-02	4.710E-02	-0.01
100	3.850E-02	3.851E-02	-0.01
200	3.141E-02	3.141E-02	-0.01
500	2.114E-02	2.115E-02	-0.01
1,000	1.154E-02	1.154E-02	-0.01
2,000	3.911E-03	3.911E-03	-0.01
5,000	4.077E-04	4.077E-04	0.00
10,000	2.673E-05	2.672E-05	0.02
20,000	1.722E-07	1.721E-07	0.06
Maximum:			0.06

B.7.51.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.426E-02	6.426E-02	-0.01
2	6.265E-02	6.266E-02	-0.01
5	6.059E-02	6.060E-02	-0.01
10	5.768E-02	5.768E-02	-0.01
20	5.276E-02	5.277E-02	-0.01
50	4.307E-02	4.308E-02	-0.01
100	3.536E-02	3.537E-02	-0.01
200	2.905E-02	2.905E-02	-0.01
500	1.955E-02	1.955E-02	-0.01
1,000	1.057E-02	1.057E-02	-0.01
2,000	3.540E-03	3.541E-03	-0.01
5,000	3.737E-04	3.737E-04	0.00
10,000	2.429E-05	2.428E-05	0.02
Maximum:			0.02

B.7.52. Cobalt – Ingestion of ^{60}Co ($f_1 = 0.1$)

Maximum difference for **Urine**: -0.31%.

Maximum difference for **Feces**: +0.04%.

Maximum difference for **Whole Body**: +0.02%.

B.7.52.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.749E-02	2.757E-02	-0.31
2	1.435E-02	1.440E-02	-0.29
5	2.269E-03	2.269E-03	-0.02
10	1.210E-03	1.210E-03	0.00
20	4.360E-04	4.361E-04	-0.02
50	7.333E-05	7.334E-05	-0.01
100	3.722E-05	3.722E-05	0.00
200	1.512E-05	1.512E-05	-0.02
500	4.288E-06	4.288E-06	0.00
1,000	2.181E-06	2.181E-06	0.01
2,000	6.395E-07	6.395E-07	0.01
5,000	1.613E-08	1.613E-08	0.01
10,000	3.498E-11	3.498E-11	0.01
20,000	1.646E-16	N/A	N/A
Maximum:			-0.31

B.7.52.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.614E-01	2.614E-01	0.01
2	3.506E-01	3.505E-01	0.01
5	2.859E-02	2.858E-02	0.04
10	4.363E-04	4.361E-04	0.03
20	8.435E-05	8.437E-05	-0.02

50	1.274E-05	1.274E-05	-0.01
100	6.294E-06	6.295E-06	-0.01
200	2.548E-06	2.548E-06	-0.02
500	7.163E-07	7.164E-07	-0.02
1,000	3.640E-07	3.641E-07	-0.02
2,000	1.067E-07	1.067E-07	-0.02
5,000	2.692E-09	2.692E-09	-0.02
10,000	5.838E-12	5.839E-12	-0.02
20,000	2.747E-17	N/A	N/A
Maximum:			0.04

B.7.52.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.108E-01	7.107E-01	0.01
2	3.456E-01	3.455E-01	0.02
5	5.588E-02	5.588E-02	0.01
10	2.991E-02	2.991E-02	-0.01
20	2.118E-02	2.118E-02	-0.01
50	1.511E-02	1.511E-02	0.00
100	1.194E-02	1.194E-02	-0.01
200	8.769E-03	8.769E-03	0.00
500	5.447E-03	5.447E-03	0.00
1,000	2.936E-03	2.936E-03	0.00
2,000	8.609E-04	8.609E-04	0.00
5,000	2.171E-05	2.171E-05	0.00
10,000	4.710E-08	4.709E-08	0.00
Maximum:			0.02

B.7.53. Cobalt – Ingestion of ^{60}Co ($f_1 = 0.05$)

Maximum difference for **Urine**: -0.31%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: +0.01%.

B.7.53.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.363E-02	1.367E-02	-0.31
2	7.255E-03	7.276E-03	-0.29
5	1.137E-03	1.137E-03	-0.02
10	6.056E-04	6.056E-04	0.00
20	2.182E-04	2.182E-04	-0.02
50	3.667E-05	3.668E-05	-0.01
100	1.861E-05	1.861E-05	0.00
200	7.560E-06	7.561E-06	-0.01
500	2.144E-06	2.144E-06	0.00
1,000	1.091E-06	1.091E-06	0.01
2,000	3.198E-07	3.197E-07	0.01
5,000	8.065E-09	8.064E-09	0.01
10,000	1.749E-11	1.749E-11	0.01
20,000	8.229E-17	N/A	N/A
Maximum:			-0.31

B.7.53.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.720E-01	2.720E-01	0.00
2	3.697E-01	3.696E-01	0.01
5	2.996E-02	2.995E-02	0.02
10	3.276E-04	3.275E-04	0.02
20	4.222E-05	4.222E-05	-0.02
50	6.370E-06	6.370E-06	-0.01
100	3.147E-06	3.148E-06	0.00
200	1.274E-06	1.274E-06	-0.02
500	3.581E-07	3.582E-07	-0.02
1,000	1.820E-07	1.821E-07	-0.02
2,000	5.336E-08	5.337E-08	-0.02
5,000	1.346E-09	1.346E-09	-0.02
10,000	2.919E-12	2.920E-12	-0.02
20,000	1.373E-17	N/A	N/A
Maximum:			-0.02

B.7.53.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.140E-01	7.140E-01	0.00
2	3.369E-01	3.368E-01	0.01
5	3.730E-02	3.730E-02	0.01
10	1.502E-02	1.503E-02	-0.01
20	1.059E-02	1.059E-02	-0.01
50	7.556E-03	7.556E-03	-0.01

100	5.968E-03	5.969E-03	-0.01
200	4.384E-03	4.385E-03	-0.01
500	2.724E-03	2.724E-03	0.00
1,000	1.468E-03	1.468E-03	0.00
2,000	4.305E-04	4.305E-04	0.00
5,000	1.086E-05	1.086E-05	0.00
10,000	2.355E-08	2.355E-08	0.00
Maximum:			0.01

B.7.54. Cobalt – Injection of ⁶⁰Co

Maximum difference for **Urine**: +0.05%.

Maximum difference for **Feces**: +0.05%.

Maximum difference for **Whole Body**: +0.05%.

B.7.54.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.192E-01	3.192E-01	0.00
2	1.142E-01	1.143E-01	-0.01
5	2.179E-02	2.179E-02	0.01
10	1.185E-02	1.185E-02	0.01
20	4.281E-03	4.281E-03	0.01
50	7.297E-04	7.296E-04	0.01
100	3.715E-04	3.715E-04	0.01
200	1.510E-04	1.510E-04	0.01
500	4.287E-05	4.286E-05	0.01
1,000	2.181E-05	2.181E-05	0.02
2,000	6.394E-06	6.393E-06	0.02
5,000	1.613E-07	1.612E-07	0.03
10,000	3.498E-10	3.496E-10	0.05
20,000	1.646E-15	N/A	N/A
Maximum:			0.05

50	1.267E-04	1.267E-04	0.01
100	6.282E-05	6.282E-05	0.01
200	2.544E-05	2.544E-05	0.01
500	7.160E-06	7.160E-06	0.01
1,000	3.640E-06	3.639E-06	0.01
2,000	1.067E-06	1.067E-06	0.02
5,000	2.691E-08	2.690E-08	0.03
10,000	5.837E-11	5.834E-11	0.05
20,000	2.746E-16	N/A	N/A
Maximum:			0.05

B.7.54.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.693E-01	6.693E-01	0.00
2	5.288E-01	5.287E-01	0.01
5	3.884E-01	3.884E-01	0.01
10	2.953E-01	2.953E-01	0.01
20	2.109E-01	2.108E-01	0.01
50	1.509E-01	1.509E-01	0.01
100	1.193E-01	1.193E-01	0.01
200	8.765E-02	8.764E-02	0.01
500	5.446E-02	5.446E-02	0.01
1,000	2.935E-02	2.935E-02	0.01
2,000	8.608E-03	8.606E-03	0.02
5,000	2.171E-04	2.170E-04	0.03
10,000	4.709E-07	4.706E-07	0.05
Maximum:			0.05

B.7.54.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.116E-02	1.116E-02	0.00
2	2.610E-02	2.610E-02	-0.01
5	8.133E-03	8.133E-03	-0.01
10	2.374E-03	2.373E-03	0.01
20	8.278E-04	8.277E-04	0.01

B.7.55. Curium – Inhalation of ²⁴²Cm (type “M”)

Maximum difference for **Urine**: +0.15%.

Maximum difference for **Feces**: +0.09%.

Maximum difference for **Whole Body**: +0.18%.

Maximum difference for **Lungs**: +0.05%.

B.7.55.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.767E-03	1.767E-03	-0.01
2	2.299E-04	2.300E-04	-0.01
5	7.025E-05	7.025E-05	0.00
10	4.657E-05	4.658E-05	-0.01
20	3.047E-05	3.048E-05	-0.01
50	1.645E-05	1.645E-05	0.00
100	9.753E-06	9.754E-06	-0.02
200	4.406E-06	4.405E-06	0.01
500	6.776E-07	6.777E-07	0.00
1,000	5.386E-08	5.383E-08	0.05
2,000	4.905E-10	4.898E-10	0.15
5,000	7.026E-16	N/A	N/A
10,000	2.422E-25	N/A	N/A
20,000	5.045E-44	N/A	N/A
Maximum:			0.15

B.7.55.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.079E-01	1.079E-01	-0.01
2	1.535E-01	1.535E-01	-0.01
5	1.302E-02	1.302E-02	0.00
10	5.506E-04	5.507E-04	-0.01
20	3.373E-04	3.373E-04	-0.01
50	1.345E-04	1.345E-04	-0.01
100	3.519E-05	3.519E-05	-0.01
200	5.960E-06	5.961E-06	-0.01
500	4.082E-07	4.081E-07	0.02
1,000	2.045E-08	2.044E-08	0.06
2,000	1.643E-10	1.642E-10	0.09
5,000	2.121E-16	N/A	N/A
10,000	7.092E-26	N/A	N/A
20,000	1.401E-44	N/A	N/A
Maximum:			0.09

B.7.55.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.933E-01	4.933E-01	-0.01
2	2.596E-01	2.595E-01	0.02
5	8.952E-02	8.952E-02	0.00
10	7.539E-02	7.549E-02	-0.13
20	6.803E-02	6.809E-02	-0.08
50	5.331E-02	5.328E-02	0.05
100	3.940E-02	3.936E-02	0.12
200	2.407E-02	2.404E-02	0.12
500	6.193E-03	6.197E-03	-0.08
1,000	6.893E-04	6.901E-04	-0.12
2,000	8.963E-06	8.946E-06	0.18
5,000	2.159E-11	N/A	N/A
10,000	1.030E-20	N/A	N/A
20,000	2.543E-39	N/A	N/A
Maximum:			0.18

B.7.55.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.738E-02	5.739E-02	-0.01
2	5.546E-02	5.547E-02	-0.01
5	5.224E-02	5.225E-02	-0.01
10	4.759E-02	4.759E-02	-0.01
20	3.987E-02	3.987E-02	-0.01
50	2.499E-02	2.500E-02	-0.01
100	1.322E-02	1.322E-02	-0.01
200	4.505E-03	4.506E-03	-0.01
500	2.165E-04	2.165E-04	0.01
1,000	1.439E-06	1.439E-06	0.02
2,000	7.285E-11	7.281E-11	0.05
5,000	2.654E-23	N/A	N/A
10,000	1.359E-43	N/A	N/A
Maximum:			0.05

B.7.56. Curium – Ingestion of ²⁴²Cm (f₁ = 0.0005)Maximum difference for **Urine**: +0.16%.Maximum difference for **Feces**: +0.14%.Maximum difference for **Whole Body**: -0.29%.**B.7.56.1. Urinary Excretion Rate**

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.951E-05	2.951E-05	0.00
2	4.549E-06	4.549E-06	0.00
5	9.261E-07	9.260E-07	0.01
10	4.708E-07	4.708E-07	0.00
20	2.115E-07	2.115E-07	-0.01
50	6.216E-08	6.213E-08	0.04
100	3.804E-08	3.805E-08	-0.03
200	2.051E-08	2.050E-08	0.06
500	4.537E-09	4.538E-09	-0.02
1,000	4.127E-10	4.124E-10	0.08

2,000	3.855E-12	3.849E-12	0.16
5,000	5.632E-18	N/A	N/A
10,000	1.955E-27	N/A	N/A
Maximum:			0.16

B.7.56.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.811E-01	2.811E-01	0.00
2	3.856E-01	3.856E-01	0.00
5	3.074E-02	3.074E-02	0.00
10	2.104E-04	2.104E-04	0.00
20	3.092E-08	3.087E-08	0.14
50	1.784E-08	1.783E-08	0.03

100	1.320E-08	1.320E-08	-0.06
200	7.681E-09	7.681E-09	0.00
500	1.709E-09	1.709E-09	0.04
1,000	1.485E-10	1.484E-10	0.07
2,000	1.283E-12	1.282E-12	0.10
5,000	1.698E-18	N/A	N/A
10,000	5.723E-28	N/A	N/A
Maximum:			0.14

B.7.56.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.147E-01	7.147E-01	0.00
2	3.260E-01	3.260E-01	0.00

5	1.879E-02	1.878E-02	0.00
10	5.536E-04	5.552E-04	-0.29
20	4.107E-04	4.115E-04	-0.18
50	3.593E-04	3.587E-04	0.17
100	2.877E-04	2.871E-04	0.23
200	1.848E-04	1.845E-04	0.15
500	4.929E-05	4.935E-05	-0.12
1,000	5.542E-06	5.548E-06	-0.10
2,000	7.232E-08	7.216E-08	0.21
5,000	1.746E-13	N/A	N/A
10,000	8.341E-23	N/A	N/A
Maximum:			-0.29

B.7.57. Curium – Injection of ²⁴²Cm

Maximum difference for **Urine**: +0.16%.

Maximum difference for **Feces**: -0.41%.

Maximum difference for **Whole Body**: -0.37%.

B.7.57.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.194E-02	6.194E-02	0.00
2	7.401E-03	7.401E-03	0.00
5	1.752E-03	1.752E-03	0.01
10	9.248E-04	9.248E-04	0.00
20	4.171E-04	4.172E-04	-0.01
50	1.240E-04	1.239E-04	0.05
100	7.603E-05	7.605E-05	-0.03
200	4.101E-05	4.098E-05	0.06
500	9.073E-06	9.075E-06	-0.01
1,000	8.254E-07	8.247E-07	0.08
2,000	7.710E-09	7.697E-09	0.16
5,000	1.126E-14	N/A	N/A
10,000	3.910E-24	N/A	N/A
20,000	8.100E-43	N/A	N/A
Maximum:			0.16

B.7.57.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.722E-03	3.717E-03	0.11
2	4.401E-03	4.389E-03	0.28
5	6.205E-04	6.226E-04	-0.33
10	5.437E-05	5.460E-05	-0.41
20	4.349E-05	4.342E-05	0.17

50	3.565E-05	3.565E-05	0.00
100	2.639E-05	2.641E-05	-0.09
200	1.536E-05	1.536E-05	-0.04
500	3.418E-06	3.418E-06	0.02
1,000	2.970E-07	2.969E-07	0.04
2,000	2.566E-09	2.564E-09	0.07
5,000	3.395E-15	N/A	N/A
10,000	1.145E-24	N/A	N/A
20,000	2.354E-43	N/A	N/A
Maximum:			-0.41

B.7.57.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.288E-01	9.301E-01	-0.14
2	9.168E-01	9.143E-01	0.27
5	8.905E-01	8.903E-01	0.02
10	8.620E-01	8.652E-01	-0.37
20	8.214E-01	8.228E-01	-0.18
50	7.185E-01	7.173E-01	0.17
100	5.755E-01	5.742E-01	0.23
200	3.695E-01	3.690E-01	0.15
500	9.858E-02	9.870E-02	-0.12
1,000	1.109E-02	1.110E-02	-0.10
2,000	1.446E-04	1.443E-04	0.21
5,000	3.492E-10	N/A	N/A
10,000	1.668E-19	N/A	N/A
Maximum:			-0.37

B.7.58. Curium – Inhalation of ²⁴⁴Cm (type “M”)

Maximum difference for **Urine**: -0.01%.

Maximum difference for **Feces**: +0.10%.

Maximum difference for **Whole Body**: +0.30%.

Maximum difference for **Lungs**: -0.01%

B.7.58.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.774E-03	1.774E-03	-0.01
2	2.319E-04	2.319E-04	-0.01
5	7.173E-05	7.173E-05	0.00
10	4.855E-05	4.855E-05	-0.01
20	3.311E-05	3.312E-05	-0.02
50	2.024E-05	2.024E-05	0.00
100	1.477E-05	1.478E-05	-0.02
200	1.011E-05	1.011E-05	0.00
500	5.405E-06	5.406E-06	-0.02
1,000	3.426E-06	3.425E-06	0.02
2,000	1.985E-06	1.983E-06	0.10
5,000	7.318E-07	7.315E-07	0.05
10,000	2.628E-07	2.625E-07	0.09
20,000	5.892E-08	5.892E-08	-0.01
Maximum:	1.774E-03	1.774E-03	-0.01

B.7.58.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.084E-01	1.084E-01	-0.01
2	1.547E-01	1.547E-01	-0.01
5	1.329E-02	1.329E-02	0.00
10	5.739E-04	5.740E-04	-0.01
20	3.665E-04	3.665E-04	-0.01
50	1.655E-04	1.655E-04	-0.01
100	5.330E-05	5.331E-05	-0.01
200	1.368E-05	1.368E-05	-0.01
500	3.256E-06	3.255E-06	0.01
1,000	1.301E-06	1.301E-06	0.03
2,000	6.650E-07	6.648E-07	0.03
5,000	2.209E-07	2.207E-07	0.10
10,000	7.694E-08	7.693E-08	0.02
20,000	1.710E-08	1.708E-08	0.10
Maximum:			0.10

B.7.58.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.953E-01	4.954E-01	-0.01
2	2.617E-01	2.617E-01	0.02
5	9.140E-02	9.140E-02	0.00
10	7.858E-02	7.869E-02	-0.13
20	7.392E-02	7.398E-02	-0.08
50	6.562E-02	6.558E-02	0.05
100	5.969E-02	5.962E-02	0.11
200	5.523E-02	5.517E-02	0.11
500	4.939E-02	4.944E-02	-0.09
1,000	4.385E-02	4.391E-02	-0.15
2,000	3.627E-02	3.622E-02	0.12
5,000	2.248E-02	2.251E-02	-0.11
10,000	1.117E-02	1.118E-02	-0.08
20,000	2.993E-03	2.985E-03	0.30
Maximum:			0.30

B.7.58.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.762E-02	5.763E-02	-0.01
2	5.593E-02	5.593E-02	-0.01
5	5.334E-02	5.334E-02	-0.01
10	4.961E-02	4.961E-02	-0.01
20	4.332E-02	4.332E-02	-0.01
50	3.076E-02	3.077E-02	-0.01
100	2.002E-02	2.002E-02	-0.01
200	1.034E-02	1.034E-02	-0.01
500	1.727E-03	1.727E-03	-0.01
1,000	9.157E-05	9.157E-05	-0.01
2,000	2.948E-07	2.948E-07	-0.01
5,000	2.765E-14	N/A	N/A
10,000	1.475E-25	N/A	N/A
Maximum:			-0.01

B.7.59. Curium – Ingestion of ²⁴⁴Cm (f₁ = 0.0005)

Maximum difference for **Urine**: +0.10%.

Maximum difference for **Feces**: +0.13%.

Maximum difference for **Whole Body**: -0.29%.

B.7.59.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.964E-05	2.964E-05	0.00
2	4.587E-06	4.587E-06	0.00
5	9.455E-07	9.454E-07	0.01
10	4.908E-07	4.907E-07	0.00
20	2.298E-07	2.298E-07	-0.01
50	7.650E-08	7.647E-08	0.04
100	5.762E-08	5.764E-08	-0.03
200	4.706E-08	4.703E-08	0.05

500	3.619E-08	3.620E-08	-0.03
1,000	2.625E-08	2.624E-08	0.05
2,000	1.560E-08	1.558E-08	0.10
5,000	5.866E-09	5.862E-09	0.06
10,000	2.121E-09	2.119E-09	0.10
20,000	4.770E-10	4.769E-10	0.01
Maximum:			0.10

B.7.59.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.822E-01	2.822E-01	0.00

2	3.888E-01	3.888E-01	0.00
5	3.138E-02	3.138E-02	0.00
10	2.193E-04	2.193E-04	0.00
20	3.359E-08	3.355E-08	0.13
50	2.195E-08	2.194E-08	0.03
100	1.999E-08	2.000E-08	-0.06
200	1.762E-08	1.763E-08	-0.01
500	1.363E-08	1.363E-08	0.03
1,000	9.449E-09	9.445E-09	0.04
2,000	5.192E-09	5.190E-09	0.04
5,000	1.768E-09	1.766E-09	0.11
10,000	6.208E-10	6.207E-10	0.02
20,000	1.384E-10	1.382E-10	0.11
Maximum:			0.13

B.7.59.3. Whole Body Retention

TIME	IMBA	PLEIADES	Difference
------	------	----------	------------

(d)			(%)
1	7.176E-01	7.176E-01	0.00
2	3.288E-01	3.287E-01	0.00
5	1.918E-02	1.918E-02	0.00
10	5.771E-04	5.787E-04	-0.29
20	4.463E-04	4.471E-04	-0.18
50	4.422E-04	4.414E-04	0.17
100	4.359E-04	4.349E-04	0.22
200	4.240E-04	4.234E-04	0.14
500	3.931E-04	3.937E-04	-0.14
1,000	3.526E-04	3.530E-04	-0.14
2,000	2.926E-04	2.922E-04	0.15
5,000	1.819E-04	1.820E-04	-0.11
10,000	9.049E-05	9.054E-05	-0.06
Maximum:			-0.29

B.7.60. Curium – Injection of ²⁴⁴Cm

Maximum difference for **Urine**: +0.10%.

Maximum difference for **Feces**: -0.41%.

Maximum difference for **Whole Body**: -0.37%.

B.7.60.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.220E-02	6.220E-02	0.00
2	7.463E-03	7.463E-03	0.00
5	1.789E-03	1.788E-03	0.01
10	9.640E-04	9.640E-04	0.00
20	4.533E-04	4.533E-04	-0.01
50	1.526E-04	1.525E-04	0.04
100	1.152E-04	1.152E-04	-0.03
200	9.409E-05	9.404E-05	0.05
500	7.237E-05	7.239E-05	-0.03
1,000	5.250E-05	5.247E-05	0.05
2,000	3.120E-05	3.117E-05	0.10
5,000	1.173E-05	1.172E-05	0.07
10,000	4.242E-06	4.237E-06	0.10
20,000	9.539E-07	9.538E-07	0.01
Maximum:			0.10

B.7.60.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.737E-03	3.733E-03	0.11
2	4.438E-03	4.425E-03	0.28
5	6.336E-04	6.356E-04	-0.33
10	5.668E-05	5.691E-05	-0.41
20	4.726E-05	4.718E-05	0.17

50	4.388E-05	4.388E-05	0.00
100	3.997E-05	4.000E-05	-0.09
200	3.524E-05	3.526E-05	-0.04
500	2.726E-05	2.726E-05	0.00
1,000	1.890E-05	1.889E-05	0.01
2,000	1.038E-05	1.038E-05	0.01
5,000	3.536E-06	3.533E-06	0.09
10,000	1.242E-06	1.242E-06	0.00
20,000	2.768E-07	2.765E-07	0.09
Maximum:			-0.41

B.7.60.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.327E-01	9.340E-01	-0.14
2	9.244E-01	9.220E-01	0.27
5	9.092E-01	9.090E-01	0.02
10	8.986E-01	9.019E-01	-0.37
20	8.925E-01	8.941E-01	-0.18
50	8.843E-01	8.828E-01	0.17
100	8.717E-01	8.698E-01	0.22
200	8.479E-01	8.467E-01	0.14
500	7.863E-01	7.873E-01	-0.14
1,000	7.051E-01	7.061E-01	-0.13
2,000	5.852E-01	5.844E-01	0.15
5,000	3.637E-01	3.641E-01	-0.11
10,000	1.810E-01	1.811E-01	-0.06
Maximum:			-0.37

B.7.61. Europium – Injection of ¹⁵²Eu

Maximum difference for **Urine**: +0.04%.

Maximum difference for **Feces**: +0.04%.

Maximum difference for **Whole Body**: **+0.02%**.

B.7.61.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.554E-02	6.554E-02	0.00
2	7.284E-03	7.282E-03	0.02
5	1.650E-03	1.650E-03	-0.01
10	1.188E-03	1.188E-03	0.00
20	6.324E-04	6.324E-04	0.00
50	1.468E-04	1.468E-04	0.01
100	7.872E-05	7.872E-05	0.00
200	7.402E-05	7.402E-05	0.00
500	6.683E-05	6.683E-05	0.00
1,000	5.637E-05	5.636E-05	0.00
2,000	4.010E-05	4.010E-05	0.00
5,000	1.444E-05	1.444E-05	0.01
10,000	2.631E-06	2.630E-06	0.02
20,000	8.734E-08	8.730E-08	0.04
Maximum:			0.04

B.7.61.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.619E-02	1.619E-02	-0.01
2	2.804E-02	2.804E-02	0.00
5	4.427E-03	4.427E-03	0.00
10	1.330E-03	1.330E-03	-0.01
20	6.939E-04	6.939E-04	0.00

50	1.545E-04	1.545E-04	0.01
100	7.898E-05	7.898E-05	0.00
200	7.404E-05	7.404E-05	0.00
500	6.685E-05	6.685E-05	0.00
1,000	5.638E-05	5.638E-05	0.00
2,000	4.011E-05	4.011E-05	0.00
5,000	1.444E-05	1.444E-05	0.01
10,000	2.631E-06	2.631E-06	0.02
20,000	8.736E-08	8.732E-08	0.04
Maximum:			0.04

B.7.61.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.181E-01	9.181E-01	0.00
2	8.827E-01	8.827E-01	0.00
5	8.466E-01	8.466E-01	0.00
10	8.301E-01	8.301E-01	0.00
20	8.110E-01	8.110E-01	0.00
50	7.887E-01	7.887E-01	0.00
100	7.735E-01	7.735E-01	0.00
200	7.475E-01	7.475E-01	0.00
500	6.749E-01	6.749E-01	0.00
1,000	5.693E-01	5.692E-01	0.00
2,000	4.050E-01	4.050E-01	0.00
5,000	1.458E-01	1.458E-01	0.01
10,000	2.657E-02	2.656E-02	0.02
Maximum:			0.02

B.7.62. Hafnium – Injection of ¹⁸¹Hf

Maximum difference for **Urine**: **+0.21%**.

Maximum difference for **Feces**: **+0.24%**.

Maximum difference for **Whole Body**: **+0.22%**.

B.7.62.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.377E-02	1.377E-02	-0.01
2	2.094E-02	2.094E-02	0.00
5	1.530E-02	1.530E-02	0.00
10	8.603E-03	8.602E-03	0.00
20	2.724E-03	2.724E-03	0.01
50	9.455E-05	9.454E-05	0.01
100	4.453E-06	4.452E-06	0.02
200	8.095E-07	8.091E-07	0.05
500	5.848E-09	5.841E-09	0.11
1,000	1.579E-12	1.575E-12	0.21
2,000	1.151E-19	N/A	N/A
5,000	4.454E-41	N/A	N/A
Maximum:			0.21

B.7.62.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.780E-03	1.780E-03	-0.01
2	9.788E-03	9.788E-03	0.00
5	1.682E-02	1.682E-02	0.00
10	1.001E-02	1.001E-02	0.00
20	3.170E-03	3.170E-03	0.00
50	1.086E-04	1.086E-04	0.01
100	4.498E-06	4.497E-06	0.03
200	8.096E-07	8.092E-07	0.05
500	5.849E-09	5.842E-09	0.11
1,000	1.579E-12	1.575E-12	0.24
2,000	1.151E-19	N/A	N/A
5,000	4.454E-41	N/A	N/A
Maximum:			0.24

B.7.62.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.682E-01	9.682E-01	0.00

2	9.218E-01	9.218E-01	0.00
5	7.779E-01	7.779E-01	0.00
10	6.028E-01	6.028E-01	0.00
20	4.163E-01	4.163E-01	0.00
50	2.216E-01	2.216E-01	0.01
100	9.667E-02	9.665E-02	0.02
200	1.869E-02	1.868E-02	0.04

500	1.350E-04	1.348E-04	0.11
1,000	3.644E-08	3.636E-08	0.22
2,000	2.656E-15	N/A	N/A
5,000	1.028E-36	N/A	N/A
Maximum:			0.22

B.7.63. Hydrogen – Injection of ^3H (Inorganic – HTO)

Maximum difference for **Whole Body**: **+0.02%**.

B.7.63.1. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.562E-01	9.562E-01	0.00
2	8.949E-01	8.949E-01	0.00
5	7.306E-01	7.306E-01	0.00
10	5.220E-01	5.220E-01	0.00
20	2.692E-01	2.692E-01	0.00
50	4.345E-02	4.345E-02	0.00
100	6.212E-03	6.212E-03	0.00
200	9.158E-04	9.157E-04	0.01
500	4.826E-06	4.825E-06	0.02
1,000	7.715E-10	N/A	N/A
2,000	1.972E-17	N/A	N/A
5,000	3.290E-40	N/A	N/A
Maximum:			0.02

B.7.64. Hydrogen – Ingestion of ^3H (Organic) ($f_1 = 0.99$)

Maximum difference for **Urine**: **+0.03%**.

Maximum difference for **Whole Body**: **+0.03%**.

Maximum:	0.03
-----------------	-------------

B.7.64.1. Urinary Excretion Rate

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.319E-02	1.319E-02	-0.01
2	2.257E-02	2.257E-02	0.00
5	2.012E-02	2.012E-02	0.00
10	1.589E-02	1.589E-02	0.00
20	1.043E-02	1.043E-02	0.00
50	4.173E-03	4.173E-03	0.00
100	1.536E-03	1.535E-03	0.00
200	2.645E-04	2.644E-04	0.01
500	1.395E-06	1.395E-06	0.01
1,000	2.230E-10	2.229E-10	0.03
2,000	5.699E-18	N/A	N/A
5,000	9.510E-41	N/A	N/A

B.7.64.2. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.720E-01	9.720E-01	0.00
2	9.292E-01	9.292E-01	0.00
5	8.184E-01	8.184E-01	0.00
10	6.741E-01	6.740E-01	0.00
20	4.792E-01	4.792E-01	0.00
50	2.241E-01	2.241E-01	0.00
100	8.739E-02	8.739E-02	0.00
200	1.513E-02	1.513E-02	0.01
500	7.980E-05	7.979E-05	0.02
1,000	1.276E-08	1.275E-08	0.03
2,000	3.260E-16	N/A	N/A
5,000	5.441E-39	N/A	N/A
Maximum:			0.03

B.7.65. Hydrogen – Injection of ^3H (Organic)

Maximum difference for **Urine**: **+0.04%**.

Maximum difference for **Whole Body**: **+0.03%**.

B.7.65.1. Urinary Excretion Rate

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.427E-02	1.427E-02	-0.01
2	2.285E-02	2.285E-02	0.00
5	2.028E-02	2.028E-02	0.00
10	1.602E-02	1.602E-02	0.00
20	1.052E-02	1.051E-02	0.00
50	4.211E-03	4.210E-03	0.00
100	1.550E-03	1.550E-03	0.00
200	2.669E-04	2.669E-04	0.01
500	1.408E-06	1.408E-06	0.02
1,000	2.251E-10	2.250E-10	0.04
2,000	5.752E-18	N/A	N/A
5,000	9.599E-41	N/A	N/A
Maximum:			0.04

B.7.65.2. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.737E-01	9.737E-01	0.00
2	9.340E-01	9.340E-01	0.00
5	8.250E-01	8.250E-01	0.00
10	6.798E-01	6.798E-01	0.00
20	4.834E-01	4.834E-01	0.00
50	2.262E-01	2.262E-01	0.00
100	8.821E-02	8.821E-02	0.00
200	1.527E-02	1.527E-02	0.01
500	8.055E-05	8.053E-05	0.02
1,000	1.288E-08	1.287E-08	0.03
2,000	3.291E-16	N/A	N/A
5,000	5.491E-39	N/A	N/A
Maximum:			0.03

B.7.66. Iodine – Inhalation of ¹²⁵I (type “F”)

Maximum difference for **Urine**: **+0.20%**.

Maximum difference for **Feces**: **+0.29%**.

Maximum difference for **Whole Body**: **+0.20%**.

Maximum difference for **Thyroid**: **+0.20%**.

B.7.66.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.026E-01	3.026E-01	-0.01
2	2.683E-02	2.682E-02	0.03
5	1.297E-04	1.297E-04	0.01
10	2.352E-04	2.352E-04	0.00
20	3.347E-04	3.347E-04	0.00
50	2.866E-04	2.866E-04	0.02
100	1.260E-04	1.260E-04	0.04
200	2.125E-05	2.124E-05	0.08
500	1.004E-07	1.002E-07	0.20
1,000	1.336E-11	N/A	N/A
2,000	2.366E-19	N/A	N/A
5,000	1.313E-42	N/A	N/A
Maximum:			0.20

B.7.66.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.051E-04	7.051E-04	0.00
2	7.088E-04	7.088E-04	0.00
5	8.200E-05	8.199E-05	0.01
10	7.565E-05	7.580E-05	-0.19
20	1.157E-04	1.159E-04	-0.16
50	1.026E-04	1.025E-04	0.01
100	4.534E-05	4.529E-05	0.12
200	7.649E-06	7.636E-06	0.17
500	3.614E-08	3.604E-08	0.29
1,000	4.809E-12	N/A	N/A

2,000	8.513E-20	N/A	N/A
5,000	4.722E-43	N/A	N/A
Maximum:			0.29

B.7.66.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.954E-01	2.954E-01	0.01
2	1.875E-01	1.875E-01	0.00
5	1.375E-01	1.375E-01	0.00
10	1.265E-01	1.265E-01	0.00
20	1.089E-01	1.089E-01	0.01
50	6.576E-02	6.575E-02	0.01
100	2.713E-02	2.712E-02	0.03
200	4.555E-03	4.551E-03	0.08
500	2.152E-05	2.148E-05	0.20
1,000	2.864E-09	N/A	N/A
2,000	5.070E-17	N/A	N/A
5,000	2.813E-40	N/A	N/A
Maximum:			0.20

B.7.66.4. Thyroid Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.318E-01	1.318E-01	-0.01
2	1.379E-01	1.379E-01	0.00
5	1.305E-01	1.305E-01	0.00
10	1.184E-01	1.184E-01	0.00
20	9.791E-02	9.791E-02	0.00
50	5.659E-02	5.658E-02	0.02
100	2.311E-02	2.310E-02	0.03

200	3.877E-03	3.874E-03	0.08
500	1.832E-05	1.828E-05	0.20
1,000	2.438E-09	N/A	N/A
2,000	4.316E-17	N/A	N/A

5,000	2.395E-40	N/A	N/A
Maximum:			0.20

B.7.67. Iodine – Ingestion of ¹²⁵I (f₁ = 0.99)

Maximum difference for **Urine**: +0.20%.

Maximum difference for **Feces**: +0.30%.

Maximum difference for **Whole Body**: +0.20%.

Maximum difference for **Thyroid**: +0.20%.

B.7.67.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.218E-01	6.218E-01	0.00
2	5.867E-02	5.865E-02	0.03
5	2.677E-04	2.676E-04	0.01
10	4.853E-04	4.852E-04	0.01
20	6.913E-04	6.912E-04	0.01
50	5.923E-04	5.922E-04	0.02
100	2.605E-04	2.603E-04	0.04
200	4.392E-05	4.388E-05	0.08
500	2.075E-07	2.071E-07	0.20
1,000	2.762E-11	N/A	N/A
2,000	4.889E-19	N/A	N/A
5,000	2.713E-42	N/A	N/A
Maximum:			0.20

B.7.67.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.548E-03	3.548E-03	0.00
2	3.524E-03	3.523E-03	0.00
5	3.146E-04	3.146E-04	0.01
10	1.570E-04	1.573E-04	-0.18
20	2.390E-04	2.393E-04	-0.15
50	2.119E-04	2.119E-04	0.02
100	9.371E-05	9.359E-05	0.13
200	1.581E-05	1.578E-05	0.18
500	7.470E-08	7.448E-08	0.30
1,000	9.939E-12	N/A	N/A
2,000	1.759E-19	N/A	N/A
5,000	9.767E-43	N/A	N/A
Maximum:			0.30

B.7.67.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.632E-01	3.631E-01	0.01
2	2.968E-01	2.968E-01	0.00
5	2.798E-01	2.797E-01	0.00
10	2.614E-01	2.614E-01	0.01
20	2.250E-01	2.250E-01	0.01
50	1.359E-01	1.359E-01	0.02
100	5.607E-02	5.605E-02	0.04
200	9.414E-03	9.406E-03	0.08
500	4.448E-05	4.439E-05	0.20
1,000	5.919E-09	N/A	N/A
2,000	1.048E-16	N/A	N/A
5,000	5.815E-40	N/A	N/A
Maximum:			0.20

B.7.67.4. Thyroid Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.712E-01	2.712E-01	0.00
2	2.850E-01	2.850E-01	0.00
5	2.697E-01	2.697E-01	0.00
10	2.446E-01	2.446E-01	0.00
20	2.024E-01	2.023E-01	0.01
50	1.170E-01	1.169E-01	0.02
100	4.776E-02	4.774E-02	0.04
200	8.013E-03	8.007E-03	0.08
500	3.786E-05	3.779E-05	0.20
1,000	5.038E-09	N/A	N/A
2,000	8.920E-17	N/A	N/A
5,000	4.949E-40	N/A	N/A
Maximum:			0.20

B.7.68. Iodine – Injection of ¹²⁵I

Maximum difference for **Urine**: +0.21%.

Maximum difference for **Feces**: +0.30%.

Maximum difference for **Whole Body**: +0.20%.

Maximum difference for **Thyroid**: +0.20%.

B.7.68.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.357E-01	6.358E-01	0.00
2	5.218E-02	5.216E-02	0.03
5	2.714E-04	2.714E-04	0.01
10	4.919E-04	4.919E-04	0.01
20	6.990E-04	6.989E-04	0.01
50	5.983E-04	5.981E-04	0.02
100	2.630E-04	2.629E-04	0.04
200	4.435E-05	4.432E-05	0.08
500	2.096E-07	2.092E-07	0.21
1,000	2.789E-11	N/A	N/A
2,000	4.937E-19	N/A	N/A
5,000	2.740E-42	N/A	N/A
Maximum:			0.21

B.7.68.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.197E-07	5.195E-07	0.03
2	7.381E-06	7.369E-06	0.16
5	6.722E-05	6.720E-05	0.03
10	1.576E-04	1.579E-04	-0.19
20	2.417E-04	2.421E-04	-0.15
50	2.141E-04	2.140E-04	0.02
100	9.463E-05	9.451E-05	0.13
200	1.596E-05	1.594E-05	0.18
500	7.544E-08	7.521E-08	0.30
1,000	1.004E-11	N/A	N/A
2,000	1.777E-19	N/A	N/A
5,000	9.851E-43	N/A	N/A
Maximum:			0.30

B.7.68.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.528E-01	3.528E-01	0.01
2	2.966E-01	2.966E-01	0.00
5	2.824E-01	2.824E-01	0.00
10	2.640E-01	2.640E-01	0.01
20	2.272E-01	2.272E-01	0.01
50	1.372E-01	1.372E-01	0.02
100	5.662E-02	5.660E-02	0.04
200	9.506E-03	9.498E-03	0.08
500	4.492E-05	4.483E-05	0.20
1,000	5.977E-09	N/A	N/A
2,000	1.058E-16	N/A	N/A
5,000	5.872E-40	N/A	N/A
Maximum:			0.20

B.7.68.4. Thyroid Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.763E-01	2.763E-01	0.00
2	2.879E-01	2.879E-01	0.00
5	2.723E-01	2.723E-01	0.00
10	2.470E-01	2.470E-01	0.01
20	2.043E-01	2.043E-01	0.01
50	1.181E-01	1.181E-01	0.02
100	4.823E-02	4.821E-02	0.04
200	8.092E-03	8.085E-03	0.08
500	3.824E-05	3.816E-05	0.20
1,000	5.088E-09	N/A	N/A
2,000	9.007E-17	N/A	N/A
5,000	4.998E-40	N/A	N/A
Maximum:			0.20

B.7.69. Iodine – Inhalation of ¹³¹I (type “F”)

Maximum difference for **Urine**: -0.03%.

Maximum difference for **Feces**: -0.20%.

Maximum difference for **Whole Body**: -0.03%.

Maximum difference for **Thyroid**: -0.03%

B.7.69.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.808E-01	2.808E-01	-0.01
2	2.311E-02	2.310E-02	0.03
5	8.931E-05	8.931E-05	0.00
10	1.115E-04	1.115E-04	-0.01
20	7.515E-05	7.515E-05	-0.01
50	6.847E-06	6.849E-06	-0.02
100	7.192E-08	7.194E-08	-0.03
200	6.921E-12	N/A	N/A
500	6.078E-24	N/A	N/A
1,000	4.905E-44	N/A	N/A
Maximum:			-0.03

B.7.69.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.544E-04	6.544E-04	0.00
2	6.104E-04	6.104E-04	0.00
5	5.644E-05	5.644E-05	0.01
10	3.585E-05	3.592E-05	-0.20
20	2.598E-05	2.603E-05	-0.17
50	2.450E-06	2.450E-06	-0.02
100	2.588E-08	2.586E-08	0.05
200	2.491E-12	N/A	N/A
500	2.188E-24	N/A	N/A
1,000	1.822E-44	N/A	N/A
Maximum:			-0.20

B.7.69.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.741E-01	2.741E-01	0.00
2	1.615E-01	1.615E-01	0.00
5	9.464E-02	9.465E-02	-0.01
10	5.994E-02	5.994E-02	-0.01
20	2.445E-02	2.445E-02	-0.01
50	1.571E-03	1.571E-03	-0.02
100	1.548E-05	1.549E-05	-0.03
200	1.483E-09	N/A	N/A
500	1.303E-21	N/A	N/A
1,000	1.049E-41	N/A	N/A
Maximum:			-0.03

B.7.69.4. Thyroid Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.223E-01	1.223E-01	-0.01
2	1.188E-01	1.188E-01	-0.01
5	8.983E-02	8.983E-02	-0.01
10	5.609E-02	5.609E-02	-0.01
20	2.198E-02	2.199E-02	-0.01
50	1.352E-03	1.352E-03	-0.02
100	1.319E-05	1.319E-05	-0.03
200	1.263E-09	N/A	N/A
500	1.109E-21	N/A	N/A
1,000	8.932E-42	N/A	N/A
Maximum:			-0.03

B.7.70. Iodine – Ingestion of ¹³¹I (f₁ = 0.99)

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: -0.19%.

Maximum difference for **Whole Body**: -0.03%.

Maximum difference for **Thyroid**: -0.03%.

B.7.70.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.771E-01	5.771E-01	0.00
2	5.053E-02	5.051E-02	0.03
5	1.843E-04	1.842E-04	0.01
10	2.299E-04	2.299E-04	0.00
20	1.552E-04	1.552E-04	-0.01
50	1.415E-05	1.415E-05	-0.02
100	1.486E-07	1.487E-07	-0.03
200	1.430E-11	N/A	N/A
500	1.256E-23	N/A	N/A
1,000	1.009E-43	N/A	N/A
Maximum:			0.03

B.7.70.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.293E-03	3.293E-03	0.00
2	3.035E-03	3.035E-03	0.00
5	2.166E-04	2.166E-04	0.00
10	7.439E-05	7.453E-05	-0.19
20	5.366E-05	5.375E-05	-0.17
50	5.063E-06	5.063E-06	-0.01
100	5.348E-08	5.344E-08	0.06
200	5.149E-12	N/A	N/A
500	4.522E-24	N/A	N/A
1,000	3.643E-44	N/A	N/A
Maximum:			-0.19

B.7.70.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.370E-01	3.370E-01	0.00
2	2.556E-01	2.556E-01	0.00
5	1.926E-01	1.926E-01	0.00
10	1.239E-01	1.239E-01	0.00
20	5.052E-02	5.053E-02	-0.01
50	3.247E-03	3.247E-03	-0.01
100	3.200E-05	3.201E-05	-0.03
200	3.066E-09	N/A	N/A
500	2.693E-21	N/A	N/A
1,000	2.169E-41	N/A	N/A
Maximum:			-0.03

B.7.70.4. Thyroid Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.517E-01	2.517E-01	0.00
2	2.454E-01	2.454E-01	0.00
5	1.857E-01	1.857E-01	0.00
10	1.159E-01	1.159E-01	0.00
20	4.544E-02	4.544E-02	-0.01
50	2.794E-03	2.794E-03	-0.01
100	2.726E-05	2.726E-05	-0.03
200	2.610E-09	N/A	N/A
500	2.292E-21	N/A	N/A
1,000	1.846E-41	N/A	N/A
Maximum:			-0.03

B.7.71. Iodine – Injection of ¹³¹I

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: -0.19%.

Maximum difference for **Whole Body**: -0.03%.

Maximum difference for **Thyroid**: -0.03%.

B.7.71.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.900E-01	5.900E-01	0.00
2	4.494E-02	4.493E-02	0.03
5	1.868E-04	1.868E-04	0.01
10	2.331E-04	2.331E-04	0.00
20	1.570E-04	1.570E-04	0.00
50	1.429E-05	1.429E-05	-0.01
100	1.501E-07	1.501E-07	-0.02
200	1.445E-11	N/A	N/A
500	1.269E-23	N/A	N/A
1,000	1.023E-43	N/A	N/A
Maximum:			0.03

B.7.71.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.823E-07	4.821E-07	0.03
2	6.357E-06	6.347E-06	0.16
5	4.627E-05	4.626E-05	0.03
10	7.468E-05	7.483E-05	-0.19
20	5.427E-05	5.436E-05	-0.17
50	5.114E-06	5.114E-06	-0.01
100	5.400E-08	5.397E-08	0.06
200	5.199E-12	N/A	N/A
500	4.566E-24	N/A	N/A
1,000	3.643E-44	N/A	N/A
Maximum:			-0.19

B.7.71.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.274E-01	3.274E-01	0.01
2	2.554E-01	2.554E-01	0.00
5	1.944E-01	1.944E-01	0.00
10	1.251E-01	1.251E-01	0.00
20	5.102E-02	5.103E-02	-0.01
50	3.279E-03	3.279E-03	-0.01
100	3.231E-05	3.232E-05	-0.03
200	3.096E-09	N/A	N/A
500	2.719E-21	N/A	N/A
1,000	2.190E-41	N/A	N/A
Maximum:			-0.03

B.7.71.4. Thyroid Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.565E-01	2.565E-01	0.00
2	2.480E-01	2.480E-01	0.00
5	1.875E-01	1.875E-01	0.00
10	1.171E-01	1.171E-01	-0.01
20	4.588E-02	4.588E-02	0.00
50	2.821E-03	2.822E-03	-0.01
100	2.753E-05	2.753E-05	-0.03
200	2.635E-09	N/A	N/A
500	2.314E-21	N/A	N/A
1,000	1.864E-41	N/A	N/A
Maximum:			-0.03

B.7.72. Iridium – Inhalation of ¹⁹²Ir (type “F”)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.02%.

B.7.72.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.70E-02	2.70E-02	-0.01
2	4.17E-03	4.17E-03	0.01
5	1.62E-03	1.62E-03	-0.01
10	1.09E-03	1.09E-03	-0.01
20	5.56E-04	5.56E-04	-0.01
50	1.83E-04	1.83E-04	-0.01
100	8.75E-05	8.75E-05	-0.02
200	2.42E-05	2.42E-05	-0.02
500	5.16E-07	5.16E-07	-0.02

1,000	8.44E-10	8.44E-10	-0.02
2,000	2.26E-15	N/A	N/A
5,000	4.35E-32	N/A	N/A
Maximum:			-0.02

B.7.72.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.16E-02	6.16E-02	0
2	8.75E-02	8.75E-02	0
5	8.71E-03	8.71E-03	0
10	1.26E-03	1.26E-03	-0.01
20	6.02E-04	6.02E-04	-0.01

50	1.87E-04	1.87E-04	-0.01
100	8.79E-05	8.79E-05	-0.01
200	2.43E-05	2.43E-05	-0.02
500	5.18E-07	5.18E-07	-0.02
1,000	8.48E-10	8.48E-10	-0.02
2,000	2.27E-15	N/A	N/A
5,000	4.37E-32	N/A	N/A
Maximum:			-0.02

B.7.72.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.11E-01	5.11E-01	0

2	3.38E-01	3.38E-01	0
5	2.08E-01	2.08E-01	-0.01
10	1.79E-01	1.79E-01	-0.01
20	1.48E-01	1.48E-01	-0.01
50	9.62E-02	9.62E-02	-0.01
100	5.04E-02	5.04E-02	-0.01
200	1.40E-02	1.40E-02	-0.01
500	2.98E-04	2.98E-04	-0.01
1,000	4.87E-07	4.87E-07	-0.01
2,000	1.31E-12	1.31E-12	-0.02
5,000	2.51E-29	N/A	N/A
Maximum:			-0.02

B.7.73. Iridium – Inhalation of ¹⁹²Ir (type “M”)

Maximum difference for **Urine**: -0.03%.

Maximum difference for **Feces**: -0.03%.

Maximum difference for **Whole Body**: -0.02%.

Maximum difference for **Lungs**: -0.05%.

B.7.73.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.04E-03	3.04E-03	-0.01
2	5.34E-04	5.34E-04	0.01
5	2.18E-04	2.18E-04	-0.01
10	1.61E-04	1.61E-04	-0.01
20	9.93E-05	9.94E-05	-0.01
50	4.63E-05	4.63E-05	-0.02
100	2.35E-05	2.35E-05	-0.02
200	7.00E-06	7.01E-06	-0.02
500	1.74E-07	1.74E-07	-0.02
1,000	3.13E-10	3.13E-10	-0.03
2,000	8.72E-16	N/A	N/A
5,000	1.69E-32	N/A	N/A
Maximum:			-0.03

B.7.73.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.07E-01	1.07E-01	-0.01
2	1.52E-01	1.52E-01	-0.01
5	1.29E-02	1.29E-02	0
10	6.87E-04	6.88E-04	-0.01
20	4.02E-04	4.02E-04	-0.01
50	1.48E-04	1.48E-04	-0.02
100	4.33E-05	4.33E-05	-0.02
200	8.75E-06	8.75E-06	-0.02
500	1.88E-07	1.88E-07	-0.02
1,000	3.21E-10	3.21E-10	-0.03
2,000	8.78E-16	N/A	N/A
5,000	1.70E-32	N/A	N/A
Maximum:			-0.03

B.7.73.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.90E-01	4.90E-01	0
2	2.56E-01	2.56E-01	0
5	8.54E-02	8.54E-02	-0.01
10	6.84E-02	6.84E-02	-0.01
20	5.65E-02	5.65E-02	-0.01
50	3.47E-02	3.47E-02	-0.01
100	1.73E-02	1.73E-02	-0.01
200	4.82E-03	4.82E-03	-0.01
500	1.09E-04	1.09E-04	-0.02
1,000	1.85E-07	1.85E-07	-0.02
2,000	5.05E-13	N/A	N/A
5,000	9.74E-30	N/A	N/A
Maximum:			-0.02

B.7.73.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.71E-02	5.71E-02	-0.01
2	5.49E-02	5.49E-02	-0.01
5	5.09E-02	5.09E-02	-0.01
10	4.52E-02	4.52E-02	-0.01
20	3.60E-02	3.60E-02	-0.02
50	1.94E-02	1.94E-02	-0.01
100	7.93E-03	7.93E-03	-0.02
200	1.62E-03	1.62E-03	-0.02
500	1.69E-05	1.69E-05	-0.03
1,000	8.72E-09	8.72E-09	-0.05
2,000	2.67E-15	N/A	N/A
5,000	2.16E-34	N/A	N/A
Maximum:			-0.05

B.7.74. Iridium – Inhalation of ¹⁹²Ir (type “S”)

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.05%.

Maximum difference for **Whole Body**: -0.08%.

Maximum difference for **Lungs**: -0.08%

B.7.74.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.80E-04	3.80E-04	-0.01
2	1.01E-04	1.01E-04	0.01
5	2.73E-05	2.73E-05	0
10	1.90E-05	1.90E-05	-0.01
20	1.04E-05	1.04E-05	-0.01
50	3.97E-06	3.97E-06	-0.01
100	1.97E-06	1.97E-06	-0.01
200	6.05E-07	6.05E-07	-0.02
500	2.06E-08	2.06E-08	-0.02
1,000	9.60E-11	9.60E-11	-0.04
2,000	3.39E-15	N/A	N/A
5,000	5.88E-28	N/A	N/A
Maximum:			-0.04

B.7.74.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.12E-01	1.12E-01	0
2	1.59E-01	1.59E-01	-0.01
5	1.33E-02	1.33E-02	0
10	6.05E-04	6.05E-04	-0.01
20	3.72E-04	3.72E-04	-0.02
50	1.45E-04	1.45E-04	-0.02
100	3.72E-05	3.72E-05	-0.02
200	5.64E-06	5.64E-06	-0.02
500	1.94E-07	1.94E-07	-0.03
1,000	1.04E-09	1.04E-09	-0.05
2,000	3.17E-14	N/A	N/A
5,000	2.00E-27	N/A	N/A
Maximum:			-0.05

B.7.74.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.87E-01	4.87E-01	0
2	2.47E-01	2.47E-01	0
5	7.21E-02	7.21E-02	-0.01
10	5.67E-02	5.67E-02	-0.01
20	4.73E-02	4.73E-02	-0.01
50	2.95E-02	2.95E-02	-0.01
100	1.55E-02	1.55E-02	-0.01
200	5.13E-03	5.13E-03	-0.02
500	2.28E-04	2.28E-04	-0.03
1,000	1.36E-06	1.36E-06	-0.04
2,000	5.61E-11	5.62E-11	-0.08
5,000	1.13E-23	N/A	N/A
10,000	2.10E-44	N/A	N/A
Maximum:			-0.08

B.7.74.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.37E-02	6.37E-02	-0.01
2	6.15E-02	6.15E-02	-0.01
5	5.79E-02	5.79E-02	-0.01
10	5.27E-02	5.27E-02	-0.01
20	4.41E-02	4.41E-02	-0.02
50	2.75E-02	2.75E-02	-0.01
100	1.44E-02	1.44E-02	-0.02
200	4.80E-03	4.80E-03	-0.02
500	2.17E-04	2.17E-04	-0.03
1,000	1.30E-06	1.30E-06	-0.05
2,000	5.35E-11	5.35E-11	-0.08
5,000	1.05E-23	N/A	N/A
10,000	1.96E-44	N/A	N/A
Maximum:			-0.08

B.7.75. Iridium – Ingestion of ¹⁹²Ir (f₁ = 0.01)

Maximum difference for **Urine**: -0.01%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: -0.01%.

B.7.75.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.60E-04	8.60E-04	-0.01
2	2.20E-04	2.20E-04	0.01
5	5.79E-05	5.79E-05	0
10	3.91E-05	3.91E-05	0
20	1.99E-05	1.99E-05	0

50	6.49E-06	6.49E-06	-0.01
100	3.09E-06	3.09E-06	-0.01
200	8.56E-07	8.56E-07	-0.01
500	1.82E-08	1.82E-08	-0.01
1,000	2.98E-11	2.98E-11	-0.01
2,000	7.99E-17	N/A	N/A
5,000	1.54E-33	N/A	N/A
Maximum:			-0.01

B.7.75.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.78E-01	2.78E-01	0
2	3.78E-01	3.78E-01	0
5	2.97E-02	2.97E-02	0
10	2.41E-04	2.41E-04	0
20	2.15E-05	2.15E-05	0
50	6.61E-06	6.61E-06	-0.01
100	3.11E-06	3.11E-06	-0.01
200	8.60E-07	8.60E-07	-0.01
500	1.83E-08	1.83E-08	-0.01
1,000	3.00E-11	3.00E-11	-0.01
2,000	8.03E-17	N/A	N/A
5,000	1.55E-33	N/A	N/A
Maximum:			-0.01

B.7.75.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.12E-01	7.12E-01	0
2	3.27E-01	3.27E-01	0
5	2.49E-02	2.49E-02	0
10	6.47E-03	6.47E-03	0
20	5.24E-03	5.24E-03	0
50	3.40E-03	3.40E-03	0
100	1.78E-03	1.78E-03	0
200	4.94E-04	4.94E-04	0
500	1.05E-05	1.05E-05	0
1,000	1.72E-08	1.72E-08	-0.01
2,000	4.62E-14	N/A	N/A
5,000	8.88E-31	N/A	N/A
Maximum:			-0.01

B.7.76. Iridium – Injection of ¹⁹²Ir

Maximum difference for **Urine**: +0.01%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: -0.01%.

B.7.76.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.56E-02	9.56E-02	0
2	1.46E-02	1.46E-02	0.01
5	5.70E-03	5.70E-03	0
10	3.86E-03	3.86E-03	0
20	1.96E-03	1.97E-03	-0.01
50	6.48E-04	6.48E-04	-0.01
100	3.09E-04	3.09E-04	-0.01
200	8.55E-05	8.55E-05	-0.01
500	1.82E-06	1.82E-06	-0.01
1,000	2.98E-09	2.98E-09	-0.01
2,000	7.99E-15	N/A	N/A
5,000	1.54E-31	N/A	N/A
Maximum:			+0.01

50	6.60E-04	6.60E-04	-0.01
100	3.11E-04	3.11E-04	-0.01
200	8.59E-05	8.59E-05	-0.01
500	1.83E-06	1.83E-06	-0.01
1,000	3.00E-09	3.00E-09	-0.01
2,000	8.03E-15	N/A	N/A
5,000	1.54E-31	N/A	N/A
Maximum:			-0.01

B.7.76.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.72E-01	8.72E-01	0
2	8.08E-01	8.08E-01	0
5	7.15E-01	7.15E-01	0
10	6.34E-01	6.34E-01	0
20	5.23E-01	5.23E-01	0
50	3.40E-01	3.40E-01	0
100	1.78E-01	1.78E-01	0
200	4.94E-02	4.94E-02	0
500	1.05E-03	1.05E-03	-0.01
1,000	1.72E-06	1.72E-06	-0.01
2,000	4.61E-12	4.61E-12	-0.01
5,000	8.87E-29	N/A	N/A
Maximum:			-0.01

B.7.76.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.33E-02	2.33E-02	-0.01
2	4.13E-02	4.13E-02	0
5	9.72E-03	9.72E-03	0
10	4.30E-03	4.30E-03	0
20	2.13E-03	2.13E-03	-0.01

B.7.77. Iron – Inhalation of ⁵⁵Fe (type “F”)

Maximum difference for **Urine**: -0.22%.

Maximum difference for **Feces**: -0.15%.

Maximum difference for **Whole Body**: +0.17%.

B.7.77.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.079E-04	6.079E-04	-0.01
2	5.381E-05	5.381E-05	0.00
5	1.777E-05	1.778E-05	-0.04
10	7.345E-06	7.342E-06	0.05
20	5.257E-06	5.264E-06	-0.14
50	4.881E-06	4.883E-06	-0.04
100	4.434E-06	4.429E-06	0.10
200	3.710E-06	3.704E-06	0.16
500	2.381E-06	2.383E-06	-0.10
1,000	1.358E-06	1.361E-06	-0.22
2,000	5.305E-07	5.305E-07	-0.01
5,000	3.482E-08	3.481E-08	0.03
10,000	3.732E-10	3.734E-10	-0.07
20,000	4.285E-14	N/A	N/A
Maximum:			-0.22

B.7.77.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.169E-02	5.170E-02	0.00
2	6.974E-02	6.974E-02	0.00
5	5.596E-03	5.596E-03	0.00
10	8.794E-05	8.795E-05	0.00
20	4.918E-05	4.925E-05	-0.15

50	4.556E-05	4.558E-05	-0.05
100	4.037E-05	4.036E-05	0.04
200	3.251E-05	3.250E-05	0.03
500	1.953E-05	1.953E-05	-0.03
1,000	1.065E-05	1.065E-05	-0.03
2,000	4.083E-06	4.085E-06	-0.06
5,000	2.677E-07	2.678E-07	-0.04
10,000	2.869E-09	2.872E-09	-0.11
20,000	3.297E-13	N/A	N/A
Maximum:			-0.15

B.7.77.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.534E-01	5.529E-01	0.10
2	4.046E-01	4.041E-01	0.13
5	3.053E-01	3.048E-01	0.17
10	2.984E-01	2.979E-01	0.17
20	2.956E-01	2.952E-01	0.16
50	2.876E-01	2.873E-01	0.12
100	2.748E-01	2.746E-01	0.07
200	2.507E-01	2.508E-01	-0.01
500	1.906E-01	1.908E-01	-0.09
1,000	1.209E-01	1.209E-01	-0.03
2,000	4.869E-02	4.869E-02	0.01
5,000	3.200E-03	3.202E-03	-0.08
10,000	3.430E-05	3.435E-05	-0.13
Maximum:			0.17

B.7.78. Iron – Inhalation of ⁵⁵Fe (type “M”)

Maximum difference for **Urine**: -0.21%.

Maximum difference for **Feces**: -0.11%.

Maximum difference for **Whole Body**: -0.13%.

Maximum difference for **Lungs**: -0.04%.

B.7.78.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.344E-04	1.344E-04	0.00
2	1.442E-05	1.442E-05	0.00
5	4.914E-06	4.915E-06	-0.03
10	2.451E-06	2.450E-06	0.03
20	1.907E-06	1.909E-06	-0.09
50	1.710E-06	1.711E-06	-0.04
100	1.534E-06	1.533E-06	0.06
200	1.303E-06	1.301E-06	0.13
500	8.479E-07	8.484E-07	-0.07
1,000	4.760E-07	4.770E-07	-0.21
2,000	1.842E-07	1.842E-07	-0.03
5,000	1.208E-08	1.208E-08	0.03
10,000	1.295E-10	1.296E-10	-0.07
20,000	1.487E-14	N/A	N/A
Maximum:			-0.21

B.7.78.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

1	1.000E-01	1.000E-01	0.00
2	1.384E-01	1.384E-01	-0.01
5	1.171E-02	1.171E-02	0.00
10	5.188E-04	5.189E-04	-0.01
20	3.338E-04	3.339E-04	-0.02
50	1.533E-04	1.533E-04	-0.02
100	5.421E-05	5.422E-05	-0.01
200	1.930E-05	1.930E-05	0.01
500	7.832E-06	7.834E-06	-0.03
1,000	3.776E-06	3.778E-06	-0.03
2,000	1.418E-06	1.419E-06	-0.07
5,000	9.287E-08	9.291E-08	-0.04
10,000	9.955E-10	9.966E-10	-0.11
20,000	1.144E-13	N/A	N/A
Maximum:			-0.11

B.7.78.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.051E-01	5.050E-01	0.02
2	2.878E-01	2.877E-01	0.04
5	1.322E-01	1.321E-01	0.08
10	1.205E-01	1.204E-01	0.09

20	1.158E-01	1.157E-01	0.09
50	1.065E-01	1.064E-01	0.09
100	9.812E-02	9.806E-02	0.06
200	8.797E-02	8.796E-02	0.00
500	6.628E-02	6.633E-02	-0.08
1,000	4.195E-02	4.197E-02	-0.04
2,000	1.690E-02	1.689E-02	0.00
5,000	1.110E-03	1.111E-03	-0.09
10,000	1.190E-05	1.192E-05	-0.13
20,000	1.368E-09	N/A	N/A
Maximum:			-0.13

B.7.78.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
-------------	------	----------	-------------------

1	5.759E-02	5.759E-02	-0.01
2	5.586E-02	5.587E-02	-0.01
5	5.318E-02	5.318E-02	-0.01
10	4.931E-02	4.932E-02	-0.01
20	4.280E-02	4.281E-02	-0.01
50	2.986E-02	2.986E-02	-0.01
100	1.886E-02	1.886E-02	-0.01
200	9.172E-03	9.173E-03	-0.02
500	1.280E-03	1.281E-03	-0.02
1,000	5.033E-05	5.034E-05	-0.03
2,000	8.904E-08	8.907E-08	-0.04
5,000	1.386E-15	N/A	N/A
10,000	3.709E-28	N/A	N/A
Maximum:			-0.04

B.7.79. Iron – Ingestion of ⁵⁵Fe (f₁ = 0.1)

Maximum difference for **Urine**: -0.21%.

Maximum difference for **Feces**: -0.14%.

Maximum difference for **Whole Body**: +0.18%.

B.7.79.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.962E-04	1.962E-04	0.00
2	2.095E-05	2.095E-05	0.00
5	6.208E-06	6.210E-06	-0.03
10	2.482E-06	2.481E-06	0.05
20	1.748E-06	1.750E-06	-0.13
50	1.622E-06	1.622E-06	-0.04
100	1.473E-06	1.471E-06	0.10
200	1.232E-06	1.230E-06	0.17
500	7.909E-07	7.916E-07	-0.09
1,000	4.511E-07	4.521E-07	-0.21
2,000	1.762E-07	1.762E-07	0.00
5,000	1.157E-08	1.156E-08	0.04
10,000	1.239E-10	1.240E-10	-0.06
20,000	1.423E-14	N/A	N/A
Maximum:			-0.21

B.7.79.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.606E-01	2.606E-01	0.00
2	3.478E-01	3.478E-01	0.00
5	2.766E-02	2.766E-02	0.00
10	2.088E-04	2.088E-04	0.00
20	1.635E-05	1.637E-05	-0.14

50	1.514E-05	1.514E-05	-0.04
100	1.341E-05	1.341E-05	0.04
200	1.080E-05	1.080E-05	0.04
500	6.487E-06	6.488E-06	-0.02
1,000	3.536E-06	3.537E-06	-0.02
2,000	1.356E-06	1.357E-06	-0.06
5,000	8.890E-08	8.893E-08	-0.03
10,000	9.530E-10	9.539E-10	-0.10
20,000	1.095E-13	N/A	N/A
Maximum:			-0.14

B.7.79.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.387E-01	7.385E-01	0.02
2	3.903E-01	3.901E-01	0.05
5	1.160E-01	1.159E-01	0.15
10	9.920E-02	9.903E-02	0.18
20	9.819E-02	9.803E-02	0.16
50	9.553E-02	9.540E-02	0.13
100	9.126E-02	9.119E-02	0.08
200	8.328E-02	8.328E-02	0.00
500	6.332E-02	6.337E-02	-0.08
1,000	4.015E-02	4.015E-02	-0.02
2,000	1.617E-02	1.617E-02	0.01
5,000	1.063E-03	1.064E-03	-0.08
10,000	1.139E-05	1.141E-05	-0.13
Maximum:			0.18

B.7.80. Iron – Injection of ⁵⁵Fe

Maximum difference for **Urine**: -0.21%.

Maximum difference for **Feces**: +0.32%.

Maximum difference for **Whole Body**: +0.18%.

B.7.80.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.024E-03	2.024E-03	0.00
2	1.759E-04	1.759E-04	0.01
5	5.870E-05	5.872E-05	-0.03
10	2.435E-05	2.434E-05	0.06
20	1.746E-05	1.748E-05	-0.13
50	1.621E-05	1.622E-05	-0.03
100	1.473E-05	1.471E-05	0.11
200	1.232E-05	1.230E-05	0.16
500	7.908E-06	7.916E-06	-0.10
1,000	4.511E-06	4.520E-06	-0.21
2,000	1.762E-06	1.762E-06	-0.01
5,000	1.157E-07	1.156E-07	0.03
10,000	1.239E-09	1.240E-09	-0.06
20,000	1.423E-13	N/A	N/A
Maximum:			-0.21

B.7.80.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.391E-06	6.402E-06	-0.18
2	4.270E-05	4.277E-05	-0.16
5	1.345E-04	1.340E-04	0.32
10	1.637E-04	1.636E-04	0.00
20	1.633E-04	1.636E-04	-0.15

50	1.513E-04	1.514E-04	-0.04
100	1.341E-04	1.340E-04	0.04
200	1.080E-04	1.079E-04	0.03
500	6.486E-05	6.487E-05	-0.02
1,000	3.536E-05	3.537E-05	-0.03
2,000	1.356E-05	1.357E-05	-0.05
5,000	8.890E-07	8.893E-07	-0.03
10,000	9.529E-09	9.539E-09	-0.10
20,000	1.095E-12	1.098E-12	-0.24
Maximum:			0.32

B.7.80.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.991E-01	9.973E-01	0.18
2	9.982E-01	9.963E-01	0.18
5	9.954E-01	9.936E-01	0.18
10	9.909E-01	9.891E-01	0.18
20	9.819E-01	9.802E-01	0.16
50	9.553E-01	9.540E-01	0.13
100	9.125E-01	9.118E-01	0.08
200	8.328E-01	8.328E-01	-0.01
500	6.332E-01	6.337E-01	-0.08
1,000	4.014E-01	4.015E-01	-0.02
2,000	1.617E-01	1.617E-01	0.02
5,000	1.063E-02	1.063E-02	-0.07
10,000	1.139E-04	1.141E-04	-0.13
Maximum:			0.18

B.7.81. Iron – Inhalation of ⁵⁹Fe (type “F”)Maximum difference for **Urine**: +0.24%.Maximum difference for **Feces**: +0.40%.Maximum difference for **Whole Body**: +0.40%.**B.7.81.1. Urinary Excretion Rate**

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.989E-04	5.989E-04	-0.01
2	5.223E-05	5.223E-05	0.00
5	1.650E-05	1.651E-05	-0.04
10	6.331E-06	6.328E-06	0.05
20	3.905E-06	3.910E-06	-0.13
50	2.322E-06	2.322E-06	-0.02
100	1.003E-06	1.002E-06	0.14
200	1.898E-07	1.894E-07	0.24
500	1.411E-09	1.409E-09	0.11
1,000	4.768E-13	N/A	N/A
2,000	6.536E-20	N/A	N/A
5,000	1.856E-40	N/A	N/A
Maximum:			0.24

B.7.81.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.093E-02	5.093E-02	0.00
2	6.770E-02	6.770E-02	0.00
5	5.195E-03	5.195E-03	0.00
10	7.580E-05	7.580E-05	0.00

20	3.653E-05	3.659E-05	-0.14
50	2.167E-05	2.167E-05	-0.03
100	9.133E-06	9.126E-06	0.08
200	1.664E-06	1.662E-06	0.11
500	1.157E-08	1.155E-08	0.18
1,000	3.737E-12	3.722E-12	0.40
2,000	5.031E-19	N/A	N/A
5,000	1.426E-39	N/A	N/A
Maximum:			0.40

B.7.81.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.453E-01	5.447E-01	0.10
2	3.928E-01	3.923E-01	0.13
5	2.834E-01	2.829E-01	0.17
10	2.572E-01	2.567E-01	0.17
20	2.196E-01	2.192E-01	0.17
50	1.368E-01	1.366E-01	0.15
100	6.215E-02	6.208E-02	0.11
200	1.283E-02	1.282E-02	0.07
500	1.130E-04	1.128E-04	0.13
1,000	4.243E-08	4.226E-08	0.40
2,000	5.999E-15	N/A	N/A
5,000	1.705E-35	N/A	N/A
Maximum:			0.40

B.7.82. Iron – Inhalation of ⁵⁹Fe (type “M”)

Maximum difference for **Urine**: +0.21%.

Maximum difference for **Feces**: +0.40%.

Maximum difference for **Whole Body**: +0.39%.

Maximum difference for **Lungs**: +0.40%.

B.7.82.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.324E-04	1.324E-04	-0.01
2	1.400E-05	1.400E-05	0.00
5	4.562E-06	4.563E-06	-0.03
10	2.112E-06	2.112E-06	0.03
20	1.417E-06	1.418E-06	-0.08
50	8.132E-07	8.134E-07	-0.02
100	3.471E-07	3.467E-07	0.10
200	6.669E-08	6.655E-08	0.21
500	5.023E-10	5.016E-10	0.15
1,000	1.671E-13	N/A	N/A
2,000	2.269E-20	N/A	N/A
5,000	6.438E-41	N/A	N/A
Maximum:			0.21

B.7.82.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.855E-02	9.856E-02	-0.01
2	1.343E-01	1.343E-01	-0.01
5	1.087E-02	1.087E-02	0.00
10	4.472E-04	4.472E-04	-0.01
20	2.480E-04	2.480E-04	-0.01
50	7.291E-05	7.291E-05	0.00
100	1.226E-05	1.226E-05	0.03
200	9.875E-07	9.866E-07	0.09
500	4.640E-09	4.632E-09	0.19
1,000	1.326E-12	1.320E-12	0.40
2,000	1.747E-19	N/A	N/A
5,000	4.949E-40	N/A	N/A
Maximum:			0.40

B.7.82.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.977E-01	4.976E-01	0.02
2	2.794E-01	2.792E-01	0.04
5	1.227E-01	1.226E-01	0.08
10	1.039E-01	1.038E-01	0.10
20	8.600E-02	8.592E-02	0.10
50	5.066E-02	5.060E-02	0.11
100	2.220E-02	2.217E-02	0.10
200	4.502E-03	4.498E-03	0.09
500	3.927E-05	3.922E-05	0.13
1,000	1.473E-08	1.467E-08	0.39
2,000	2.082E-15	N/A	N/A
5,000	5.916E-36	N/A	N/A
Maximum:			0.39

B.7.82.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.674E-02	5.674E-02	-0.01
2	5.422E-02	5.423E-02	-0.01
5	4.937E-02	4.937E-02	-0.01
10	4.250E-02	4.250E-02	-0.01
20	3.180E-02	3.180E-02	0.00
50	1.420E-02	1.420E-02	0.01
100	4.266E-03	4.265E-03	0.03
200	4.694E-04	4.690E-04	0.07
500	7.585E-07	7.571E-07	0.19
1,000	1.767E-11	1.759E-11	0.40
2,000	1.097E-20	N/A	N/A
Maximum:			0.40

B.7.83. Iron – Ingestion of ⁵⁹Fe (f₁ = 0.1)

Maximum difference for **Urine**: +0.25%.

Maximum difference for **Feces**: +0.40%.

Maximum difference for **Whole Body**: +0.41%.

B.7.83.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.933E-04	1.933E-04	0.00
2	2.034E-05	2.034E-05	0.00
5	5.763E-06	5.765E-06	-0.03
10	2.139E-06	2.138E-06	0.06
20	1.298E-06	1.300E-06	-0.12
50	7.712E-07	7.713E-07	-0.02
100	3.332E-07	3.327E-07	0.15

200	6.306E-08	6.291E-08	0.25
500	4.686E-10	4.680E-10	0.12
1,000	1.584E-13	N/A	N/A
2,000	2.171E-20	N/A	N/A
5,000	6.163E-41	N/A	N/A
Maximum:			0.25

B.7.83.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.567E-01	2.567E-01	0.00

2	3.377E-01	3.376E-01	0.00
5	2.568E-02	2.568E-02	0.00
10	1.799E-04	1.799E-04	0.00
20	1.214E-05	1.216E-05	-0.14
50	7.199E-06	7.201E-06	-0.02
100	3.034E-06	3.032E-06	0.08
200	5.527E-07	5.521E-07	0.12
500	3.843E-09	3.836E-09	0.19
1,000	1.241E-12	1.236E-12	0.40
2,000	1.671E-19	N/A	N/A
5,000	4.738E-40	N/A	N/A
Maximum:			0.40

B.7.83.3. Whole Body Retention

TIME	IMBA	PLEIADES	Difference
------	------	----------	------------

(d)			(%)
1	7.278E-01	7.276E-01	0.03
2	3.789E-01	3.787E-01	0.05
5	1.077E-01	1.076E-01	0.15
10	8.550E-02	8.535E-02	0.18
20	7.294E-02	7.281E-02	0.17
50	4.544E-02	4.537E-02	0.15
100	2.064E-02	2.062E-02	0.12
200	4.262E-03	4.258E-03	0.08
500	3.751E-05	3.746E-05	0.13
1,000	1.409E-08	1.403E-08	0.41
2,000	1.993E-15	N/A	N/A
5,000	5.663E-36	N/A	N/A
Maximum:			0.41

B.7.84. Iron – Injection of ⁵⁹Fe

Maximum difference for **Urine**: +0.25%.

Maximum difference for **Feces**: +0.40%.

Maximum difference for **Whole Body**: +0.41%.

B.7.84.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.995E-03	1.995E-03	0.00
2	1.708E-04	1.708E-04	0.01
5	5.450E-05	5.451E-05	-0.03
10	2.099E-05	2.097E-05	0.06
20	1.297E-05	1.298E-05	-0.12
50	7.710E-06	7.711E-06	-0.02
100	3.331E-06	3.326E-06	0.15
200	6.305E-07	6.289E-07	0.25
500	4.685E-09	4.680E-09	0.12
1,000	1.584E-12	1.580E-12	0.22
2,000	2.171E-19	N/A	N/A
5,000	6.163E-40	N/A	N/A
Maximum:			0.25

B.7.84.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.296E-06	6.308E-06	-0.18
2	4.145E-05	4.152E-05	-0.16
5	1.248E-04	1.244E-04	0.33
10	1.411E-04	1.410E-04	0.01
20	1.213E-04	1.215E-04	-0.14

50	7.197E-05	7.198E-05	-0.02
100	3.033E-05	3.031E-05	0.09
200	5.526E-06	5.519E-06	0.12
500	3.843E-08	3.835E-08	0.19
1,000	1.241E-11	1.236E-11	0.40
2,000	1.671E-18	N/A	N/A
5,000	4.738E-39	N/A	N/A
Maximum:			0.40

B.7.84.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.844E-01	9.825E-01	0.18
2	9.689E-01	9.672E-01	0.18
5	9.241E-01	9.225E-01	0.18
10	8.540E-01	8.525E-01	0.18
20	7.294E-01	7.281E-01	0.17
50	4.543E-01	4.537E-01	0.15
100	2.064E-01	2.062E-01	0.12
200	4.262E-02	4.258E-02	0.08
500	3.751E-04	3.746E-04	0.13
1,000	1.409E-07	1.403E-07	0.41
2,000	1.993E-14	N/A	N/A
5,000	5.663E-35	N/A	N/A
Maximum:			0.41

B.7.85. Lanthanum – Injection of ¹⁴⁰La

Maximum difference for **Urine**: +0.04%.

Maximum difference for **Feces**: +0.04%.

Maximum difference for **Whole Body**: +0.04%.

B.7.85.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.834E-05	3.834E-05	0.00
2	4.214E-05	4.214E-05	0.00
5	1.254E-05	1.254E-05	0.02
10	1.588E-06	1.588E-06	0.02
20	2.548E-08	2.546E-08	0.04
50	1.051E-13	N/A	N/A
100	1.115E-22	N/A	N/A
200	1.256E-40	N/A	N/A
Maximum:			0.04

B.7.85.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.897E-06	4.898E-06	-0.01
2	1.875E-05	1.875E-05	0.00
5	1.205E-05	1.205E-05	0.01

10	1.589E-06	1.588E-06	0.02
20	2.548E-08	2.547E-08	0.04
50	1.051E-13	N/A	N/A
100	1.116E-22	N/A	N/A
200	1.256E-40	N/A	N/A
Maximum:			0.04

B.7.85.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.616E-01	6.616E-01	0.00
2	4.376E-01	4.376E-01	0.00
5	1.267E-01	1.267E-01	0.01
10	1.604E-02	1.604E-02	0.02
20	2.573E-04	2.572E-04	0.04
50	1.061E-09	N/A	N/A
100	1.126E-18	N/A	N/A
200	1.269E-36	N/A	N/A
Maximum:			0.04

B.7.86. Lead – Inhalation of ²¹⁰Pb (type “F”)

Maximum difference for **Urine**: -0.84%.

Maximum difference for **Feces**: +0.48%.

Maximum difference for **Whole Body**: -0.05%.

B.7.86.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.48E-02	1.48E-02	0.02
2	3.75E-03	3.77E-03	-0.65
5	3.12E-03	3.10E-03	0.71
10	2.51E-03	2.53E-03	-0.69
20	1.75E-03	1.75E-03	-0.24
50	7.09E-04	7.06E-04	0.54
100	2.65E-04	2.67E-04	-0.84
200	1.00E-04	9.95E-05	0.69
500	2.03E-05	2.05E-05	-0.75
1,000	8.75E-06	8.69E-06	0.65
2,000	4.17E-06	4.19E-06	-0.57
5,000	1.18E-06	1.17E-06	0.25
10,000	2.90E-07	2.91E-07	-0.28
20,000	4.86E-08	4.85E-08	0.26
Maximum:			-0.84

B.7.86.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.89E-02	4.89E-02	-0.01
2	6.42E-02	6.42E-02	0
5	6.34E-03	6.34E-03	-0.09
10	1.35E-03	1.34E-03	0.32
20	1.10E-03	1.10E-03	-0.14

50	5.32E-04	5.32E-04	0.02
100	1.85E-04	1.85E-04	0.05
200	6.24E-05	6.24E-05	-0.09
500	1.23E-05	1.23E-05	-0.44
1,000	5.16E-06	5.14E-06	0.48
2,000	2.46E-06	2.47E-06	-0.39
5,000	6.90E-07	6.89E-07	0.19
10,000	1.71E-07	1.71E-07	-0.2
20,000	2.85E-08	2.85E-08	0.19
Maximum:			+0.48

B.7.86.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.39E-01	5.39E-01	0
2	3.92E-01	3.92E-01	-0.02
5	2.84E-01	2.84E-01	0.02
10	2.57E-01	2.57E-01	-0.02
20	2.22E-01	2.22E-01	-0.03
50	1.61E-01	1.61E-01	0.03
100	1.20E-01	1.20E-01	-0.05
200	8.86E-02	8.86E-02	0.04
500	6.04E-02	6.04E-02	-0.04
1,000	4.66E-02	4.66E-02	0.02
2,000	3.27E-02	3.27E-02	-0.04
5,000	1.51E-02	1.51E-02	0.01
10,000	5.80E-03	5.80E-03	-0.03
Maximum:			-0.05

B.7.87. Lead – Ingestion of ²¹⁰Pb (f₁ = 0.2)

Maximum difference for **Urine**: -0.84%.

Maximum difference for **Feces**: +0.49%.

Maximum difference for **Whole Body**: +0.05%.

B.7.87.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.80E-03	8.80E-03	0.04
2	2.43E-03	2.45E-03	-0.58
5	1.96E-03	1.94E-03	0.76
10	1.58E-03	1.59E-03	-0.67
20	1.09E-03	1.10E-03	-0.25
50	4.44E-04	4.41E-04	0.55
100	1.65E-04	1.67E-04	-0.84
200	6.25E-05	6.21E-05	0.7
500	1.27E-05	1.28E-05	-0.75
1,000	5.45E-06	5.41E-06	0.66
2,000	2.60E-06	2.61E-06	-0.56
5,000	7.32E-07	7.30E-07	0.25
10,000	1.81E-07	1.81E-07	-0.28
20,000	3.03E-08	3.02E-08	0.26
Maximum:			-0.84

B.7.87.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.39E-01	2.39E-01	0
2	3.09E-01	3.09E-01	0
5	2.51E-02	2.51E-02	-0.01
10	9.89E-04	9.86E-04	0.28
20	6.89E-04	6.90E-04	-0.12

50	3.33E-04	3.33E-04	0.03
100	1.16E-04	1.16E-04	0.06
200	3.89E-05	3.89E-05	-0.08
500	7.66E-06	7.69E-06	-0.43
1,000	3.22E-06	3.20E-06	0.49
2,000	1.53E-06	1.54E-06	-0.38
5,000	4.30E-07	4.29E-07	0.2
10,000	1.06E-07	1.06E-07	-0.2
20,000	1.78E-08	1.77E-08	0.2
Maximum:			+0.49

B.7.87.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.51E-01	7.51E-01	0
2	4.39E-01	4.39E-01	-0.01
5	1.89E-01	1.89E-01	0.03
10	1.61E-01	1.61E-01	-0.02
20	1.39E-01	1.39E-01	-0.02
50	1.01E-01	1.01E-01	0.03
100	7.48E-02	7.48E-02	-0.04
200	5.52E-02	5.52E-02	0.05
500	3.76E-02	3.77E-02	-0.03
1,000	2.90E-02	2.90E-02	0.03
2,000	2.04E-02	2.04E-02	-0.03
5,000	9.42E-03	9.42E-03	0.02
10,000	3.61E-03	3.61E-03	-0.02
Maximum:			+0.05

B.7.88. Lead – Injection of ²¹⁰Pb

Maximum difference for **Urine**: -0.84%.

Maximum difference for **Feces**: +0.48%.

B.7.88.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.65E-02	4.65E-02	0.03
2	1.16E-02	1.17E-02	-0.65
5	9.71E-03	9.64E-03	0.71
10	7.82E-03	7.87E-03	-0.69
20	5.43E-03	5.44E-03	-0.23
50	2.21E-03	2.20E-03	0.55
100	8.24E-04	8.31E-04	-0.84
200	3.12E-04	3.10E-04	0.7
500	6.33E-05	6.38E-05	-0.75
1,000	2.72E-05	2.71E-05	0.66
2,000	1.30E-05	1.31E-05	-0.56
5,000	3.66E-06	3.65E-06	0.25
10,000	9.04E-07	9.06E-07	-0.27
20,000	1.51E-07	1.51E-07	0.26
Maximum:			-0.84

B.7.88.2. Fecal Excretion Rate

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.49E-03	5.49E-03	-0.13
2	7.72E-03	7.70E-03	0.19
5	4.58E-03	4.60E-03	-0.38
10	4.09E-03	4.08E-03	0.33
20	3.43E-03	3.44E-03	-0.13
50	1.66E-03	1.66E-03	0.03
100	5.76E-04	5.76E-04	0.06
200	1.94E-04	1.94E-04	-0.08
500	3.83E-05	3.84E-05	-0.43
1,000	1.61E-05	1.60E-05	0.48
2,000	7.66E-06	7.69E-06	-0.39
5,000	2.15E-06	2.15E-06	0.2
10,000	5.31E-07	5.32E-07	-0.2
Maximum:			+0.48

B.7.89. Lutetium – Inhalation of ¹⁷⁴Lu (type “M”)

Maximum difference for **Urine**: -0.11%.

Maximum difference for **Feces**: -0.11%.

Maximum difference for **Whole Body**: -0.11%.

Maximum difference for **Lungs**: -0.04%

B.7.89.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.90E-03	4.90E-03	-0.01
2	4.74E-04	4.74E-04	0.02
5	5.66E-05	5.66E-05	-0.01
10	5.19E-05	5.19E-05	-0.01
20	4.47E-05	4.47E-05	-0.01
50	3.15E-05	3.15E-05	-0.01
100	2.10E-05	2.10E-05	-0.01
200	1.18E-05	1.18E-05	-0.01
500	3.86E-06	3.86E-06	-0.01
1,000	1.83E-06	1.83E-06	-0.02
2,000	8.22E-07	8.22E-07	-0.03
5,000	8.11E-08	8.12E-08	-0.06
10,000	1.71E-09	1.71E-09	-0.11
20,000	7.60E-13	N/A	N/A
Maximum:			-0.11

B.7.89.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.09E-01	1.09E-01	-0.01
2	1.57E-01	1.57E-01	0
5	1.35E-02	1.35E-02	0
10	6.21E-04	6.21E-04	-0.01
20	4.04E-04	4.04E-04	-0.01
50	1.90E-04	1.90E-04	-0.01
100	6.90E-05	6.90E-05	-0.01
200	2.20E-05	2.20E-05	-0.01
500	4.99E-06	4.99E-06	-0.02
1,000	1.87E-06	1.87E-06	-0.02
2,000	8.22E-07	8.22E-07	-0.03
5,000	8.11E-08	8.12E-08	-0.06
10,000	1.71E-09	1.71E-09	-0.11
20,000	7.61E-13	N/A	N/A
Maximum:			-0.11

B.7.89.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.91E-01	4.91E-01	0
2	2.55E-01	2.55E-01	0
5	8.29E-02	8.29E-02	-0.01
10	6.97E-02	6.97E-02	-0.01
20	6.42E-02	6.42E-02	-0.01
50	5.38E-02	5.38E-02	-0.01
100	4.53E-02	4.53E-02	-0.01
200	3.76E-02	3.76E-02	-0.01
500	2.70E-02	2.70E-02	-0.02
1,000	1.80E-02	1.80E-02	-0.02
2,000	8.30E-03	8.30E-03	-0.03
5,000	8.19E-04	8.20E-04	-0.06
10,000	1.73E-05	1.73E-05	-0.11
Maximum:			-0.11

B.7.89.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.76E-02	5.76E-02	-0.01
2	5.59E-02	5.59E-02	-0.01
5	5.32E-02	5.32E-02	-0.01
10	4.94E-02	4.94E-02	-0.01
20	4.29E-02	4.29E-02	-0.01
50	3.01E-02	3.01E-02	-0.01
100	1.91E-02	1.91E-02	-0.01
200	9.41E-03	9.41E-03	-0.02
500	1.37E-03	1.37E-03	-0.02
1,000	5.73E-05	5.73E-05	-0.02
2,000	1.15E-07	1.15E-07	-0.04
5,000	2.65E-15	N/A	N/A
10,000	1.36E-27	N/A	N/A
Maximum:			-0.04

B.7.90. Lutetium – Inhalation of ¹⁷⁴Lu (type “S”)

Maximum difference for **Urine**: -0.11%.

Maximum difference for **Feces**: -0.11%.

Maximum difference for **Whole Body**: -0.11%.

Maximum difference for **Lungs**: -0.21%

B.7.90.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

1	8.13E-05	8.13E-05	-0.01
2	1.19E-05	1.19E-05	0.02
5	1.31E-06	1.31E-06	-0.01
10	1.23E-06	1.23E-06	-0.01
20	1.11E-06	1.11E-06	-0.02

50	8.86E-07	8.86E-07	-0.01
100	7.26E-07	7.26E-07	-0.01
200	6.05E-07	6.05E-07	-0.01
500	4.30E-07	4.30E-07	-0.02
1,000	2.59E-07	2.59E-07	-0.02
2,000	1.07E-07	1.07E-07	-0.03
5,000	1.17E-08	1.17E-08	-0.06
10,000	3.41E-10	3.42E-10	-0.11
20,000	2.80E-13	N/A	N/A
Maximum:			-0.11

B.7.90.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.14E-01	1.14E-01	-0.01
2	1.63E-01	1.63E-01	-0.01
5	1.40E-02	1.40E-02	0
10	6.45E-04	6.45E-04	-0.01
20	4.35E-04	4.35E-04	-0.02
50	2.22E-04	2.22E-04	-0.02
100	8.64E-05	8.64E-05	-0.01
200	3.01E-05	3.01E-05	-0.02
500	1.46E-05	1.46E-05	-0.02
1,000	6.49E-06	6.50E-06	-0.02
2,000	1.34E-06	1.34E-06	-0.03
5,000	2.92E-08	2.92E-08	-0.06
10,000	5.33E-10	5.33E-10	-0.11
20,000	3.48E-13	N/A	N/A
Maximum:			-0.11

B.7.90.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
-------------	------	----------	-------------------

1	4.91E-01	4.91E-01	0
2	2.49E-01	2.49E-01	0
5	7.24E-02	7.24E-02	-0.01
10	5.91E-02	5.91E-02	-0.01
20	5.39E-02	5.39E-02	-0.01
50	4.37E-02	4.37E-02	-0.01
100	3.55E-02	3.55E-02	-0.01
200	2.88E-02	2.88E-02	-0.02
500	1.87E-02	1.87E-02	-0.02
1,000	9.60E-03	9.60E-03	-0.02
2,000	2.99E-03	2.99E-03	-0.03
5,000	2.28E-04	2.28E-04	-0.06
10,000	5.96E-06	5.96E-06	-0.11
Maximum:			-0.11

B.7.90.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.42E-02	6.43E-02	-0.01
2	6.26E-02	6.26E-02	-0.01
5	6.05E-02	6.05E-02	-0.01
10	5.76E-02	5.76E-02	-0.01
20	5.25E-02	5.25E-02	-0.01
50	4.26E-02	4.26E-02	-0.01
100	3.46E-02	3.46E-02	-0.01
200	2.78E-02	2.78E-02	-0.02
500	1.76E-02	1.76E-02	-0.02
1,000	8.54E-03	8.54E-03	-0.02
2,000	2.31E-03	2.31E-03	-0.03
5,000	1.29E-04	1.29E-04	-0.06
10,000	2.87E-06	2.87E-06	-0.11
20,000	2.09E-09	2.10E-09	-0.21
Maximum:			-0.21

B.7.91. Lutetium – Ingestion of ¹⁷⁴Lu (f₁ = 0.0005)

Maximum difference for **Urine**: -0.1%

Maximum difference for **Feces**: -0.1%.

Maximum difference for **Whole Body**: -0.1%

B.7.91.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.83E-05	7.83E-05	-0.01
2	1.46E-05	1.46E-05	0.02
5	1.01E-07	1.00E-07	0
10	7.72E-08	7.72E-08	0
20	5.34E-08	5.34E-08	0
50	3.24E-08	3.24E-08	0
100	2.85E-08	2.85E-08	0
200	2.63E-08	2.63E-08	0
500	2.09E-08	2.09E-08	0
1,000	1.42E-08	1.42E-08	-0.01
2,000	6.56E-09	6.56E-09	-0.02
5,000	6.47E-10	6.48E-10	-0.05
10,000	1.37E-11	1.37E-11	-0.1
20,000	6.07E-15	N/A	N/A
Maximum:			-0.1

B.7.91.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.82E-01	2.82E-01	0
2	3.89E-01	3.89E-01	0
5	3.13E-02	3.13E-02	0
10	2.18E-04	2.18E-04	0
20	6.59E-08	6.59E-08	0
50	3.27E-08	3.27E-08	0
100	2.85E-08	2.85E-08	0
200	2.63E-08	2.63E-08	0
500	2.09E-08	2.09E-08	0
1,000	1.42E-08	1.42E-08	-0.01
2,000	6.56E-09	6.56E-09	-0.02
5,000	6.48E-10	6.48E-10	-0.05
10,000	1.37E-11	1.37E-11	-0.1
20,000	6.07E-15	N/A	N/A
Maximum:			-0.1

B.7.91.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.17E-01	7.17E-01	0
2	3.28E-01	3.28E-01	0
5	1.90E-02	1.90E-02	0
10	4.36E-04	4.36E-04	0
20	3.06E-04	3.06E-04	0
50	2.98E-04	2.98E-04	0

100	2.87E-04	2.87E-04	0
200	2.66E-04	2.66E-04	0
500	2.11E-04	2.11E-04	-0.01
1,000	1.43E-04	1.43E-04	-0.01
2,000	6.62E-05	6.63E-05	-0.02
5,000	6.54E-06	6.54E-06	-0.05
10,000	1.38E-07	1.38E-07	-0.1
Maximum:			-0.1

B.7.92. Lutetium – Injection of ¹⁷⁴Lu

Maximum difference for **Urine**: -0.2%.

Maximum difference for **Feces**: -0.2%.

Maximum difference for **Whole Body**: -0.1%.

B.7.92.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.72E-01	1.72E-01	0
2	1.45E-02	1.45E-02	0.03
5	1.95E-04	1.95E-04	0
10	1.53E-04	1.53E-04	0
20	1.06E-04	1.06E-04	0
50	6.47E-05	6.47E-05	0
100	5.70E-05	5.70E-05	0
200	5.26E-05	5.26E-05	0
500	4.17E-05	4.18E-05	0
1,000	2.84E-05	2.84E-05	-0.01
2,000	1.31E-05	1.31E-05	-0.02
5,000	1.30E-06	1.30E-06	-0.05
10,000	2.73E-08	2.73E-08	-0.1
20,000	1.21E-11	1.22E-11	-0.2
Maximum:			-0.2

50	6.53E-05	6.53E-05	0
100	5.71E-05	5.71E-05	0
200	5.26E-05	5.26E-05	0
500	4.18E-05	4.18E-05	0
1,000	2.84E-05	2.84E-05	-0.01
2,000	1.31E-05	1.31E-05	-0.02
5,000	1.30E-06	1.30E-06	-0.05
10,000	2.73E-08	2.73E-08	-0.1
20,000	1.21E-11	1.22E-11	-0.2
Maximum:			-0.2

B.7.92.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.84E-01	7.84E-01	0
2	6.97E-01	6.97E-01	0
5	6.26E-01	6.26E-01	0
10	6.18E-01	6.18E-01	0
20	6.12E-01	6.12E-01	0
50	5.97E-01	5.97E-01	0
100	5.74E-01	5.74E-01	0
200	5.31E-01	5.31E-01	0
500	4.22E-01	4.22E-01	0
1,000	2.87E-01	2.87E-01	-0.01
2,000	1.33E-01	1.33E-01	-0.02
5,000	1.31E-02	1.31E-02	-0.05
10,000	2.76E-04	2.76E-04	-0.1
Maximum:			-0.1

B.7.92.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.30E-02	4.30E-02	-0.01
2	7.28E-02	7.28E-02	0
5	7.40E-03	7.40E-03	0.01
10	2.14E-04	2.14E-04	0
20	1.11E-04	1.11E-04	0

B.7.93. Manganese – Injection of ⁵⁴Mn

Maximum difference for **Urine**: +0.06%.

Maximum difference for **Feces**: +0.05%.

Maximum difference for **Whole Body**: +0.06%.

B.7.93.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.779E-02	1.779E-02	-0.01
2	2.663E-02	2.663E-02	-0.01
5	1.836E-02	1.836E-02	0.00

10	1.038E-02	1.038E-02	0.00
20	5.089E-03	5.089E-03	0.00
50	2.325E-03	2.325E-03	0.00
100	8.731E-04	8.730E-04	0.01
200	1.236E-04	1.236E-04	0.02
500	3.511E-07	3.509E-07	0.06
1,000	1.999E-11	N/A	N/A

2,000	6.484E-20	N/A	N/A
5,000	2.803E-45	N/A	N/A
Maximum:			0.06

B.7.93.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.312E-03	2.313E-03	-0.02
2	1.271E-02	1.271E-02	-0.01
5	2.111E-02	2.111E-02	0.00
10	1.220E-02	1.220E-02	0.00
20	5.490E-03	5.490E-03	0.00
50	2.387E-03	2.387E-03	0.00
100	8.958E-04	8.958E-04	0.01
200	1.269E-04	1.268E-04	0.02
500	3.602E-07	3.600E-07	0.05
1,000	2.052E-11	N/A	N/A
2,000	6.653E-20	N/A	N/A
5,000	2.803E-45	N/A	N/A

Maximum:	0.05
----------	------

B.7.93.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.777E-01	9.777E-01	0.00
2	9.362E-01	9.362E-01	0.00
5	8.038E-01	8.037E-01	0.00
10	6.528E-01	6.528E-01	0.00
20	4.946E-01	4.946E-01	0.00
50	2.690E-01	2.690E-01	0.01
100	1.012E-01	1.012E-01	0.02
200	1.433E-02	1.433E-02	0.02
500	4.070E-05	4.067E-05	0.06
1,000	2.318E-09	N/A	N/A
2,000	7.516E-18	N/A	N/A
5,000	2.564E-43	N/A	N/A
Maximum:			0.06

B.7.94. Mercury – Inhalation of ²⁰³Hg (type “F”)

Maximum difference for **Urine**: -0.24%.

Maximum difference for **Feces**: -0.24%.

Maximum difference for **Whole Body**: -0.45%.

B.7.94.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.06E-04	8.06E-04	-0.01
2	1.39E-03	1.39E-03	-0.01
5	1.33E-03	1.33E-03	-0.01
10	1.19E-03	1.19E-03	0
20	9.37E-04	9.37E-04	-0.01
50	4.62E-04	4.62E-04	-0.03
100	1.43E-04	1.43E-04	-0.05
200	1.36E-05	1.36E-05	-0.1
500	1.20E-08	1.20E-08	-0.24
1,000	2.92E-13	N/A	N/A
2,000	6.55E-20	N/A	N/A
5,000	2.22E-39	N/A	N/A
Maximum:			-0.24

B.7.94.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.68E-02	3.68E-02	0
2	4.49E-02	4.49E-02	0
5	4.56E-03	4.56E-03	-0.01
10	1.22E-03	1.22E-03	-0.01
20	9.49E-04	9.49E-04	-0.01

50	4.68E-04	4.68E-04	-0.03
100	1.44E-04	1.44E-04	-0.05
200	1.37E-05	1.38E-05	-0.1
500	1.21E-08	1.21E-08	-0.24
1,000	2.93E-13	N/A	N/A
2,000	6.55E-20	N/A	N/A
5,000	2.22E-39	N/A	N/A
Maximum:			-0.24

B.7.94.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.59E-01	5.59E-01	0
2	4.28E-01	4.28E-01	-0.01
5	3.29E-01	3.29E-01	-0.01
10	2.90E-01	2.90E-01	-0.01
20	2.30E-01	2.30E-01	-0.02
50	1.15E-01	1.15E-01	-0.03
100	3.70E-02	3.70E-02	-0.05
200	4.04E-03	4.04E-03	-0.1
500	1.30E-05	1.30E-05	-0.23
1,000	5.86E-09	5.89E-09	-0.45
2,000	1.89E-15	N/A	N/A
5,000	6.41E-35	N/A	N/A
Maximum:			-0.45

B.7.95. Mercury – Ingestion of ²⁰³Hg (f₁ = 0.99)

Maximum difference for **Urine**: -0.23%.

Maximum difference for **Feces**: -0.23%.

Maximum difference for **Whole Body**: -0.44%.

B.7.95.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.19E-03	2.19E-03	0
2	3.80E-03	3.80E-03	0
5	3.66E-03	3.66E-03	0
10	3.25E-03	3.25E-03	0
20	2.57E-03	2.57E-03	-0.01
50	1.27E-03	1.27E-03	-0.02
100	3.91E-04	3.91E-04	-0.04
200	3.72E-05	3.72E-05	-0.09
500	3.28E-08	3.29E-08	-0.23
1,000	8.01E-13	N/A	N/A
2,000	1.80E-19	N/A	N/A
5,000	6.09E-39	N/A	N/A
Maximum:			-0.23

B.7.95.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.80E-03	3.80E-03	0
2	5.13E-03	5.13E-03	0
5	3.79E-03	3.79E-03	0
10	3.29E-03	3.29E-03	0
20	2.60E-03	2.60E-03	0

50	1.28E-03	1.28E-03	-0.02
100	3.96E-04	3.96E-04	-0.04
200	3.77E-05	3.77E-05	-0.09
500	3.32E-08	3.33E-08	-0.23
1,000	8.05E-13	N/A	N/A
2,000	1.80E-19	N/A	N/A
5,000	6.09E-39	N/A	N/A
Maximum:			-0.23

B.7.95.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.79E-01	9.79E-01	0
2	9.56E-01	9.56E-01	0
5	8.91E-01	8.91E-01	0
10	7.94E-01	7.94E-01	0
20	6.30E-01	6.30E-01	-0.01
50	3.16E-01	3.17E-01	-0.02
100	1.01E-01	1.02E-01	-0.05
200	1.11E-02	1.11E-02	-0.09
500	3.55E-05	3.56E-05	-0.22
1,000	1.61E-08	1.62E-08	-0.44
2,000	5.18E-15	N/A	N/A
5,000	1.76E-34	N/A	N/A
Maximum:			-0.44

B.7.96. Mercury – Injection of ²⁰³Hg

Maximum difference for **Urine**: -0.23%.

Maximum difference for **Feces**: -0.23%.

Maximum difference for **Whole Body**: -0.44%.

B.7.96.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.37E-03	2.37E-03	0
2	3.85E-03	3.85E-03	0
5	3.69E-03	3.69E-03	0
10	3.28E-03	3.28E-03	0
20	2.59E-03	2.59E-03	0
50	1.28E-03	1.28E-03	-0.02
100	3.95E-04	3.95E-04	-0.04
200	3.75E-05	3.76E-05	-0.09
500	3.31E-08	3.32E-08	-0.23
1,000	8.09E-13	N/A	N/A
2,000	1.82E-19	N/A	N/A
5,000	6.15E-39	N/A	N/A
Maximum:			-0.23

B.7.96.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.03E-04	3.03E-04	-0.01
2	1.72E-03	1.72E-03	0
5	3.59E-03	3.59E-03	0
10	3.32E-03	3.32E-03	0
20	2.63E-03	2.63E-03	0

50	1.30E-03	1.30E-03	-0.02
100	4.00E-04	4.00E-04	-0.04
200	3.80E-05	3.81E-05	-0.09
500	3.35E-08	3.36E-08	-0.23
1,000	8.13E-13	N/A	N/A
2,000	1.82E-19	N/A	N/A
5,000	6.15E-39	N/A	N/A
Maximum:			-0.23

B.7.96.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.83E-01	9.83E-01	0
2	9.63E-01	9.63E-01	0
5	9.00E-01	9.00E-01	0
10	8.02E-01	8.02E-01	0
20	6.37E-01	6.37E-01	-0.01
50	3.20E-01	3.20E-01	-0.02
100	1.02E-01	1.03E-01	-0.05
200	1.12E-02	1.12E-02	-0.09
500	3.59E-05	3.60E-05	-0.22
1,000	1.62E-08	1.63E-08	-0.44
2,000	5.24E-15	N/A	N/A
5,000	1.78E-34	N/A	N/A
Maximum:			-0.44

B.7.97. Molybdenum – Inhalation of ⁹⁹Mo (type “F”)

Maximum difference for **Urine**: +0.23%.

Maximum difference for **Feces**: +0.23%.

Maximum difference for **Whole Body**: +0.44%.

B.7.97.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.03E-02	1.03E-02	0.01
2	9.66E-03	9.66E-03	0.01
5	1.64E-03	1.63E-03	0.02
10	3.17E-04	3.17E-04	0.06
20	2.19E-05	2.19E-05	0.1
50	7.51E-09	7.50E-09	0.23
100	1.27E-14	N/A	N/A
200	3.60E-26	N/A	N/A
Maximum:			+0.23

B.7.97.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.08E-02	1.08E-02	0
2	9.55E-03	9.55E-03	0.01
5	6.20E-04	6.20E-04	0.02

10	4.28E-05	4.27E-05	0.06
20	2.79E-06	2.79E-06	0.1
50	9.59E-10	9.56E-10	0.23
100	1.61E-15	N/A	N/A
200	4.60E-27	N/A	N/A
Maximum:			+0.23

B.7.97.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.50E-01	4.50E-01	0
2	2.83E-01	2.83E-01	0.01
5	1.09E-01	1.09E-01	0.02
10	2.88E-02	2.88E-02	0.04
20	2.05E-03	2.05E-03	0.08
50	7.54E-07	7.52E-07	0.22
100	1.52E-12	1.51E-12	0.44
200	8.45E-24	N/A	N/A
Maximum:			+0.44

B.7.98. Molybdenum – Ingestion of ⁹⁹Mo (f₁ = 0.8)

Maximum difference for **Urine**: +0.24%.

Maximum difference for **Feces**: +0.24%.

Maximum difference for **Whole Body**: +0.45%.

B.7.98.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.75E-02	1.75E-02	0.01
2	1.78E-02	1.78E-02	0.02
5	2.99E-03	2.99E-03	0.03
10	5.75E-04	5.75E-04	0.06
20	3.97E-05	3.97E-05	0.11
50	1.36E-08	1.36E-08	0.24
100	2.30E-14	N/A	N/A
200	6.54E-26	N/A	N/A
Maximum:			+0.24

B.7.98.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.38E-02	5.38E-02	0
2	4.55E-02	4.55E-02	0.01
5	2.11E-03	2.11E-03	0.03

10	7.97E-05	7.96E-05	0.06
20	5.07E-06	5.06E-06	0.11
50	1.74E-09	1.74E-09	0.24
100	2.93E-15	N/A	N/A
200	8.34E-27	N/A	N/A
Maximum:			+0.24

B.7.98.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.06E-01	7.06E-01	0
2	4.85E-01	4.85E-01	0.01
5	1.98E-01	1.98E-01	0.02
10	5.22E-02	5.22E-02	0.04
20	3.72E-03	3.72E-03	0.09
50	1.37E-06	1.37E-06	0.22
100	2.75E-12	2.74E-12	0.45
200	1.53E-23	N/A	N/A
Maximum:			+0.45

B.7.99. Molybdenum – Injection of ⁹⁹Mo

Maximum difference for **Urine**: +0.24%.

Maximum difference for **Feces**: +0.24%.

Maximum difference for **Whole Body**: +0.45%.

B.7.99.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.44E-02	2.44E-02	0.01
2	2.17E-02	2.16E-02	0.02
5	3.68E-03	3.68E-03	0.03
10	7.17E-04	7.17E-04	0.06
20	4.96E-05	4.96E-05	0.11
50	1.70E-08	1.70E-08	0.24
100	2.87E-14	N/A	N/A
200	8.16E-26	N/A	N/A
Maximum:			+0.24

B.7.99.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.17E-04	4.17E-04	0.01
2	1.56E-03	1.56E-03	0.02
5	6.97E-04	6.96E-04	0.03

10	9.54E-05	9.54E-05	0.06
20	6.33E-06	6.32E-06	0.11
50	2.17E-09	2.17E-09	0.24
100	3.66E-15	N/A	N/A
200	1.04E-26	N/A	N/A
Maximum:			+0.24

B.7.99.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.52E-01	7.52E-01	0
2	5.62E-01	5.62E-01	0.01
5	2.46E-01	2.46E-01	0.02
10	6.52E-02	6.52E-02	0.04
20	4.65E-03	4.65E-03	0.09
50	1.71E-06	1.71E-06	0.22
100	3.43E-12	3.42E-12	0.45
200	1.92E-23	N/A	N/A
Maximum:			+0.45

B.7.100. Neptunium – Inhalation of ²³⁷Np (type “M”)

Maximum difference for **Urine**: -0.01%.

Maximum difference for **Feces**: +0.20%.

Maximum difference for **Whole Body**: +0.06%.

Maximum difference for **Lungs**: -0.01%.

B.7.100.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.221E-03	6.222E-03	-0.01
2	1.336E-03	1.336E-03	-0.01
5	3.438E-04	3.438E-04	-0.01
10	1.277E-04	1.277E-04	-0.01
20	8.827E-05	8.828E-05	-0.01
50	6.151E-05	6.151E-05	-0.01
100	4.158E-05	4.159E-05	-0.01
200	2.449E-05	2.449E-05	-0.01
500	8.505E-06	8.506E-06	-0.01
1,000	4.670E-06	4.670E-06	-0.01
2,000	3.188E-06	3.188E-06	-0.01
5,000	1.569E-06	1.569E-06	-0.01
10,000	8.392E-07	8.393E-07	-0.01
20,000	4.525E-07	4.525E-07	-0.01
Maximum:			-0.01

B.7.100.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

1	1.083E-01	1.083E-01	-0.01
2	1.547E-01	1.547E-01	0.00
5	1.330E-02	1.330E-02	0.00
10	5.731E-04	5.732E-04	-0.01
20	3.649E-04	3.650E-04	-0.01
50	1.643E-04	1.643E-04	-0.02
100	5.205E-05	5.205E-05	-0.01
200	1.236E-05	1.236E-05	-0.01
500	2.103E-06	2.103E-06	-0.04
1,000	4.141E-07	4.139E-07	0.05
2,000	1.670E-07	1.671E-07	-0.07
5,000	6.942E-08	6.929E-08	0.19
10,000	3.590E-08	3.597E-08	-0.19
20,000	1.918E-08	1.915E-08	0.18
Maximum:			0.20

B.7.100.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.911E-01	4.911E-01	0.00
2	2.563E-01	2.563E-01	0.00
5	8.485E-02	8.486E-02	-0.01
10	7.154E-02	7.156E-02	-0.04
20	6.636E-02	6.636E-02	0.00

50	5.679E-02	5.677E-02	0.02
100	4.952E-02	4.955E-02	-0.05
200	4.384E-02	4.387E-02	-0.06
500	3.803E-02	3.800E-02	0.06
1,000	3.459E-02	3.458E-02	0.03
2,000	3.050E-02	3.050E-02	0.01
5,000	2.360E-02	2.360E-02	-0.02
10,000	1.774E-02	1.773E-02	0.05
20,000	1.140E-02	1.140E-02	0.01
Maximum:			0.06

B.7.100.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
-------------	------	----------	-------------------

1	5.763E-02	5.763E-02	-0.01
2	5.594E-02	5.594E-02	-0.01
5	5.336E-02	5.337E-02	-0.01
10	4.966E-02	4.966E-02	-0.01
20	4.341E-02	4.342E-02	-0.01
50	3.092E-02	3.093E-02	-0.01
100	2.023E-02	2.024E-02	-0.01
200	1.056E-02	1.056E-02	-0.01
500	1.820E-03	1.820E-03	-0.01
1,000	1.017E-04	1.017E-04	-0.01
2,000	3.636E-07	3.636E-07	-0.01
5,000	4.670E-14	N/A	N/A
10,000	4.209E-25	N/A	N/A
Maximum:			-0.01

B.7.101. Neptunium – Ingestion of ²³⁷Np (f₁ = 0.0005)

Maximum difference for **Urine**: 0.00%.

Maximum difference for **Feces**: +0.21%.

Maximum difference for **Whole Body**: -0.11%.

B.7.101.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.769E-05	9.769E-05	0.00
2	3.054E-05	3.054E-05	0.00
5	5.008E-06	5.008E-06	0.00
10	8.364E-07	8.364E-07	0.00
20	2.476E-07	2.476E-07	0.00
50	1.165E-07	1.165E-07	0.00
100	7.345E-08	7.345E-08	0.00
200	5.602E-08	5.602E-08	0.00
500	4.199E-08	4.199E-08	0.00
1,000	3.544E-08	3.544E-08	0.00
2,000	2.513E-08	2.513E-08	0.00
5,000	1.254E-08	1.254E-08	0.00
10,000	6.761E-09	6.761E-09	0.00
20,000	3.658E-09	3.658E-09	0.00
Maximum:			0.00

B.7.101.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.823E-01	2.823E-01	0.00
2	3.889E-01	3.889E-01	0.00
5	3.140E-02	3.140E-02	0.00
10	2.195E-04	2.195E-04	0.00
20	1.867E-08	1.868E-08	-0.07

50	7.967E-09	7.962E-09	0.06
100	7.301E-09	7.292E-09	0.12
200	6.208E-09	6.204E-09	0.07
500	4.135E-09	4.142E-09	-0.18
1,000	2.492E-09	2.488E-09	0.14
2,000	1.289E-09	1.290E-09	-0.11
5,000	5.546E-10	5.534E-10	0.21
10,000	2.892E-10	2.897E-10	-0.17
20,000	1.551E-10	1.548E-10	0.19
Maximum:			0.21

B.7.101.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.176E-01	7.176E-01	0.00
2	3.287E-01	3.287E-01	0.00
5	1.908E-02	1.908E-02	0.00
10	4.617E-04	4.620E-04	-0.07
20	3.305E-04	3.304E-04	0.04
50	3.255E-04	3.252E-04	0.08
100	3.201E-04	3.204E-04	-0.11
200	3.132E-04	3.134E-04	-0.06
500	2.981E-04	2.978E-04	0.10
1,000	2.771E-04	2.770E-04	0.04
2,000	2.453E-04	2.453E-04	0.01
5,000	1.905E-04	1.905E-04	0.00
10,000	1.434E-04	1.433E-04	0.06
Maximum:			-0.11

B.7.102. Neptunium – Injection of ²³⁷Np

Maximum difference for **Urine**: 0.00%.

Maximum difference for **Feces**: -0.32%.

Maximum difference for **Whole Body**: -0.11%.

B.7.102.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.189E-01	2.189E-01	0.00
2	4.420E-02	4.420E-02	0.00
5	9.167E-03	9.167E-03	0.00
10	1.577E-03	1.577E-03	0.00
20	4.910E-04	4.910E-04	0.00
50	2.321E-04	2.321E-04	0.00
100	1.468E-04	1.468E-04	0.00
200	1.120E-04	1.120E-04	0.00
500	8.396E-05	8.396E-05	0.00
1,000	7.088E-05	7.087E-05	0.00
2,000	5.026E-05	5.026E-05	0.00
5,000	2.509E-05	2.509E-05	0.00
10,000	1.352E-05	1.352E-05	0.00
20,000	7.316E-06	7.316E-06	0.00
Maximum:			0.00

B.7.102.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.150E-03	1.152E-03	-0.12
2	2.141E-03	2.139E-03	0.11
5	5.274E-04	5.291E-04	-0.32
10	6.345E-05	6.327E-05	0.28
20	1.733E-05	1.736E-05	-0.18

50	1.593E-05	1.592E-05	0.03
100	1.460E-05	1.458E-05	0.08
200	1.241E-05	1.241E-05	0.03
500	8.268E-06	8.286E-06	-0.22
1,000	4.982E-06	4.977E-06	0.11
2,000	2.578E-06	2.581E-06	-0.13
5,000	1.109E-06	1.107E-06	0.18
10,000	5.783E-07	5.795E-07	-0.20
20,000	3.102E-07	3.097E-07	0.17
Maximum:			-0.32

B.7.102.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.797E-01	7.799E-01	-0.03
2	7.336E-01	7.336E-01	0.01
5	6.858E-01	6.858E-01	0.00
10	6.674E-01	6.680E-01	-0.10
20	6.609E-01	6.606E-01	0.04
50	6.509E-01	6.504E-01	0.08
100	6.401E-01	6.408E-01	-0.11
200	6.265E-01	6.268E-01	-0.06
500	5.962E-01	5.956E-01	0.10
1,000	5.541E-01	5.539E-01	0.03
2,000	4.905E-01	4.905E-01	0.01
5,000	3.809E-01	3.809E-01	0.00
10,000	2.868E-01	2.866E-01	0.06
Maximum:			-0.11

B.7.103. Neptunium – Inhalation of ²³⁹Np (type “M”)

Maximum difference for **Urine**: -0.16%.

Maximum difference for **Feces**: -0.16%.

Maximum difference for **Whole Body**: -0.13%.

Maximum difference for **Lungs**: -0.16%.

B.7.103.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.635E-03	4.635E-03	-0.01
2	7.414E-04	7.415E-04	-0.01
5	7.891E-05	7.893E-05	-0.02
10	6.727E-06	6.730E-06	-0.04
20	2.451E-07	2.452E-07	-0.07
50	2.498E-11	2.502E-11	-0.16
100	6.860E-18	N/A	N/A
200	6.664E-31	N/A	N/A
Maximum:			-0.16

B.7.103.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.071E-02	8.072E-02	-0.01
2	8.587E-02	8.588E-02	-0.01
5	3.052E-03	3.053E-03	-0.02
10	3.020E-05	3.021E-05	-0.04
20	1.013E-06	1.014E-06	-0.07

50	6.673E-11	6.684E-11	-0.16
100	8.586E-18	N/A	N/A
200	3.364E-31	N/A	N/A
Maximum:			-0.16

B.7.103.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.659E-01	3.659E-01	-0.01
2	1.423E-01	1.423E-01	-0.01
5	1.948E-02	1.948E-02	-0.02
10	3.769E-03	3.772E-03	-0.07
20	1.842E-04	1.843E-04	-0.06
50	2.306E-08	2.309E-08	-0.13
100	8.170E-15	N/A	N/A
200	1.193E-27	N/A	N/A
Maximum:			-0.13

B.7.103.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.294E-02	4.294E-02	-0.01

2	3.105E-02	3.105E-02	-0.02
5	1.225E-02	1.225E-02	-0.03
10	2.617E-03	2.618E-03	-0.04
20	1.205E-04	1.206E-04	-0.08
50	1.256E-08	1.258E-08	-0.16

100	3.338E-15	N/A	N/A
200	2.873E-28	N/A	N/A
Maximum:			-0.16

B.7.104. Neptunium – Ingestion of ²³⁹Np (f₁ = 0.0005)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.13%

Maximum difference for **Whole Body**: -0.10%.

B.7.104.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.278E-05	7.278E-05	0.00
2	1.695E-05	1.695E-05	-0.01
5	1.150E-06	1.150E-06	-0.02
10	4.407E-08	4.408E-08	-0.03
20	6.876E-10	6.880E-10	-0.06
50	4.731E-14	N/A	N/A
100	1.212E-20	N/A	N/A
200	1.525E-33	N/A	N/A
Maximum:			-0.06

B.7.104.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.103E-01	2.103E-01	0.00
2	2.159E-01	2.159E-01	-0.01
5	7.207E-03	7.208E-03	-0.01

10	1.157E-05	1.157E-05	-0.03
20	5.182E-11	5.189E-11	-0.13
50	3.236E-15	N/A	N/A
100	1.204E-21	N/A	N/A
200	1.690E-34	N/A	N/A
Maximum:			-0.13

B.7.104.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.347E-01	5.347E-01	0.00
2	1.825E-01	1.825E-01	-0.01
5	4.379E-03	4.380E-03	-0.02
10	2.433E-05	2.435E-05	-0.10
20	9.176E-07	9.178E-07	-0.02
50	1.322E-10	N/A	N/A
100	5.280E-17	N/A	N/A
200	8.525E-30	N/A	N/A
Maximum:			-0.10

B.7.105. Neptunium – Injection of ²³⁹Np

Maximum difference for **Urine**: -0.15%.

Maximum difference for **Feces**: -0.34%

Maximum difference for **Whole Body**: -0.12%.

B.7.105.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.631E-01	1.631E-01	0.00
2	2.454E-02	2.454E-02	0.00
5	2.104E-03	2.105E-03	-0.01
10	8.310E-05	8.312E-05	-0.03
20	1.363E-06	1.364E-06	-0.06
50	9.428E-11	9.442E-11	-0.15
100	2.421E-17	N/A	N/A
200	3.048E-30	N/A	N/A
Maximum:			-0.15

B.7.105.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.569E-04	8.580E-04	-0.13
2	1.188E-03	1.187E-03	0.10
5	1.211E-04	1.215E-04	-0.34

10	3.343E-06	3.335E-06	0.25
20	4.811E-08	4.823E-08	-0.24
50	6.470E-12	6.478E-12	-0.13
100	2.408E-18	N/A	N/A
200	3.378E-31	N/A	N/A
Maximum:			-0.34

B.7.105.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.809E-01	5.811E-01	-0.03
2	4.072E-01	4.072E-01	0.00
5	1.574E-01	1.574E-01	-0.01
10	3.517E-02	3.521E-02	-0.12
20	1.835E-03	1.835E-03	-0.02
50	2.644E-07	2.645E-07	-0.07
100	1.056E-13	N/A	N/A
200	1.705E-26	N/A	N/A
Maximum:			-0.12

B.7.106. Nickel – Injection of ⁶³Ni

Maximum difference for **Urine**: +0.02%.

Maximum difference for **Feces**: +0.03%.

B.7.106.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.097E-01	6.098E-01	-0.01
2	5.352E-02	5.351E-02	0.01
5	1.784E-04	1.783E-04	0.02
10	1.641E-04	1.641E-04	0.01
20	1.632E-04	1.631E-04	0.01
50	1.603E-04	1.602E-04	0.01
100	1.556E-04	1.555E-04	0.01
200	1.465E-04	1.465E-04	0.01
500	1.225E-04	1.225E-04	0.01
1,000	9.086E-05	9.085E-05	0.01
2,000	4.999E-05	4.999E-05	0.01
5,000	8.329E-06	8.329E-06	0.00
10,000	4.201E-07	4.201E-07	-0.01
20,000	1.069E-09	N/A	N/A
Maximum:			0.02

B.7.106.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.546E-03	7.547E-03	-0.01
2	1.293E-02	1.293E-02	0.00
5	1.306E-03	1.306E-03	0.01
10	1.746E-05	1.746E-05	0.02
20	8.166E-06	8.163E-06	0.03
50	8.020E-06	8.018E-06	0.03
100	7.784E-06	7.782E-06	0.03
200	7.333E-06	7.331E-06	0.03
500	6.130E-06	6.128E-06	0.03
1,000	4.547E-06	4.546E-06	0.03
2,000	2.502E-06	2.501E-06	0.02
5,000	4.168E-07	4.167E-07	0.02
10,000	2.102E-08	2.102E-08	0.00
Maximum:			0.03

B.7.107. Niobium – Inhalation of ⁹⁵Nb (type “M”)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.01%.

Maximum difference for **Lungs**: -0.01%.

B.7.107.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.375E-04	8.375E-04	0.01
2	1.328E-03	1.328E-03	0.01
5	9.638E-04	9.638E-04	0.01
10	5.480E-04	5.480E-04	-0.01
20	2.109E-04	2.109E-04	-0.02
50	4.880E-05	4.881E-05	-0.01
100	1.377E-05	1.377E-05	-0.01
200	1.354E-06	1.354E-06	-0.01
500	1.372E-09	1.372E-09	0.01
1,000	1.324E-14	N/A	N/A
2,000	1.152E-24	N/A	N/A
Maximum:			-0.02

B.7.107.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.055E-01	1.055E-01	0.00
2	1.473E-01	1.473E-01	-0.01
5	1.211E-02	1.211E-02	0.00
10	5.889E-04	5.889E-04	-0.01
20	2.888E-04	2.888E-04	-0.02
50	6.998E-05	6.999E-05	-0.01

100	9.752E-06	9.753E-06	-0.01
200	4.889E-07	4.889E-07	-0.01
500	3.528E-10	3.528E-10	-0.01
1,000	2.864E-15	N/A	N/A
2,000	2.331E-25	N/A	N/A
Maximum:			-0.02

B.7.107.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.875E-01	4.875E-01	0.00
2	2.537E-01	2.537E-01	0.00
5	8.264E-02	8.265E-02	-0.01
10	6.074E-02	6.075E-02	-0.01
20	4.343E-02	4.343E-02	-0.01
50	1.888E-02	1.888E-02	-0.01
100	5.469E-03	5.470E-03	-0.01
200	5.225E-04	5.225E-04	-0.01
500	5.000E-07	5.000E-07	0.00
1,000	4.655E-12	N/A	N/A
2,000	3.993E-22	N/A	N/A
Maximum:			-0.01

B.7.107.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
-------------	------	----------	-------------------

1	5.650E-02	5.651E-02	-0.01
2	5.377E-02	5.378E-02	-0.01
5	4.835E-02	4.836E-02	-0.01
10	4.077E-02	4.078E-02	-0.01
20	2.926E-02	2.927E-02	-0.01
50	1.154E-02	1.154E-02	-0.01
100	2.816E-03	2.816E-03	-0.01

200	2.045E-04	2.045E-04	-0.01
500	9.506E-08	9.505E-08	0.00
1,000	2.774E-13	N/A	N/A
2,000	2.706E-24	N/A	N/A
Maximum:			-0.01

B.7.108. Niobium – Inhalation of ⁹⁵Nb (type “S”)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: -0.01%.

Maximum difference for **Lungs**: -0.01%.

B.7.108.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.512E-05	8.511E-05	0.01
2	1.805E-04	1.805E-04	0.01
5	1.323E-04	1.322E-04	0.00
10	7.130E-05	7.130E-05	0.00
20	2.332E-05	2.332E-05	-0.02
50	3.671E-06	3.672E-06	-0.01
100	1.035E-06	1.035E-06	0.00
200	1.118E-07	1.118E-07	0.00
500	1.760E-10	1.760E-10	0.00
1,000	4.804E-15	N/A	N/A
2,000	5.537E-24	N/A	N/A
Maximum:			-0.02

B.7.108.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.827E-01	4.827E-01	0.00
2	2.421E-01	2.421E-01	0.00
5	6.871E-02	6.872E-02	-0.01
10	5.102E-02	5.102E-02	-0.01
20	3.814E-02	3.814E-02	-0.01
50	1.737E-02	1.738E-02	-0.01
100	5.416E-03	5.416E-03	-0.01
200	6.389E-04	6.389E-04	-0.01
500	1.277E-06	1.276E-06	0.00
1,000	4.293E-11	N/A	N/A
2,000	5.652E-20	N/A	N/A
Maximum:			-0.01

B.7.108.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.111E-01	1.111E-01	0.00
2	1.552E-01	1.552E-01	0.00
5	1.262E-02	1.262E-02	0.00
10	5.433E-04	5.434E-04	-0.01
20	2.985E-04	2.985E-04	-0.01
50	8.498E-05	8.499E-05	-0.01
100	1.272E-05	1.272E-05	-0.01
200	6.562E-07	6.563E-07	-0.01
500	1.015E-09	1.015E-09	0.00
1,000	3.087E-14	N/A	N/A
2,000	2.974E-23	N/A	N/A
Maximum:			-0.01

B.7.108.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.302E-02	6.303E-02	-0.01
2	6.027E-02	6.028E-02	-0.01
5	5.500E-02	5.501E-02	-0.01
10	4.753E-02	4.753E-02	-0.01
20	3.582E-02	3.583E-02	-0.01
50	1.636E-02	1.636E-02	-0.01
100	5.102E-03	5.103E-03	-0.01
200	6.048E-04	6.048E-04	-0.01
500	1.223E-06	1.223E-06	0.00
1,000	4.135E-11	N/A	N/A
2,000	5.416E-20	N/A	N/A
Maximum:			-0.01

B.7.109. Niobium – Ingestion of ⁹⁵Nb (f₁ = 0.01)

Maximum difference for **Urine**: +0.02%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: +0.01%.

B.7.109.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.926E-04	1.926E-04	0.01
2	4.060E-04	4.059E-04	0.02
5	2.930E-04	2.929E-04	0.01
10	1.539E-04	1.539E-04	0.00
20	4.595E-05	4.596E-05	-0.02
50	5.185E-06	5.186E-06	-0.01
100	1.428E-06	1.428E-06	0.01
200	1.404E-07	1.404E-07	0.01
500	1.339E-10	1.338E-10	0.01
1,000	1.236E-15	N/A	N/A
2,000	1.054E-25	N/A	N/A
Maximum:			0.02

B.7.109.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.748E-01	2.748E-01	0.00
2	3.702E-01	3.701E-01	0.00
5	2.819E-02	2.819E-02	0.00
10	2.145E-04	2.145E-04	0.00

20	1.065E-05	1.066E-05	-0.01
50	1.067E-06	1.067E-06	-0.02
100	2.870E-07	2.870E-07	-0.01
200	2.823E-08	2.823E-08	-0.01
500	2.691E-11	2.691E-11	0.00
1,000	2.485E-16	N/A	N/A
2,000	2.118E-26	N/A	N/A
Maximum:			-0.02

B.7.109.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.055E-01	7.055E-01	0.00
2	3.212E-01	3.212E-01	0.00
5	2.408E-02	2.408E-02	0.00
10	5.523E-03	5.523E-03	0.00
20	3.527E-03	3.527E-03	0.00
50	1.580E-03	1.580E-03	0.00
100	4.936E-04	4.936E-04	0.00
200	4.858E-05	4.858E-05	0.00
500	4.631E-08	4.630E-08	0.01
1,000	4.276E-13	N/A	N/A
2,000	3.645E-23	N/A	N/A
Maximum:			0.01

B.7.110. Niobium – Injection of ⁹⁵NbMaximum difference for **Urine**: +0.02%.Maximum difference for **Feces**: -0.02%.Maximum difference for **Whole Body**: +0.01%.**B.7.110.1. Urinary Excretion Rate**

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.733E-02	2.732E-02	0.01
2	4.104E-02	4.103E-02	0.02
5	2.863E-02	2.863E-02	0.01
10	1.505E-02	1.505E-02	0.00
20	4.507E-03	4.508E-03	-0.02
50	5.167E-04	5.167E-04	-0.01
100	1.427E-04	1.426E-04	0.01
200	1.403E-05	1.403E-05	0.01
500	1.338E-08	1.337E-08	0.02
1,000	1.235E-13	N/A	N/A
2,000	1.053E-23	N/A	N/A
Maximum:			0.02

B.7.110.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.079E-04	7.078E-04	0.01
2	3.861E-03	3.861E-03	0.01
5	6.401E-03	6.400E-03	0.01
10	3.556E-03	3.555E-03	0.00

20	1.044E-03	1.044E-03	-0.02
50	1.063E-04	1.063E-04	-0.02
100	2.868E-05	2.868E-05	-0.01
200	2.821E-06	2.821E-06	-0.01
500	2.689E-09	2.689E-09	0.00
1,000	2.483E-14	N/A	N/A
2,000	2.117E-24	N/A	N/A
Maximum:			-0.02

B.7.110.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.524E-01	9.524E-01	0.00
2	8.889E-01	8.890E-01	0.00
5	7.228E-01	7.228E-01	0.00
10	5.382E-01	5.382E-01	-0.01
20	3.516E-01	3.516E-01	-0.01
50	1.579E-01	1.579E-01	0.00
100	4.933E-02	4.933E-02	0.00
200	4.855E-03	4.854E-03	0.00
500	4.628E-06	4.627E-06	0.01
1,000	4.273E-11	N/A	N/A
2,000	3.643E-21	N/A	N/A
Maximum:			0.01

B.7.111. Phosphorus – Inhalation of ³²P (type “F”)

Maximum difference for **Urine**: +0.07%.

Maximum difference for **Feces**: +0.07%.

Maximum difference for **Whole Body**: +0.08%.

B.7.111.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.859E-02	4.859E-02	0.01
2	2.787E-02	2.787E-02	-0.01
5	8.870E-03	8.870E-03	0.00
10	3.294E-03	3.294E-03	0.00
20	1.145E-03	1.145E-03	0.01
50	9.161E-05	9.161E-05	0.01
100	1.651E-06	1.651E-06	0.02
200	3.326E-09	3.323E-09	0.07
500	1.281E-15	N/A	N/A
1,000	2.981E-26	N/A	N/A
Maximum:			0.07

B.7.111.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.404E-02	1.404E-02	0.00
2	1.612E-02	1.612E-02	0.00
5	2.390E-03	2.390E-03	-0.01
10	4.494E-04	4.494E-04	-0.01

20	1.354E-04	1.354E-04	0.00
50	1.072E-05	1.072E-05	0.00
100	1.912E-07	1.912E-07	0.01
200	3.713E-10	3.711E-10	0.07
500	1.425E-16	N/A	N/A
1,000	3.315E-27	N/A	N/A

Maximum: 0.07

B.7.111.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.143E-01	5.143E-01	0.00
2	3.745E-01	3.745E-01	0.00
5	2.395E-01	2.395E-01	-0.01
10	1.613E-01	1.613E-01	0.00
20	8.319E-02	8.319E-02	0.00
50	1.405E-02	1.405E-02	0.01
100	1.026E-03	1.026E-03	0.04
200	7.396E-06	7.390E-06	0.08
500	3.080E-12	N/A	N/A
1,000	7.168E-23	N/A	N/A
2,000	3.924E-44	N/A	N/A
Maximum:			0.08

B.7.112. Phosphorus – Inhalation of ³²P (type “M”)

Maximum difference for **Urine**: +0.07%.

Maximum difference for **Feces**: +0.07%.

Maximum difference for **Whole Body**: +0.08%.

Maximum difference for **Lungs**: +0.07%.

B.7.112.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.623E-02	3.623E-02	0.01
2	2.253E-02	2.253E-02	0.00
5	7.168E-03	7.168E-03	0.00
10	2.732E-03	2.732E-03	0.00
20	9.909E-04	9.909E-04	0.01
50	8.973E-05	8.972E-05	0.01
100	2.211E-06	2.211E-06	0.02
200	5.688E-09	5.683E-09	0.07
500	1.370E-15	N/A	N/A
1,000	2.739E-26	N/A	N/A
Maximum:			0.07

B.7.112.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

1	2.597E-02	2.597E-02	0.00
2	2.867E-02	2.867E-02	0.00
5	3.047E-03	3.047E-03	-0.01
10	4.339E-04	4.339E-04	-0.01
20	1.439E-04	1.439E-04	0.00
50	1.329E-05	1.329E-05	0.00
100	3.325E-07	3.324E-07	0.02
200	7.748E-10	7.743E-10	0.07
500	1.612E-16	N/A	N/A
1,000	3.059E-27	N/A	N/A

Maximum: 0.07

B.7.112.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.147E-01	5.148E-01	0.00
2	3.677E-01	3.677E-01	0.00
5	2.328E-01	2.328E-01	-0.01
10	1.598E-01	1.598E-01	0.00
20	8.443E-02	8.443E-02	0.00

50	1.470E-02	1.470E-02	0.01
100	1.055E-03	1.055E-03	0.03
200	7.213E-06	7.208E-06	0.08
500	2.837E-12	N/A	N/A
1,000	6.512E-23	N/A	N/A
2,000	3.503E-44	N/A	N/A
Maximum:			0.08

B.7.112.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
-------------	------	----------	-------------------

1	5.490E-02	5.491E-02	-0.01
2	5.077E-02	5.077E-02	-0.01
5	4.187E-02	4.188E-02	-0.01
10	3.057E-02	3.058E-02	-0.01
20	1.645E-02	1.645E-02	0.00
50	2.735E-03	2.735E-03	0.01
100	1.583E-04	1.583E-04	0.03
200	6.462E-07	6.458E-07	0.07
500	5.335E-14	N/A	N/A
1,000	8.740E-26	N/A	N/A
Maximum:			0.07

B.7.113. Phosphorus – Ingestion of ³²P (f₁ = 0.8)

Maximum difference for **Urine**: +0.08%.

Maximum difference for **Feces**: +0.08%.

Maximum difference for **Whole Body**: +0.08%.

B.7.113.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.513E-02	8.512E-02	0.01
2	5.176E-02	5.176E-02	0.00
5	1.624E-02	1.624E-02	0.00
10	6.000E-03	5.999E-03	0.01
20	2.081E-03	2.080E-03	0.01
50	1.664E-04	1.664E-04	0.01
100	2.998E-06	2.997E-06	0.02
200	6.033E-09	6.028E-09	0.08
500	2.324E-15	N/A	N/A
1,000	5.408E-26	N/A	N/A
Maximum:			0.08

B.7.113.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.724E-02	6.724E-02	0.00
2	7.150E-02	7.149E-02	0.00
5	7.081E-03	7.082E-03	0.00
10	8.344E-04	8.344E-04	0.00

20	2.460E-04	2.459E-04	0.00
50	1.947E-05	1.947E-05	0.01
100	3.472E-07	3.471E-07	0.02
200	6.736E-10	6.731E-10	0.08
500	2.584E-16	N/A	N/A
1,000	6.012E-27	N/A	N/A
Maximum:			0.08

B.7.113.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.003E-01	8.003E-01	0.00
2	6.391E-01	6.391E-01	0.00
5	4.335E-01	4.335E-01	0.00
10	2.928E-01	2.928E-01	0.00
20	1.510E-01	1.510E-01	0.00
50	2.550E-02	2.549E-02	0.02
100	1.862E-03	1.861E-03	0.04
200	1.341E-05	1.340E-05	0.08
500	5.587E-12	N/A	N/A
1,000	1.300E-22	N/A	N/A
2,000	7.006E-44	N/A	N/A
Maximum:			0.08

B.7.114. Phosphorus – Injection of ³²P

Maximum difference for **Urine**: +0.08%.

Maximum difference for **Feces**: +0.08%.

Maximum difference for **Whole Body**: +0.08%.

B.7.114.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.131E-01	1.131E-01	0.01
2	6.200E-02	6.200E-02	0.00
5	1.996E-02	1.996E-02	0.00
10	7.444E-03	7.443E-03	0.01
20	2.593E-03	2.593E-03	0.01
50	2.075E-04	2.074E-04	0.02

100	3.740E-06	3.739E-06	0.02
200	7.539E-09	7.533E-09	0.08
500	2.905E-15	N/A	N/A
1,000	6.759E-26	N/A	N/A
Maximum:			0.08

B.7.114.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.467E-03	2.467E-03	0.02

2	6.379E-03	6.379E-03	0.01
5	3.442E-03	3.442E-03	-0.01
10	1.004E-03	1.004E-03	-0.01
20	3.065E-04	3.065E-04	0.01
50	2.428E-05	2.428E-05	0.01
100	4.331E-07	4.330E-07	0.02
200	8.418E-10	8.411E-10	0.08
500	3.230E-16	N/A	N/A
1,000	7.515E-27	N/A	N/A
Maximum:			0.08

B.7.114.3. Whole Body Retention

TIME	IMBA	PLEIADES	Difference
------	------	----------	------------

(d)			(%)
1	8.371E-01	8.371E-01	0.00
2	7.291E-01	7.291E-01	0.00
5	5.371E-01	5.371E-01	0.00
10	3.654E-01	3.653E-01	0.00
20	1.885E-01	1.885E-01	0.01
50	3.186E-02	3.185E-02	0.02
100	2.327E-03	2.326E-03	0.04
200	1.677E-05	1.675E-05	0.08
500	6.984E-12	N/A	N/A
1,000	1.625E-22	N/A	N/A
2,000	8.828E-44	N/A	N/A
Maximum:			0.08

B.7.115. Plutonium – Inhalation of ²³⁸Pu (type “M”)

Maximum difference for **Urine**: -0.08%.

Maximum difference for **Feces**: -0.23%

Maximum difference for **Whole Body**: +0.22%.

Maximum difference for **Lungs**: -0.02%

B.7.115.1. Urinary Excretion Rate

TIME	IMBA	PLEIADES	Difference
(d)	(d ⁻¹)	(d ⁻¹)	(%)
1	2.316E-04	2.316E-04	-0.01
2	1.307E-04	1.307E-04	0.00
5	3.908E-05	3.908E-05	-0.01
10	1.538E-05	1.538E-05	0.00
20	1.024E-05	1.024E-05	0.00
50	8.507E-06	8.507E-06	0.01
100	6.843E-06	6.840E-06	0.03
200	5.104E-06	5.100E-06	0.07
500	3.310E-06	3.312E-06	-0.08
1,000	2.385E-06	2.385E-06	0.02
2,000	1.567E-06	1.566E-06	0.05
5,000	8.430E-07	8.433E-07	-0.04
10,000	5.501E-07	5.501E-07	0.01
20,000	3.136E-07	3.135E-07	0.05
Maximum:			-0.08

B.7.115.2. Fecal Excretion Rate

TIME	IMBA	PLEIADES	Difference
(d)	(d ⁻¹)	(d ⁻¹)	(%)
1	1.083E-01	1.083E-01	-0.01
2	1.548E-01	1.548E-01	-0.01
5	1.334E-02	1.334E-02	0.00
10	5.847E-04	5.848E-04	-0.01
20	3.688E-04	3.688E-04	-0.02
50	1.671E-04	1.671E-04	-0.01
100	5.429E-05	5.430E-05	-0.01
200	1.409E-05	1.409E-05	-0.01
500	3.122E-06	3.124E-06	-0.05
1,000	1.015E-06	1.013E-06	0.16
2,000	5.469E-07	5.482E-07	-0.23
5,000	3.503E-07	3.496E-07	0.21
10,000	2.380E-07	2.385E-07	-0.20
20,000	1.373E-07	1.371E-07	0.09
Maximum:			-0.23

B.7.115.3. Whole Body Retention

TIME	IMBA	PLEIADES	Difference
(d)			(%)
1	4.970E-01	4.970E-01	0.00
2	2.634E-01	2.634E-01	0.00
5	9.313E-02	9.313E-02	0.00
10	8.047E-02	8.051E-02	-0.05
20	7.606E-02	7.610E-02	-0.06
50	6.828E-02	6.828E-02	0.00
100	6.302E-02	6.298E-02	0.07
200	5.962E-02	5.956E-02	0.09
500	5.597E-02	5.602E-02	-0.08
1,000	5.313E-02	5.319E-02	-0.12
2,000	4.951E-02	4.946E-02	0.11
5,000	4.189E-02	4.192E-02	-0.09
10,000	3.307E-02	3.310E-02	-0.09
20,000	2.139E-02	2.135E-02	0.22
Maximum:			0.22

B.7.115.4. Lung Retention

TIME	IMBA	PLEIADES	Difference
(d)			(%)
1	5.763E-02	5.763E-02	-0.01
2	5.593E-02	5.594E-02	-0.01
5	5.336E-02	5.336E-02	-0.01
10	4.965E-02	4.965E-02	-0.01
20	4.339E-02	4.340E-02	-0.01
50	3.089E-02	3.089E-02	-0.01
100	2.019E-02	2.019E-02	-0.01
200	1.051E-02	1.051E-02	-0.02
500	1.800E-03	1.801E-03	-0.01
1,000	9.951E-05	9.953E-05	-0.01
2,000	3.482E-07	3.482E-07	-0.01
5,000	4.191E-14	N/A	N/A
10,000	3.390E-25	N/A	N/A
Maximum:			-0.02

B.7.116. Plutonium – Inhalation of ²³⁸Pu (type “S”)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.05%.

Maximum difference for **Whole Body**: +0.16%.

Maximum difference for **Lungs**: -0.01%.

B.7.116.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.346E-06	2.346E-06	-0.01
2	1.357E-06	1.357E-06	-0.01
5	4.548E-07	4.548E-07	-0.01
10	2.250E-07	2.250E-07	-0.01
20	1.771E-07	1.771E-07	0.00
50	1.664E-07	1.664E-07	0.00
100	1.599E-07	1.599E-07	0.01
200	1.599E-07	1.598E-07	0.04
500	1.710E-07	1.711E-07	-0.01
1,000	1.733E-07	1.733E-07	-0.01
2,000	1.510E-07	1.510E-07	0.04
5,000	9.752E-08	9.757E-08	-0.06
10,000	6.645E-08	6.643E-08	0.04
20,000	3.781E-08	3.782E-08	-0.01
Maximum:			-0.06

B.7.116.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.141E-01	1.141E-01	0.00
2	1.632E-01	1.632E-01	-0.01
5	1.406E-02	1.406E-02	0.00
10	6.482E-04	6.482E-04	-0.01
20	4.393E-04	4.394E-04	-0.02
50	2.279E-04	2.279E-04	-0.02
100	9.068E-05	9.070E-05	-0.01
200	3.300E-05	3.301E-05	-0.01
500	1.884E-05	1.884E-05	-0.01
1,000	1.093E-05	1.093E-05	-0.02
2,000	3.788E-06	3.788E-06	-0.01
5,000	3.174E-07	3.174E-07	-0.01
10,000	7.671E-08	7.675E-08	-0.05
20,000	2.078E-08	2.078E-08	0.00
Maximum:			-0.05

B.7.116.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.915E-01	4.915E-01	0.00
2	2.496E-01	2.496E-01	0.00
5	7.260E-02	7.260E-02	-0.01
10	5.943E-02	5.944E-02	-0.01
20	5.447E-02	5.447E-02	-0.01
50	4.492E-02	4.493E-02	-0.01
100	3.764E-02	3.765E-02	-0.01
200	3.236E-02	3.236E-02	-0.01
500	2.511E-02	2.512E-02	-0.01
1,000	1.755E-02	1.755E-02	-0.02
2,000	1.039E-02	1.039E-02	0.00
5,000	5.783E-03	5.784E-03	-0.01
10,000	4.121E-03	4.124E-03	-0.09
20,000	2.528E-03	2.524E-03	0.16
Maximum:			0.16

B.7.116.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.428E-02	6.428E-02	-0.01
2	6.270E-02	6.270E-02	-0.01
5	6.069E-02	6.070E-02	-0.01
10	5.787E-02	5.788E-02	-0.01
20	5.312E-02	5.313E-02	-0.01
50	4.381E-02	4.381E-02	-0.01
100	3.658E-02	3.658E-02	-0.01
200	3.109E-02	3.109E-02	-0.01
500	2.316E-02	2.316E-02	-0.01
1,000	1.483E-02	1.483E-02	-0.01
2,000	6.969E-03	6.970E-03	-0.01
5,000	2.032E-03	2.032E-03	-0.01
10,000	7.177E-04	7.178E-04	-0.02
Maximum:			-0.02

B.7.117. Plutonium – Ingestion of ²³⁸Pu (f₁ = 0.0005)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.25%.

Maximum difference for **Whole Body**: +0.15%.

B.7.117.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.366E-06	3.366E-06	0.00
2	2.587E-06	2.587E-06	0.00

5	6.465E-07	6.465E-07	0.00
10	1.823E-07	1.823E-07	0.01
20	8.737E-08	8.735E-08	0.03
50	6.587E-08	6.586E-08	0.03
100	4.729E-08	4.725E-08	0.08
200	3.251E-08	3.247E-08	0.13

500	2.391E-08	2.394E-08	-0.12
1,000	1.846E-08	1.845E-08	0.06
2,000	1.236E-08	1.235E-08	0.05
5,000	6.785E-09	6.785E-09	-0.01
10,000	4.449E-09	4.448E-09	0.02
20,000	2.540E-09	2.538E-09	0.07
Maximum:			0.13

B.7.117.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.823E-01	2.823E-01	0.00
2	3.889E-01	3.889E-01	0.00
5	3.140E-02	3.139E-02	0.00
10	2.197E-04	2.197E-04	0.00
20	3.506E-08	3.508E-08	-0.05
50	1.948E-08	1.949E-08	-0.05
100	1.834E-08	1.832E-08	0.14
200	1.613E-08	1.613E-08	-0.01
500	1.118E-08	1.119E-08	-0.06
1,000	6.997E-09	6.982E-09	0.21
2,000	4.315E-09	4.326E-09	-0.25
5,000	2.826E-09	2.820E-09	0.22

10,000	1.925E-09	1.929E-09	-0.19
20,000	1.112E-09	1.111E-09	0.10
Maximum:			-0.25

B.7.117.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.177E-01	7.177E-01	0.00
2	3.288E-01	3.288E-01	0.00
5	1.922E-02	1.922E-02	0.00
10	6.070E-04	6.075E-04	-0.08
20	4.774E-04	4.779E-04	-0.12
50	4.750E-04	4.748E-04	0.04
100	4.713E-04	4.706E-04	0.15
200	4.646E-04	4.640E-04	0.13
500	4.484E-04	4.489E-04	-0.12
1,000	4.289E-04	4.293E-04	-0.10
2,000	4.005E-04	4.000E-04	0.13
5,000	3.392E-04	3.395E-04	-0.09
10,000	2.679E-04	2.681E-04	-0.08
Maximum:			0.15

B.7.118. Plutonium – Ingestion of ²³⁸Pu (f₁ = 0.00001)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.28%.

Maximum difference for **Whole Body**: +0.15%.

B.7.118.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.731E-08	6.731E-08	0.00
2	5.174E-08	5.174E-08	0.00
5	1.293E-08	1.293E-08	0.00
10	3.646E-09	3.645E-09	0.01
20	1.748E-09	1.747E-09	0.03
50	1.318E-09	1.317E-09	0.03
100	9.458E-10	9.451E-10	0.08
200	6.502E-10	6.494E-10	0.13
500	4.781E-10	4.787E-10	-0.12
1,000	3.692E-10	3.690E-10	0.07
2,000	2.472E-10	2.470E-10	0.05
5,000	1.357E-10	1.357E-10	-0.01
10,000	8.898E-11	8.896E-11	0.02
20,000	5.080E-11	5.076E-11	0.07
Maximum:			0.13

B.7.118.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.824E-01	2.824E-01	0.00
2	3.891E-01	3.891E-01	0.00
5	3.141E-02	3.141E-02	0.00
10	2.196E-04	2.196E-04	0.00
20	1.048E-08	1.048E-08	0.00

50	3.896E-10	3.900E-10	-0.10
100	3.668E-10	3.665E-10	0.09
200	3.225E-10	3.227E-10	-0.05
500	2.237E-10	2.239E-10	-0.10
1,000	1.399E-10	1.397E-10	0.18
2,000	8.631E-11	8.655E-11	-0.28
5,000	5.652E-11	5.641E-11	0.20
10,000	3.850E-11	3.858E-11	-0.21
20,000	2.223E-11	2.222E-11	0.08
Maximum:			-0.28

B.7.118.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.176E-01	7.176E-01	0.00
2	3.285E-01	3.285E-01	0.00
5	1.875E-02	1.875E-02	0.00
10	1.374E-04	1.374E-04	0.00
20	9.553E-06	9.565E-06	-0.12
50	9.499E-06	9.496E-06	0.04
100	9.426E-06	9.411E-06	0.15
200	9.292E-06	9.280E-06	0.12
500	8.968E-06	8.978E-06	-0.12
1,000	8.577E-06	8.586E-06	-0.10
2,000	8.011E-06	8.000E-06	0.14
5,000	6.784E-06	6.790E-06	-0.08
10,000	5.358E-06	5.362E-06	-0.08
Maximum:			0.15

B.7.119. Plutonium – Ingestion of ²³⁸Pu (f₁ = 0.0001)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.27%.

Maximum difference for **Whole Body**: +0.15%.

B.7.119.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.731E-07	6.731E-07	0.00
2	5.174E-07	5.174E-07	0.00
5	1.293E-07	1.293E-07	0.00
10	3.646E-08	3.645E-08	0.01
20	1.748E-08	1.747E-08	0.03
50	1.318E-08	1.317E-08	0.03
100	9.458E-09	9.451E-09	0.08
200	6.502E-09	6.494E-09	0.13
500	4.781E-09	4.787E-09	-0.12
1,000	3.692E-09	3.690E-09	0.07
2,000	2.472E-09	2.470E-09	0.05
5,000	1.357E-09	1.357E-09	-0.01
10,000	8.898E-10	8.896E-10	0.02
20,000	5.080E-10	5.076E-10	0.07
Maximum:			0.13

B.7.119.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.823E-01	2.823E-01	0.00
2	3.890E-01	3.889E-01	0.00
5	3.139E-02	3.139E-02	0.00
10	2.194E-04	2.194E-04	0.00
20	1.496E-08	1.496E-08	-0.03

50	3.874E-09	3.878E-09	-0.09
100	3.628E-09	3.624E-09	0.10
200	3.155E-09	3.156E-09	-0.05
500	2.117E-09	2.119E-09	-0.09
1,000	1.253E-09	1.251E-09	0.19
2,000	6.923E-10	6.942E-10	-0.27
5,000	3.257E-10	3.250E-10	0.21
10,000	1.279E-10	1.281E-10	-0.18
20,000	2.452E-11	2.449E-11	0.13
Maximum:			-0.27

B.7.119.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.176E-01	7.176E-01	0.00
2	3.285E-01	3.285E-01	0.00
5	1.883E-02	1.883E-02	0.00
10	2.234E-04	2.235E-04	-0.04
20	9.527E-05	9.538E-05	-0.12
50	9.447E-05	9.444E-05	0.04
100	9.323E-05	9.308E-05	0.15
200	9.089E-05	9.078E-05	0.13
500	8.487E-05	8.497E-05	-0.12
1,000	7.682E-05	7.690E-05	-0.10
2,000	6.426E-05	6.417E-05	0.14
5,000	3.909E-05	3.912E-05	-0.07
10,000	1.779E-05	1.780E-05	-0.05
Maximum:			0.15

B.7.120. Plutonium – Injection of ²³⁸Pu

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.26%.

Maximum difference for **Whole Body**: +0.15%.

B.7.120.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.182E-03	8.182E-03	0.00
2	4.481E-03	4.480E-03	0.00
5	1.205E-03	1.205E-03	0.00
10	3.511E-04	3.511E-04	0.01
20	1.741E-04	1.740E-04	0.03
50	1.315E-04	1.315E-04	0.02
100	9.447E-05	9.440E-05	0.08
200	6.499E-05	6.491E-05	0.13
500	4.781E-05	4.787E-05	-0.12
1,000	3.692E-05	3.689E-05	0.07
2,000	2.471E-05	2.470E-05	0.05
5,000	1.357E-05	1.357E-05	-0.01
10,000	8.898E-06	8.896E-06	0.02
20,000	5.080E-06	5.077E-06	0.07
Maximum:			0.13

B.7.120.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.605E-03	1.605E-03	0.00
2	4.296E-03	4.296E-03	0.00
5	2.163E-03	2.163E-03	0.01
10	3.616E-04	3.616E-04	0.00
20	4.945E-05	4.949E-05	-0.07
50	3.895E-05	3.897E-05	-0.05
100	3.667E-05	3.662E-05	0.14
200	3.224E-05	3.225E-05	-0.01
500	2.236E-05	2.238E-05	-0.06
1,000	1.399E-05	1.396E-05	0.21
2,000	8.630E-06	8.652E-06	-0.26
5,000	5.652E-06	5.639E-06	0.22
10,000	3.850E-06	3.858E-06	-0.19
20,000	2.223E-06	2.221E-06	0.10
Maximum:			-0.26

B.7.120.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.900E-01	9.902E-01	-0.02
2	9.814E-01	9.814E-01	0.00
5	9.667E-01	9.663E-01	0.04
10	9.584E-01	9.593E-01	-0.10
20	9.547E-01	9.558E-01	-0.12
50	9.499E-01	9.495E-01	0.04

100	9.426E-01	9.411E-01	0.15
200	9.292E-01	9.280E-01	0.12
500	8.968E-01	8.978E-01	-0.12
1,000	8.577E-01	8.586E-01	-0.10
2,000	8.011E-01	8.000E-01	0.13
5,000	6.784E-01	6.790E-01	-0.09
10,000	5.358E-01	5.362E-01	-0.08
Maximum:			0.15

B.7.121. Plutonium – Inhalation of ²³⁹Pu (type “M”)

Maximum difference for **Urine**: -0.08%.

Maximum difference for **Feces**: -0.23%.

Maximum difference for **Whole Body**: +0.22%.

Maximum difference for **Lungs**: -0.02%.

B.7.121.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.316E-04	2.316E-04	-0.01
2	1.307E-04	1.307E-04	-0.01
5	3.909E-05	3.909E-05	-0.01
10	1.538E-05	1.538E-05	0.00
20	1.024E-05	1.024E-05	0.01
50	8.516E-06	8.516E-06	0.00
100	6.857E-06	6.855E-06	0.03
200	5.126E-06	5.122E-06	0.07
500	3.346E-06	3.348E-06	-0.08
1,000	2.437E-06	2.437E-06	0.02
2,000	1.636E-06	1.636E-06	0.05
5,000	9.390E-07	9.393E-07	-0.04
10,000	6.825E-07	6.824E-07	0.01
20,000	4.827E-07	4.825E-07	0.05
Maximum:			-0.08

B.7.121.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.970E-01	4.970E-01	0.00
2	2.634E-01	2.634E-01	0.00
5	9.314E-02	9.314E-02	0.00
10	8.049E-02	8.053E-02	-0.05
20	7.609E-02	7.613E-02	-0.06
50	6.835E-02	6.835E-02	0.00
100	6.316E-02	6.312E-02	0.07
200	5.987E-02	5.982E-02	0.09
500	5.658E-02	5.663E-02	-0.09
1,000	5.429E-02	5.435E-02	-0.12
2,000	5.170E-02	5.164E-02	0.11
5,000	4.665E-02	4.669E-02	-0.09
10,000	4.102E-02	4.106E-02	-0.09
20,000	3.293E-02	3.286E-02	0.22
Maximum:			0.22

B.7.121.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.083E-01	1.083E-01	-0.01
2	1.548E-01	1.548E-01	0.00
5	1.335E-02	1.334E-02	0.00
10	5.848E-04	5.849E-04	-0.01
20	3.689E-04	3.690E-04	-0.02
50	1.673E-04	1.673E-04	-0.01
100	5.441E-05	5.442E-05	-0.01
200	1.415E-05	1.415E-05	-0.01
500	3.156E-06	3.157E-06	-0.05
1,000	1.037E-06	1.035E-06	0.16
2,000	5.710E-07	5.724E-07	-0.23
5,000	3.902E-07	3.894E-07	0.21
10,000	2.953E-07	2.959E-07	-0.20
20,000	2.113E-07	2.111E-07	0.09
Maximum:			-0.23

B.7.121.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.763E-02	5.763E-02	-0.01
2	5.594E-02	5.594E-02	-0.01
5	5.336E-02	5.337E-02	-0.01
10	4.966E-02	4.966E-02	-0.01
20	4.341E-02	4.342E-02	-0.01
50	3.092E-02	3.093E-02	-0.01
100	2.023E-02	2.024E-02	-0.01
200	1.056E-02	1.056E-02	-0.01
500	1.820E-03	1.820E-03	-0.02
1,000	1.017E-04	1.017E-04	-0.01
2,000	3.635E-07	3.635E-07	-0.01
5,000	4.668E-14	N/A	N/A
10,000	4.206E-25	N/A	N/A
Maximum:			-0.02

B.7.122. Plutonium – Inhalation of ²³⁹Pu (type “S”)

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: -0.05%.

Maximum difference for **Whole Body**: +0.17%.

Maximum difference for **Lungs**: -0.02%.

B.7.122.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.346E-06	2.346E-06	-0.01
2	1.357E-06	1.357E-06	0.00
5	4.548E-07	4.549E-07	-0.01
10	2.250E-07	2.250E-07	-0.01
20	1.772E-07	1.772E-07	0.00
50	1.666E-07	1.666E-07	0.00
100	1.603E-07	1.603E-07	0.02
200	1.606E-07	1.605E-07	0.04
500	1.729E-07	1.729E-07	-0.01
1,000	1.771E-07	1.771E-07	-0.01
2,000	1.577E-07	1.576E-07	0.03
5,000	1.086E-07	1.087E-07	-0.05
10,000	8.244E-08	8.241E-08	0.04
20,000	5.820E-08	5.820E-08	-0.01
Maximum:			-0.05

B.7.122.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.141E-01	1.141E-01	-0.01
2	1.632E-01	1.632E-01	0.00
5	1.407E-02	1.407E-02	0.00
10	6.483E-04	6.484E-04	-0.01
20	4.395E-04	4.395E-04	-0.02
50	2.282E-04	2.282E-04	-0.01
100	9.088E-05	9.089E-05	-0.01
200	3.315E-05	3.315E-05	-0.01
500	1.904E-05	1.905E-05	-0.01
1,000	1.116E-05	1.116E-05	-0.02
2,000	3.955E-06	3.955E-06	-0.01
5,000	3.535E-07	3.535E-07	-0.01
10,000	9.517E-08	9.522E-08	-0.05
20,000	3.198E-08	3.198E-08	0.00
Maximum:			-0.05

B.7.122.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.915E-01	4.915E-01	0.00
2	2.496E-01	2.496E-01	0.00
5	7.260E-02	7.261E-02	-0.01
10	5.945E-02	5.946E-02	-0.01
20	5.449E-02	5.450E-02	-0.01
50	4.497E-02	4.497E-02	-0.01
100	3.772E-02	3.773E-02	-0.01
200	3.249E-02	3.250E-02	-0.01
500	2.539E-02	2.539E-02	-0.01
1,000	1.793E-02	1.793E-02	-0.03
2,000	1.085E-02	1.085E-02	0.00
5,000	6.442E-03	6.442E-03	-0.01
10,000	5.112E-03	5.117E-03	-0.09
20,000	3.892E-03	3.885E-03	0.17
Maximum:			0.17

B.7.122.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.428E-02	6.429E-02	-0.01
2	6.270E-02	6.271E-02	-0.01
5	6.070E-02	6.071E-02	-0.01
10	5.789E-02	5.789E-02	-0.01
20	5.314E-02	5.315E-02	-0.01
50	4.385E-02	4.386E-02	-0.01
100	3.666E-02	3.666E-02	-0.01
200	3.122E-02	3.122E-02	-0.01
500	2.341E-02	2.341E-02	-0.01
1,000	1.516E-02	1.516E-02	-0.01
2,000	7.276E-03	7.277E-03	-0.01
5,000	2.263E-03	2.263E-03	-0.02
10,000	8.904E-04	8.906E-04	-0.02
Maximum:			-0.02

B.7.123. Plutonium – Ingestion of ²³⁹Pu (f₁ = 0.0005)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.26%.

Maximum difference for **Whole Body**: +0.15%.

B.7.123.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.366E-06	3.366E-06	0.00

2	2.587E-06	2.587E-06	0.00
5	6.466E-07	6.466E-07	0.00
10	1.823E-07	1.823E-07	0.01
20	8.741E-08	8.738E-08	0.03
50	6.594E-08	6.593E-08	0.03

100	4.739E-08	4.736E-08	0.08
200	3.265E-08	3.261E-08	0.13
500	2.417E-08	2.419E-08	-0.12
1,000	1.886E-08	1.885E-08	0.06
2,000	1.290E-08	1.290E-08	0.05
5,000	7.557E-09	7.558E-09	-0.01
10,000	5.519E-09	5.518E-09	0.02
20,000	3.909E-09	3.907E-09	0.07
Maximum:			0.13

B.7.123.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.823E-01	2.823E-01	0.00
2	3.889E-01	3.889E-01	0.00
5	3.140E-02	3.140E-02	0.00
10	2.197E-04	2.197E-04	0.00
20	3.508E-08	3.509E-08	-0.04
50	1.950E-08	1.951E-08	-0.05
100	1.838E-08	1.835E-08	0.14
200	1.620E-08	1.620E-08	-0.01
500	1.131E-08	1.131E-08	-0.06
1,000	7.150E-09	7.135E-09	0.21
2,000	4.505E-09	4.517E-09	-0.26

5,000	3.148E-09	3.141E-09	0.22
10,000	2.389E-09	2.393E-09	-0.19
20,000	1.711E-09	1.709E-09	0.10
Maximum:			-0.26

B.7.123.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.177E-01	7.177E-01	0.00
2	3.289E-01	3.288E-01	0.00
5	1.922E-02	1.922E-02	0.00
10	6.072E-04	6.076E-04	-0.08
20	4.776E-04	4.782E-04	-0.12
50	4.755E-04	4.753E-04	0.04
100	4.723E-04	4.716E-04	0.15
200	4.666E-04	4.660E-04	0.12
500	4.533E-04	4.538E-04	-0.12
1,000	4.382E-04	4.387E-04	-0.10
2,000	4.182E-04	4.176E-04	0.13
5,000	3.778E-04	3.781E-04	-0.09
10,000	3.324E-04	3.326E-04	-0.08
Maximum:			0.15

B.7.124. Plutonium – Ingestion of ²³⁹Pu (f₁ = 0.00001)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.28%.

Maximum difference for **Whole Body**: +0.15%.

B.7.124.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.731E-08	6.731E-08	0.00
2	5.174E-08	5.174E-08	0.00
5	1.293E-08	1.293E-08	0.00
10	3.646E-09	3.646E-09	0.01
20	1.748E-09	1.748E-09	0.03
50	1.319E-09	1.319E-09	0.03
100	9.479E-10	9.471E-10	0.08
200	6.530E-10	6.522E-10	0.13
500	4.833E-10	4.839E-10	-0.12
1,000	3.773E-10	3.770E-10	0.07
2,000	2.581E-10	2.579E-10	0.05
5,000	1.511E-10	1.512E-10	-0.01
10,000	1.104E-10	1.104E-10	0.03
20,000	7.819E-11	7.813E-11	0.07
Maximum:			0.13

B.7.124.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.824E-01	2.824E-01	0.00
2	3.891E-01	3.891E-01	0.00
5	3.142E-02	3.142E-02	0.00
10	2.196E-04	2.196E-04	0.00
20	1.048E-08	1.048E-08	-0.01

50	3.900E-10	3.904E-10	-0.10
100	3.676E-10	3.673E-10	0.10
200	3.239E-10	3.241E-10	-0.05
500	2.261E-10	2.263E-10	-0.09
1,000	1.430E-10	1.427E-10	0.18
2,000	9.011E-11	9.036E-11	-0.28
5,000	6.295E-11	6.283E-11	0.20
10,000	4.777E-11	4.787E-11	-0.21
20,000	3.422E-11	3.419E-11	0.08
Maximum:			-0.28

B.7.124.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.176E-01	7.176E-01	0.00
2	3.286E-01	3.286E-01	0.00
5	1.876E-02	1.875E-02	0.00
10	1.375E-04	1.375E-04	0.00
20	9.557E-06	9.569E-06	-0.12
50	9.510E-06	9.506E-06	0.04
100	9.446E-06	9.432E-06	0.15
200	9.332E-06	9.320E-06	0.13
500	9.065E-06	9.076E-06	-0.12
1,000	8.764E-06	8.773E-06	-0.10
2,000	8.364E-06	8.352E-06	0.14
5,000	7.556E-06	7.562E-06	-0.08
10,000	6.648E-06	6.653E-06	-0.08
Maximum:			0.15

B.7.125. Plutonium – Ingestion of ²³⁹Pu (f₁ = 0.0001)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.28%.

Maximum difference for **Whole Body**: +0.15%.

B.7.125.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.731E-07	6.731E-07	0.00
2	5.174E-07	5.174E-07	0.00
5	1.293E-07	1.293E-07	0.00
10	3.646E-08	3.646E-08	0.01
20	1.748E-08	1.748E-08	0.03
50	1.319E-08	1.319E-08	0.03
100	9.479E-09	9.471E-09	0.08
200	6.530E-09	6.522E-09	0.13
500	4.833E-09	4.839E-09	-0.12
1,000	3.773E-09	3.770E-09	0.07
2,000	2.581E-09	2.579E-09	0.05
5,000	1.511E-09	1.512E-09	-0.01
10,000	1.104E-09	1.104E-09	0.02
20,000	7.819E-10	7.813E-10	0.07
Maximum:			0.13

B.7.125.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.824E-01	2.823E-01	0.00
2	3.891E-01	3.890E-01	0.00
5	3.141E-02	3.141E-02	0.00
10	2.197E-04	2.196E-04	0.00
20	1.500E-08	1.500E-08	-0.03

50	3.900E-09	3.903E-09	-0.09
100	3.676E-09	3.672E-09	0.10
200	3.239E-09	3.240E-09	-0.04
500	2.261E-09	2.263E-09	-0.09
1,000	1.430E-09	1.427E-09	0.18
2,000	9.011E-10	9.036E-10	-0.28
5,000	6.295E-10	6.282E-10	0.20
10,000	4.777E-10	4.787E-10	-0.21
20,000	3.422E-10	3.419E-10	0.08
Maximum:			-0.28

B.7.125.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.177E-01	7.177E-01	0.00
2	3.286E-01	3.286E-01	0.00
5	1.884E-02	1.884E-02	0.00
10	2.237E-04	2.238E-04	-0.04
20	9.552E-05	9.564E-05	-0.12
50	9.510E-05	9.506E-05	0.04
100	9.446E-05	9.432E-05	0.15
200	9.332E-05	9.320E-05	0.13
500	9.065E-05	9.076E-05	-0.12
1,000	8.764E-05	8.773E-05	-0.10
2,000	8.364E-05	8.352E-05	0.14
5,000	7.556E-05	7.562E-05	-0.08
10,000	6.648E-05	6.653E-05	-0.08
Maximum:			0.15

B.7.126. Plutonium – Injection of ²³⁹Pu

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.26%.

Maximum difference for **Whole Body**: +0.15%.

B.7.126.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.182E-03	8.182E-03	0.00
2	4.481E-03	4.481E-03	0.00
5	1.205E-03	1.205E-03	0.00
10	3.512E-04	3.512E-04	0.01
20	1.741E-04	1.741E-04	0.03
50	1.317E-04	1.316E-04	0.03
100	9.468E-05	9.460E-05	0.08
200	6.527E-05	6.519E-05	0.13
500	4.833E-05	4.838E-05	-0.12
1,000	3.772E-05	3.770E-05	0.06
2,000	2.580E-05	2.579E-05	0.05
5,000	1.511E-05	1.512E-05	-0.02
10,000	1.104E-05	1.104E-05	0.02
20,000	7.819E-06	7.814E-06	0.07
Maximum:			0.13

B.7.126.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.606E-03	1.605E-03	0.00
2	4.296E-03	4.296E-03	0.00
5	2.164E-03	2.163E-03	0.01
10	3.617E-04	3.617E-04	0.00
20	4.947E-05	4.951E-05	-0.07
50	3.899E-05	3.901E-05	-0.05
100	3.675E-05	3.670E-05	0.14
200	3.238E-05	3.239E-05	-0.01
500	2.260E-05	2.262E-05	-0.06
1,000	1.430E-05	1.427E-05	0.21
2,000	9.010E-06	9.033E-06	-0.26
5,000	6.295E-06	6.281E-06	0.22
10,000	4.777E-06	4.786E-06	-0.19
20,000	3.422E-06	3.419E-06	0.10
Maximum:			-0.26

B.7.126.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.900E-01	9.902E-01	-0.02
2	9.815E-01	9.814E-01	0.00
5	9.668E-01	9.665E-01	0.04
10	9.586E-01	9.595E-01	-0.10
20	9.551E-01	9.563E-01	-0.12
50	9.509E-01	9.506E-01	0.04

100	9.446E-01	9.431E-01	0.15
200	9.332E-01	9.320E-01	0.12
500	9.065E-01	9.076E-01	-0.12
1,000	8.764E-01	8.773E-01	-0.10
2,000	8.364E-01	8.352E-01	0.13
5,000	7.556E-01	7.562E-01	-0.09
10,000	6.648E-01	6.653E-01	-0.08
Maximum:			0.15

B.7.127. Plutonium – Inhalation of ²⁴⁰Pu (type “M”)

Maximum difference for **Urine**: -0.08%.

Maximum difference for **Feces**: -0.23%.

Maximum difference for **Whole Body**: +0.22%.

Maximum difference for **Lungs**: -0.02%.

B.7.127.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.3160E-04	2.3160E-04	-0.01
2	1.3070E-04	1.3070E-04	-0.01
5	3.9090E-05	3.9090E-05	-0.01
10	1.5380E-05	1.5380E-05	0.00
20	1.0240E-05	1.0240E-05	0.01
50	8.5160E-06	8.5160E-06	0.01
100	6.8570E-06	6.8550E-06	0.03
200	5.1260E-06	5.1220E-06	0.07
500	3.3450E-06	3.3480E-06	-0.08
1,000	2.4370E-06	2.4360E-06	0.02
2,000	1.6360E-06	1.6350E-06	0.05
5,000	9.3800E-07	9.3830E-07	-0.04
10,000	6.8110E-07	6.8100E-07	0.01
20,000	4.8070E-07	4.8040E-07	0.05
Maximum:			-0.08

B.7.127.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.9700E-01	4.9700E-01	0.00
2	2.6340E-01	2.6340E-01	0.00
5	9.3140E-02	9.3140E-02	0.00
10	8.0490E-02	8.0530E-02	-0.05
20	7.6090E-02	7.6130E-02	-0.06
50	6.8350E-02	6.8350E-02	0.00
100	6.3160E-02	6.3120E-02	0.07
200	5.9870E-02	5.9820E-02	0.09
500	5.6570E-02	5.6620E-02	-0.09
1,000	5.4270E-02	5.4340E-02	-0.12
2,000	5.1670E-02	5.1620E-02	0.11
5,000	4.6600E-02	4.6650E-02	-0.09
10,000	4.0940E-02	4.0970E-02	-0.09
20,000	3.2790E-02	3.2720E-02	0.22
Maximum:			0.22

B.7.127.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.0830E-01	1.0830E-01	-0.01
2	1.5480E-01	1.5480E-01	0.00
5	1.3350E-02	1.3340E-02	0.00
10	5.8480E-04	5.8490E-04	-0.01
20	3.6890E-04	3.6900E-04	-0.02
50	1.6730E-04	1.6730E-04	-0.01
100	5.4410E-05	5.4410E-05	-0.01
200	1.4150E-05	1.4150E-05	-0.01
500	3.1560E-06	3.1570E-06	-0.05
1,000	1.0370E-06	1.0350E-06	0.16
2,000	5.7080E-07	5.7210E-07	-0.23
5,000	3.8980E-07	3.8890E-07	0.21
10,000	2.9470E-07	2.9520E-07	-0.20
20,000	2.1040E-07	2.1020E-07	0.09
Maximum:			-0.23

B.7.127.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.7630E-02	5.7630E-02	-0.01
2	5.5940E-02	5.5940E-02	-0.01
5	5.3360E-02	5.3370E-02	-0.01
10	4.9660E-02	4.9660E-02	-0.01
20	4.3410E-02	4.3420E-02	-0.01
50	3.0920E-02	3.0930E-02	-0.01
100	2.0230E-02	2.0240E-02	-0.01
200	1.0560E-02	1.0560E-02	-0.02
500	1.8200E-03	1.8200E-03	-0.02
1,000	1.0170E-04	1.0170E-04	-0.01
2,000	3.6340E-07	3.6340E-07	-0.01
5,000	4.6630E-14	N/A	N/A
10,000	4.1970E-25	N/A	N/A
Maximum:			-0.02

B.7.128. Plutonium – Inhalation of ²⁴⁰Pu (type “S”)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.05%.

Maximum difference for **Whole Body**: +0.17%.

Maximum difference for **Lungs**: -0.01%.

B.7.128.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.3460E-06	2.3460E-06	-0.01
2	1.3570E-06	1.3570E-06	0.00
5	4.5480E-07	4.5490E-07	-0.01
10	2.2500E-07	2.2500E-07	-0.01
20	1.7720E-07	1.7720E-07	0.00
50	1.6660E-07	1.6660E-07	0.00
100	1.6030E-07	1.6030E-07	0.01
200	1.6060E-07	1.6050E-07	0.04
500	1.7290E-07	1.7290E-07	-0.01
1,000	1.7710E-07	1.7710E-07	-0.01
2,000	1.5760E-07	1.5750E-07	0.04
5,000	1.0850E-07	1.0860E-07	-0.06
10,000	8.2270E-08	8.2240E-08	0.04
20,000	5.7950E-08	5.7960E-08	-0.01
Maximum:			-0.06

B.7.128.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.1410E-01	1.1410E-01	-0.01
2	1.6320E-01	1.6320E-01	0.00
5	1.4070E-02	1.4070E-02	0.00
10	6.4830E-04	6.4840E-04	-0.01
20	4.3950E-04	4.3950E-04	-0.02
50	2.2820E-04	2.2820E-04	-0.01
100	9.0880E-05	9.0890E-05	-0.01
200	3.3150E-05	3.3150E-05	-0.01
500	1.9040E-05	1.9040E-05	-0.01
1,000	1.1160E-05	1.1160E-05	-0.01
2,000	3.9530E-06	3.9540E-06	-0.01
5,000	3.5310E-07	3.5310E-07	-0.01
10,000	9.4970E-08	9.5020E-08	-0.05
20,000	3.1840E-08	3.1840E-08	0.00
Maximum:			-0.05

B.7.128.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.9150E-01	4.9150E-01	0.00
2	2.4960E-01	2.4960E-01	0.00
5	7.2600E-02	7.2610E-02	-0.01
10	5.9450E-02	5.9460E-02	-0.01
20	5.4490E-02	5.4500E-02	-0.02
50	4.4970E-02	4.4970E-02	-0.01
100	3.7720E-02	3.7730E-02	-0.01
200	3.2490E-02	3.2500E-02	-0.01
500	2.5380E-02	2.5390E-02	-0.01
1,000	1.7920E-02	1.7930E-02	-0.03
2,000	1.0840E-02	1.0840E-02	-0.01
5,000	6.4350E-03	6.4350E-03	-0.01
10,000	5.1010E-03	5.1060E-03	-0.09
20,000	3.8750E-03	3.8690E-03	0.17
Maximum:			0.17

B.7.128.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.4280E-02	6.4290E-02	-0.01
2	6.2700E-02	6.2710E-02	-0.01
5	6.0700E-02	6.0710E-02	-0.01
10	5.7890E-02	5.7890E-02	-0.01
20	5.3140E-02	5.3150E-02	-0.01
50	4.3850E-02	4.3860E-02	-0.01
100	3.6660E-02	3.6660E-02	-0.01
200	3.1220E-02	3.1220E-02	-0.01
500	2.3410E-02	2.3410E-02	-0.01
1,000	1.5150E-02	1.5150E-02	-0.01
2,000	7.2730E-03	7.2740E-03	-0.01
5,000	2.2610E-03	2.2610E-03	-0.01
10,000	8.8850E-04	8.8870E-04	-0.01
Maximum:			-0.01

B.7.129. Plutonium – Ingestion of ²⁴⁰Pu (f₁ = 0.0005)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.26%.

Maximum difference for **Whole Body**: +0.15%.

B.7.129.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.366E-06	3.366E-06	0.00
2	2.587E-06	2.587E-06	0.00

5	6.466E-07	6.466E-07	0.00
10	1.823E-07	1.823E-07	0.01
20	8.741E-08	8.738E-08	0.03
50	6.594E-08	6.593E-08	0.03
100	4.739E-08	4.735E-08	0.08
200	3.265E-08	3.261E-08	0.13

500	2.416E-08	2.419E-08	-0.12
1,000	1.886E-08	1.885E-08	0.06
2,000	1.290E-08	1.289E-08	0.05
5,000	7.549E-09	7.550E-09	-0.01
10,000	5.508E-09	5.507E-09	0.02
20,000	3.893E-09	3.890E-09	0.07
Maximum:			0.13

B.7.129.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.823E-01	2.823E-01	0.00
2	3.889E-01	3.889E-01	0.00
5	3.140E-02	3.140E-02	0.00
10	2.197E-04	2.197E-04	0.00
20	3.508E-08	3.509E-08	-0.05
50	1.950E-08	1.951E-08	-0.05
100	1.838E-08	1.835E-08	0.14
200	1.619E-08	1.620E-08	-0.01
500	1.130E-08	1.131E-08	-0.06
1,000	7.148E-09	7.133E-09	0.21
2,000	4.504E-09	4.515E-09	-0.26
5,000	3.144E-09	3.137E-09	0.22

10,000	2.383E-09	2.388E-09	-0.19
20,000	1.704E-09	1.702E-09	0.10
Maximum:			-0.26

B.7.129.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.177E-01	7.177E-01	0.00
2	3.288E-01	3.288E-01	0.00
5	1.922E-02	1.922E-02	0.00
10	6.072E-04	6.076E-04	-0.08
20	4.776E-04	4.782E-04	-0.12
50	4.755E-04	4.753E-04	0.04
100	4.723E-04	4.716E-04	0.15
200	4.666E-04	4.660E-04	0.12
500	4.532E-04	4.537E-04	-0.12
1,000	4.381E-04	4.386E-04	-0.10
2,000	4.180E-04	4.174E-04	0.13
5,000	3.774E-04	3.777E-04	-0.09
10,000	3.317E-04	3.319E-04	-0.08
Maximum:			0.15

B.7.130. Plutonium – Ingestion of ²⁴⁰Pu (f₁ = 0.00001)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.28%.

Maximum difference for **Whole Body**: +0.15%.

B.7.130.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.731E-08	6.731E-08	0.00
2	5.174E-08	5.174E-08	0.00
5	1.293E-08	1.293E-08	0.00
10	3.646E-09	3.646E-09	0.01
20	1.748E-09	1.748E-09	0.03
50	1.319E-09	1.319E-09	0.03
100	9.478E-10	9.471E-10	0.08
200	6.530E-10	6.522E-10	0.13
500	4.833E-10	4.838E-10	-0.12
1,000	3.772E-10	3.769E-10	0.07
2,000	2.579E-10	2.578E-10	0.05
5,000	1.510E-10	1.510E-10	-0.01
10,000	1.102E-10	1.101E-10	0.02
20,000	7.786E-11	7.780E-11	0.07
Maximum:			0.13

B.7.130.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.824E-01	2.824E-01	0.00
2	3.891E-01	3.891E-01	0.00
5	3.142E-02	3.142E-02	0.00
10	2.196E-04	2.196E-04	0.00
20	1.048E-08	1.048E-08	-0.01

50	3.900E-10	3.904E-10	-0.10
100	3.676E-10	3.672E-10	0.10
200	3.239E-10	3.241E-10	-0.05
500	2.261E-10	2.263E-10	-0.10
1,000	1.430E-10	1.427E-10	0.18
2,000	9.007E-11	9.032E-11	-0.28
5,000	6.288E-11	6.276E-11	0.20
10,000	4.767E-11	4.777E-11	-0.21
20,000	3.408E-11	3.405E-11	0.08
Maximum:			-0.28

B.7.130.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.176E-01	7.176E-01	0.00
2	3.286E-01	3.286E-01	0.00
5	1.876E-02	1.875E-02	0.00
10	1.375E-04	1.375E-04	0.00
20	9.557E-06	9.569E-06	-0.12
50	9.510E-06	9.506E-06	0.04
100	9.446E-06	9.431E-06	0.15
200	9.332E-06	9.320E-06	0.13
500	9.064E-06	9.075E-06	-0.12
1,000	8.762E-06	8.771E-06	-0.10
2,000	8.360E-06	8.349E-06	0.14
5,000	7.548E-06	7.554E-06	-0.08
10,000	6.634E-06	6.639E-06	-0.08
Maximum:			0.15

B.7.131. Plutonium – Ingestion of ²⁴⁰Pu (f₁ = 0.0001)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.28%.

Maximum difference for **Whole Body**: +0.15%.

B.7.131.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.731E-07	6.731E-07	0.00
2	5.174E-07	5.174E-07	0.00
5	1.293E-07	1.293E-07	0.00
10	3.646E-08	3.646E-08	0.01
20	1.748E-08	1.748E-08	0.03
50	1.319E-08	1.319E-08	0.03
100	9.478E-09	9.471E-09	0.08
200	6.530E-09	6.522E-09	0.13
500	4.833E-09	4.838E-09	-0.12
1,000	3.772E-09	3.769E-09	0.07
2,000	2.579E-09	2.578E-09	0.05
5,000	1.510E-09	1.510E-09	-0.01
10,000	1.102E-09	1.101E-09	0.02
20,000	7.786E-10	7.780E-10	0.07
Maximum:			0.13

B.7.131.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.824E-01	2.823E-01	0.00
2	3.891E-01	3.890E-01	0.00
5	3.141E-02	3.141E-02	0.00
10	2.197E-04	2.196E-04	0.00
20	1.500E-08	1.500E-08	-0.03

50	3.900E-09	3.903E-09	-0.09
100	3.676E-09	3.672E-09	0.10
200	3.239E-09	3.240E-09	-0.05
500	2.261E-09	2.263E-09	-0.09
1,000	1.430E-09	1.427E-09	0.18
2,000	9.007E-10	9.032E-10	-0.28
5,000	6.288E-10	6.276E-10	0.20
10,000	4.767E-10	4.777E-10	-0.21
20,000	3.408E-10	3.405E-10	0.08
Maximum:			-0.28

B.7.131.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.177E-01	7.177E-01	0.00
2	3.286E-01	3.286E-01	0.00
5	1.884E-02	1.884E-02	0.00
10	2.237E-04	2.238E-04	-0.04
20	9.552E-05	9.564E-05	-0.12
50	9.510E-05	9.506E-05	0.04
100	9.446E-05	9.431E-05	0.15
200	9.332E-05	9.320E-05	0.13
500	9.064E-05	9.075E-05	-0.12
1,000	8.762E-05	8.771E-05	-0.10
2,000	8.360E-05	8.349E-05	0.14
5,000	7.548E-05	7.554E-05	-0.08
10,000	6.634E-05	6.639E-05	-0.08
Maximum:			0.15

B.7.132. Plutonium – Injection of ²⁴⁰Pu

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.26%.

Maximum difference for **Whole Body**: +0.15%.

B.7.132.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.182E-03	8.182E-03	0.00
2	4.481E-03	4.481E-03	0.00
5	1.205E-03	1.205E-03	0.00
10	3.512E-04	3.512E-04	0.01
20	1.741E-04	1.741E-04	0.03
50	1.317E-04	1.316E-04	0.02
100	9.468E-05	9.460E-05	0.08
200	6.527E-05	6.518E-05	0.13
500	4.832E-05	4.838E-05	-0.12
1,000	3.772E-05	3.769E-05	0.06
2,000	2.579E-05	2.578E-05	0.05
5,000	1.510E-05	1.510E-05	-0.02
10,000	1.102E-05	1.101E-05	0.02
20,000	7.786E-06	7.781E-06	0.07
Maximum:			0.13

B.7.132.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.606E-03	1.605E-03	0.00
2	4.296E-03	4.296E-03	0.00
5	2.164E-03	2.163E-03	0.01
10	3.617E-04	3.617E-04	0.00
20	4.947E-05	4.951E-05	-0.07
50	3.899E-05	3.901E-05	-0.05
100	3.675E-05	3.670E-05	0.14
200	3.238E-05	3.238E-05	-0.01
500	2.260E-05	2.262E-05	-0.06
1,000	1.429E-05	1.426E-05	0.21
2,000	9.007E-06	9.030E-06	-0.26
5,000	6.288E-06	6.275E-06	0.22
10,000	4.767E-06	4.776E-06	-0.19
20,000	3.408E-06	3.404E-06	0.10
Maximum:			-0.26

B.7.132.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.900E-01	9.902E-01	-0.02
2	9.815E-01	9.814E-01	0.00
5	9.668E-01	9.664E-01	0.04
10	9.586E-01	9.595E-01	-0.10
20	9.551E-01	9.562E-01	-0.12
50	9.509E-01	9.506E-01	0.04

100	9.446E-01	9.431E-01	0.15
200	9.331E-01	9.320E-01	0.12
500	9.064E-01	9.075E-01	-0.12
1,000	8.762E-01	8.771E-01	-0.10
2,000	8.360E-01	8.349E-01	0.13
5,000	7.548E-01	7.555E-01	-0.09
10,000	6.634E-01	6.639E-01	-0.08
Maximum:			0.15

B.7.133. Plutonium – Inhalation of ²⁴¹Pu (type “M”)

Maximum difference for **Urine**: -0.08%.

Maximum difference for **Feces**: -0.23%

Maximum difference for **Whole Body**: +0.22%.

Maximum difference for **Lungs**: -0.02%

B.7.133.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.316E-04	2.316E-04	-0.01
2	1.307E-04	1.307E-04	-0.01
5	3.909E-05	3.909E-05	-0.01
10	1.538E-05	1.538E-05	0.00
20	1.024E-05	1.024E-05	0.01
50	8.516E-06	8.516E-06	0.01
100	6.857E-06	6.855E-06	0.03
200	5.126E-06	5.122E-06	0.07
500	3.345E-06	3.348E-06	-0.08
1,000	2.437E-06	2.436E-06	0.02
2,000	1.636E-06	1.635E-06	0.05
5,000	9.380E-07	9.383E-07	-0.04
10,000	6.811E-07	6.810E-07	0.01
20,000	4.807E-07	4.804E-07	0.05
Maximum:			-0.08

B.7.133.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.970E-01	4.970E-01	0.00
2	2.634E-01	2.634E-01	0.00
5	9.314E-02	9.314E-02	0.00
10	8.049E-02	8.053E-02	-0.05
20	7.609E-02	7.613E-02	-0.06
50	6.835E-02	6.835E-02	0.00
100	6.316E-02	6.312E-02	0.07
200	5.987E-02	5.982E-02	0.09
500	5.657E-02	5.662E-02	-0.09
1,000	5.427E-02	5.434E-02	-0.12
2,000	5.167E-02	5.162E-02	0.11
5,000	4.660E-02	4.665E-02	-0.09
10,000	4.094E-02	4.097E-02	-0.09
20,000	3.279E-02	3.272E-02	0.22
Maximum:			0.22

B.7.133.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.083E-01	1.083E-01	-0.01
2	1.548E-01	1.548E-01	0.00
5	1.335E-02	1.334E-02	0.00
10	5.848E-04	5.849E-04	-0.01
20	3.689E-04	3.690E-04	-0.02
50	1.673E-04	1.673E-04	-0.01
100	5.441E-05	5.441E-05	-0.01
200	1.415E-05	1.415E-05	-0.01
500	3.156E-06	3.157E-06	-0.05
1,000	1.037E-06	1.035E-06	0.16
2,000	5.708E-07	5.721E-07	-0.23
5,000	3.898E-07	3.889E-07	0.21
10,000	2.947E-07	2.952E-07	-0.20
20,000	2.104E-07	2.102E-07	0.09
Maximum:			-0.23

B.7.133.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.763E-02	5.763E-02	-0.01
2	5.594E-02	5.594E-02	-0.01
5	5.336E-02	5.337E-02	-0.01
10	4.966E-02	4.966E-02	-0.01
20	4.341E-02	4.342E-02	-0.01
50	3.092E-02	3.093E-02	-0.01
100	2.023E-02	2.024E-02	-0.01
200	1.056E-02	1.056E-02	-0.02
500	1.820E-03	1.820E-03	-0.02
1,000	1.017E-04	1.017E-04	-0.01
2,000	3.634E-07	3.634E-07	-0.01
5,000	4.663E-14	N/A	N/A
10,000	4.197E-25	N/A	N/A
Maximum:			-0.02

B.7.134. Plutonium – Inhalation of ²⁴¹Pu (type “S”)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.05%.

Maximum difference for **Whole Body**: +0.17%.

Maximum difference for **Lungs**: -0.02%.

B.7.134.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.346E-06	2.346E-06	-0.01
2	1.357E-06	1.357E-06	0.00
5	4.548E-07	4.549E-07	-0.01
10	2.250E-07	2.250E-07	-0.01
20	1.772E-07	1.772E-07	0.00
50	1.666E-07	1.666E-07	0.00
100	1.603E-07	1.603E-07	0.01
200	1.606E-07	1.605E-07	0.04
500	1.729E-07	1.729E-07	-0.01
1,000	1.771E-07	1.771E-07	-0.01
2,000	1.576E-07	1.575E-07	0.04
5,000	1.085E-07	1.086E-07	-0.06
10,000	8.227E-08	8.224E-08	0.04
20,000	5.795E-08	5.796E-08	-0.01
Maximum:			-0.06

B.7.134.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.141E-01	1.141E-01	-0.01
2	1.632E-01	1.632E-01	0.00
5	1.407E-02	1.407E-02	0.00
10	6.483E-04	6.484E-04	-0.01
20	4.395E-04	4.395E-04	-0.02
50	2.282E-04	2.282E-04	-0.01
100	9.088E-05	9.089E-05	-0.01
200	3.315E-05	3.315E-05	-0.01
500	1.904E-05	1.904E-05	-0.01
1,000	1.116E-05	1.116E-05	-0.01
2,000	3.953E-06	3.954E-06	-0.01
5,000	3.531E-07	3.531E-07	-0.01
10,000	9.497E-08	9.502E-08	-0.05
20,000	3.184E-08	3.184E-08	0.00
Maximum:			-0.05

B.7.134.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.915E-01	4.915E-01	0.00
2	2.496E-01	2.496E-01	0.00
5	7.260E-02	7.261E-02	-0.01
10	5.945E-02	5.946E-02	-0.01
20	5.449E-02	5.450E-02	-0.02
50	4.497E-02	4.497E-02	-0.01
100	3.772E-02	3.773E-02	-0.01
200	3.249E-02	3.250E-02	-0.01
500	2.538E-02	2.539E-02	-0.01
1,000	1.792E-02	1.793E-02	-0.03
2,000	1.084E-02	1.084E-02	-0.01
5,000	6.435E-03	6.435E-03	-0.01
10,000	5.101E-03	5.106E-03	-0.09
20,000	3.875E-03	3.869E-03	0.17
Maximum:			0.17

B.7.134.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.428E-02	6.429E-02	-0.01
2	6.270E-02	6.271E-02	-0.01
5	6.070E-02	6.071E-02	-0.01
10	5.789E-02	5.789E-02	-0.01
20	5.314E-02	5.315E-02	-0.01
50	4.385E-02	4.386E-02	-0.01
100	3.666E-02	3.666E-02	-0.01
200	3.122E-02	3.122E-02	-0.01
500	2.341E-02	2.341E-02	-0.01
1,000	1.515E-02	1.515E-02	-0.01
2,000	7.273E-03	7.274E-03	-0.01
5,000	2.261E-03	2.261E-03	-0.01
10,000	8.885E-04	8.887E-04	-0.01
Maximum:			-0.01

B.7.135. Plutonium – Ingestion of ²⁴¹Pu (f₁ = 0.0005)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.26%.

Maximum difference for **Whole Body**: +0.15%.

B.7.135.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.366E-06	3.366E-06	0.00

2	2.587E-06	2.587E-06	0.00
5	6.466E-07	6.466E-07	0.00
10	1.823E-07	1.823E-07	0.01
20	8.741E-08	8.738E-08	0.03
50	6.594E-08	6.593E-08	0.03

100	4.739E-08	4.735E-08	0.08
200	3.265E-08	3.261E-08	0.13
500	2.416E-08	2.419E-08	-0.12
1,000	1.886E-08	1.885E-08	0.06
2,000	1.290E-08	1.289E-08	0.05
5,000	7.549E-09	7.550E-09	-0.01
10,000	5.508E-09	5.507E-09	0.02
20,000	3.893E-09	3.890E-09	0.07
Maximum:			0.13

B.7.135.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.823E-01	2.823E-01	0.00
2	3.889E-01	3.889E-01	0.00
5	3.140E-02	3.140E-02	0.00
10	2.197E-04	2.197E-04	0.00
20	3.508E-08	3.509E-08	-0.05
50	1.950E-08	1.951E-08	-0.05
100	1.838E-08	1.835E-08	0.14
200	1.619E-08	1.620E-08	-0.01
500	1.130E-08	1.131E-08	-0.06
1,000	7.148E-09	7.133E-09	0.21
2,000	4.504E-09	4.515E-09	-0.26

5,000	3.144E-09	3.137E-09	0.22
10,000	2.383E-09	2.388E-09	-0.19
20,000	1.704E-09	1.702E-09	0.10
Maximum:			-0.26

B.7.135.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.177E-01	7.177E-01	0.00
2	3.288E-01	3.288E-01	0.00
5	1.922E-02	1.922E-02	0.00
10	6.072E-04	6.076E-04	-0.08
20	4.776E-04	4.782E-04	-0.12
50	4.755E-04	4.753E-04	0.04
100	4.723E-04	4.716E-04	0.15
200	4.666E-04	4.660E-04	0.12
500	4.532E-04	4.537E-04	-0.12
1,000	4.381E-04	4.386E-04	-0.10
2,000	4.180E-04	4.174E-04	0.13
5,000	3.774E-04	3.777E-04	-0.09
10,000	3.317E-04	3.319E-04	-0.08
Maximum:			0.15

B.7.136. Plutonium – Ingestion of ²⁴¹Pu (f₁ = 0.00001)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.28%.

Maximum difference for **Whole Body**: +0.15%.

B.7.136.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.731E-08	6.731E-08	0.00
2	5.174E-08	5.174E-08	0.00
5	1.293E-08	1.293E-08	0.00
10	3.646E-09	3.646E-09	0.01
20	1.748E-09	1.748E-09	0.03
50	1.319E-09	1.319E-09	0.03
100	9.478E-10	9.471E-10	0.08
200	6.530E-10	6.522E-10	0.13
500	4.833E-10	4.838E-10	-0.12
1,000	3.772E-10	3.769E-10	0.07
2,000	2.579E-10	2.578E-10	0.05
5,000	1.510E-10	1.510E-10	-0.01
10,000	1.102E-10	1.101E-10	0.02
20,000	7.786E-11	7.780E-11	0.07
Maximum:			0.13

B.7.136.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.824E-01	2.824E-01	0.00
2	3.891E-01	3.891E-01	0.00
5	3.142E-02	3.142E-02	0.00
10	2.196E-04	2.196E-04	0.00
20	1.048E-08	1.048E-08	-0.01
50	3.900E-10	3.904E-10	-0.10

100	3.676E-10	3.672E-10	0.10
200	3.239E-10	3.241E-10	-0.05
500	2.261E-10	2.263E-10	-0.10
1,000	1.430E-10	1.427E-10	0.18
2,000	9.007E-11	9.032E-11	-0.28
5,000	6.288E-11	6.276E-11	0.20
10,000	4.767E-11	4.777E-11	-0.21
20,000	3.408E-11	3.405E-11	0.08
Maximum:			-0.28

B.7.136.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.176E-01	7.176E-01	0.00
2	3.286E-01	3.286E-01	0.00
5	1.876E-02	1.875E-02	0.00
10	1.375E-04	1.375E-04	0.00
20	9.557E-06	9.569E-06	-0.12
50	9.510E-06	9.506E-06	0.04
100	9.446E-06	9.431E-06	0.15
200	9.332E-06	9.320E-06	0.13
500	9.064E-06	9.075E-06	-0.12
1,000	8.762E-06	8.771E-06	-0.10
2,000	8.360E-06	8.349E-06	0.14
5,000	7.548E-06	7.554E-06	-0.08
10,000	6.634E-06	6.639E-06	-0.08
Maximum:			0.15

B.7.137. Plutonium – Ingestion of ²⁴¹Pu (f₁ = 0.0001)

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.28%.

Maximum difference for **Whole Body**: +0.15%.

B.7.137.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.731E-07	6.731E-07	0.00
2	5.174E-07	5.174E-07	0.00
5	1.293E-07	1.293E-07	0.00
10	3.646E-08	3.646E-08	0.01
20	1.748E-08	1.748E-08	0.03
50	1.319E-08	1.319E-08	0.03
100	9.478E-09	9.471E-09	0.08
200	6.530E-09	6.522E-09	0.13
500	4.833E-09	4.838E-09	-0.12
1,000	3.772E-09	3.769E-09	0.07
2,000	2.579E-09	2.578E-09	0.05
5,000	1.510E-09	1.510E-09	-0.01
10,000	1.102E-09	1.101E-09	0.02
20,000	7.786E-10	7.780E-10	0.07
Maximum:			0.13

B.7.137.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.824E-01	2.823E-01	0.00
2	3.891E-01	3.890E-01	0.00
5	3.141E-02	3.141E-02	0.00
10	2.197E-04	2.196E-04	0.00
20	1.500E-08	1.500E-08	-0.03

50	3.900E-09	3.903E-09	-0.09
100	3.676E-09	3.672E-09	0.10
200	3.239E-09	3.240E-09	-0.05
500	2.261E-09	2.263E-09	-0.09
1,000	1.430E-09	1.427E-09	0.18
2,000	9.007E-10	9.032E-10	-0.28
5,000	6.288E-10	6.276E-10	0.20
10,000	4.767E-10	4.777E-10	-0.21
20,000	3.408E-10	3.405E-10	0.08
Maximum:			-0.28

B.7.137.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.177E-01	7.177E-01	0.00
2	3.286E-01	3.286E-01	0.00
5	1.884E-02	1.884E-02	0.00
10	2.237E-04	2.238E-04	-0.04
20	9.552E-05	9.564E-05	-0.12
50	9.510E-05	9.506E-05	0.04
100	9.446E-05	9.431E-05	0.15
200	9.332E-05	9.320E-05	0.13
500	9.064E-05	9.075E-05	-0.12
1,000	8.762E-05	8.771E-05	-0.10
2,000	8.360E-05	8.349E-05	0.14
5,000	7.548E-05	7.554E-05	-0.08
10,000	6.634E-05	6.639E-05	-0.08
Maximum:			0.15

B.7.138. Plutonium – Injection of ²⁴¹Pu

Maximum difference for **Urine**: +0.13%.

Maximum difference for **Feces**: -0.26%.

Maximum difference for **Whole Body**: +0.15%.

B.7.138.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.182E-03	8.182E-03	0.00
2	4.481E-03	4.481E-03	0.00
5	1.205E-03	1.205E-03	0.00
10	3.512E-04	3.512E-04	0.01
20	1.741E-04	1.741E-04	0.03
50	1.317E-04	1.316E-04	0.02
100	9.468E-05	9.460E-05	0.08
200	6.527E-05	6.518E-05	0.13
500	4.832E-05	4.838E-05	-0.12
1,000	3.772E-05	3.769E-05	0.06
2,000	2.579E-05	2.578E-05	0.05
5,000	1.510E-05	1.510E-05	-0.02
10,000	1.102E-05	1.101E-05	0.02

20,000	7.786E-06	7.781E-06	0.07
Maximum:			0.13

B.7.138.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.606E-03	1.605E-03	0.00
2	4.296E-03	4.296E-03	0.00
5	2.164E-03	2.163E-03	0.01
10	3.617E-04	3.617E-04	0.00
20	4.947E-05	4.951E-05	-0.07
50	3.899E-05	3.901E-05	-0.05
100	3.675E-05	3.670E-05	0.14
200	3.238E-05	3.238E-05	-0.01
500	2.260E-05	2.262E-05	-0.06
1,000	1.429E-05	1.426E-05	0.21
2,000	9.007E-06	9.030E-06	-0.26

5,000	6.288E-06	6.275E-06	0.22
10,000	4.767E-06	4.776E-06	-0.19
20,000	3.408E-06	3.404E-06	0.10
Maximum:			-0.26

B.7.138.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.900E-01	9.902E-01	-0.02
2	9.815E-01	9.814E-01	0.00
5	9.668E-01	9.664E-01	0.04

10	9.586E-01	9.595E-01	-0.10
20	9.551E-01	9.562E-01	-0.12
50	9.509E-01	9.506E-01	0.04
100	9.446E-01	9.431E-01	0.15
200	9.331E-01	9.320E-01	0.12
500	9.064E-01	9.075E-01	-0.12
1,000	8.762E-01	8.771E-01	-0.10
2,000	8.360E-01	8.349E-01	0.13
5,000	7.548E-01	7.555E-01	-0.09
10,000	6.634E-01	6.639E-01	-0.08
Maximum:			0.15

B.7.139. Polonium – Inhalation of ²⁰⁸Po (type “F”)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: -0.01%.

B.7.139.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.87E-04	7.87E-04	-0.02
2	1.33E-03	1.33E-03	-0.02
5	1.31E-03	1.31E-03	-0.02
10	1.22E-03	1.22E-03	-0.02
20	1.06E-03	1.06E-03	-0.02
50	6.82E-04	6.82E-04	-0.02
100	3.30E-04	3.30E-04	-0.01
200	7.73E-05	7.73E-05	-0.01
500	9.92E-07	9.93E-07	-0.01
1,000	6.98E-10	6.99E-10	-0.01
2,000	3.46E-16	N/A	N/A
5,000	4.20E-35	N/A	N/A
Maximum:			-0.02

50	1.39E-03	1.39E-03	-0.01
100	6.74E-04	6.74E-04	-0.01
200	1.58E-04	1.58E-04	0
500	2.03E-06	2.03E-06	0
1,000	1.43E-09	1.43E-09	0
2,000	7.06E-16	N/A	N/A
5,000	8.58E-35	N/A	N/A
Maximum:			-0.01

B.7.139.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.53E-01	5.53E-01	0
2	4.01E-01	4.01E-01	-0.01
5	2.91E-01	2.91E-01	-0.01
10	2.66E-01	2.66E-01	-0.01
20	2.30E-01	2.30E-01	-0.01
50	1.49E-01	1.49E-01	-0.01
100	7.19E-02	7.19E-02	-0.01
200	1.68E-02	1.68E-02	-0.01
500	2.16E-04	2.16E-04	0
1,000	1.52E-07	1.52E-07	0
2,000	7.54E-14	N/A	N/A
5,000	9.16E-33	N/A	N/A
Maximum:			-0.01

B.7.139.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.19E-02	5.19E-02	0
2	7.09E-02	7.09E-02	0
5	8.12E-03	8.12E-03	0
10	2.53E-03	2.53E-03	-0.01
20	2.15E-03	2.15E-03	-0.01

B.7.140. Polonium – Inhalation of ²⁰⁸Po (type “M”)

Maximum difference for **Urine**: -0.03%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: -0.01%.

Maximum difference for **Lungs**: -0.01%.

B.7.140.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.49E-04	1.49E-04	-0.03
2	2.96E-04	2.96E-04	-0.02

5	3.01E-04	3.01E-04	-0.01
10	2.87E-04	2.87E-04	-0.01
20	2.60E-04	2.60E-04	-0.01
50	1.91E-04	1.91E-04	-0.02
100	1.13E-04	1.13E-04	-0.02
200	4.21E-05	4.21E-05	-0.02
500	4.07E-06	4.08E-06	-0.02

1,000	1.55E-07	1.55E-07	-0.02
2,000	2.83E-10	2.83E-10	-0.02
5,000	4.96E-18	N/A	N/A
10,000	1.72E-30	N/A	N/A
Maximum:			-0.03

B.7.140.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.00E-01	1.00E-01	0
2	1.39E-01	1.39E-01	-0.01
5	1.23E-02	1.23E-02	0
10	1.09E-03	1.09E-03	-0.01
20	8.49E-04	8.50E-04	-0.01
50	5.29E-04	5.29E-04	-0.01
100	2.72E-04	2.72E-04	-0.01
200	9.41E-05	9.41E-05	-0.01
500	9.19E-06	9.19E-06	-0.01
1,000	3.48E-07	3.48E-07	-0.01
2,000	6.19E-10	6.19E-10	-0.01
5,000	1.02E-17	N/A	N/A
10,000	3.50E-30	N/A	N/A
Maximum:			-0.01

B.7.140.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.05E-01	5.05E-01	0
2	2.87E-01	2.87E-01	0
5	1.29E-01	1.29E-01	-0.01

10	1.13E-01	1.13E-01	-0.01
20	1.00E-01	1.00E-01	-0.01
50	7.21E-02	7.21E-02	-0.01
100	4.38E-02	4.38E-02	-0.01
200	1.85E-02	1.85E-02	-0.01
500	2.22E-03	2.22E-03	-0.01
1,000	8.76E-05	8.76E-05	-0.01
2,000	1.63E-07	1.63E-07	-0.01
5,000	2.95E-15	N/A	N/A
10,000	1.03E-27	N/A	N/A
Maximum:			-0.01

B.7.140.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.76E-02	5.76E-02	-0.01
2	5.59E-02	5.59E-02	-0.01
5	5.32E-02	5.32E-02	-0.01
10	4.93E-02	4.93E-02	-0.01
20	4.28E-02	4.29E-02	-0.01
50	2.99E-02	2.99E-02	-0.01
100	1.90E-02	1.90E-02	-0.01
200	9.26E-03	9.26E-03	-0.01
500	1.31E-03	1.31E-03	-0.01
1,000	5.28E-05	5.28E-05	-0.01
2,000	9.81E-08	9.81E-08	-0.01
5,000	1.77E-15	N/A	N/A
10,000	6.01E-28	N/A	N/A
Maximum:			-0.01

B.7.141. Polonium – Ingestion of ²⁰⁸Po (f₁ = 0.1)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: +0.01%.

Maximum difference for **Whole Body**: +0.01%.

B.7.141.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.93E-04	1.94E-04	-0.02
2	4.32E-04	4.32E-04	-0.01
5	4.37E-04	4.37E-04	-0.01
10	4.06E-04	4.06E-04	-0.01
20	3.51E-04	3.51E-04	-0.01
50	2.27E-04	2.27E-04	-0.01
100	1.10E-04	1.10E-04	-0.01
200	2.57E-05	2.57E-05	-0.01
500	3.30E-07	3.30E-07	-0.01
1,000	2.33E-10	2.33E-10	0
2,000	1.15E-16	N/A	N/A
5,000	1.40E-35	N/A	N/A
Maximum:			-0.02

B.7.141.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.61E-01	2.61E-01	0
2	3.48E-01	3.48E-01	0

5	2.85E-02	2.85E-02	0
10	1.02E-03	1.02E-03	0
20	7.17E-04	7.17E-04	0
50	4.64E-04	4.64E-04	0
100	2.24E-04	2.24E-04	0
200	5.25E-05	5.25E-05	0
500	6.75E-07	6.75E-07	0
1,000	4.75E-10	4.75E-10	0.01
2,000	2.35E-16	N/A	N/A
5,000	2.86E-35	N/A	N/A
Maximum:			+0.01

B.7.141.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.39E-01	7.39E-01	0
2	3.89E-01	3.89E-01	0
5	1.12E-01	1.12E-01	0
10	8.86E-02	8.86E-02	0
20	7.65E-02	7.65E-02	0
50	4.95E-02	4.95E-02	0
100	2.40E-02	2.40E-02	0
200	5.61E-03	5.61E-03	0

500	7.20E-05	7.20E-05	0
1,000	5.07E-08	5.07E-08	0.01
2,000	2.51E-14	N/A	N/A

5,000	3.05E-33	N/A	N/A
Maximum:			+0.01

B.7.142. Polonium – Injection of ²⁰⁸Po

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: +0.01%.

B.7.142.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.69E-03	2.69E-03	-0.02
2	4.42E-03	4.42E-03	-0.01
5	4.35E-03	4.35E-03	-0.01
10	4.05E-03	4.05E-03	-0.01
20	3.50E-03	3.50E-03	-0.01
50	2.27E-03	2.27E-03	-0.01
100	1.10E-03	1.10E-03	0
200	2.57E-04	2.57E-04	-0.01
500	3.30E-06	3.30E-06	0
1,000	2.32E-09	2.32E-09	0
2,000	1.15E-15	N/A	N/A
5,000	1.40E-34	N/A	N/A
Maximum:			-0.02

B.7.142.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.88E-04	6.88E-04	-0.01
2	3.96E-03	3.96E-03	-0.01
5	8.52E-03	8.52E-03	0
10	8.26E-03	8.26E-03	0
20	7.15E-03	7.15E-03	0

50	4.63E-03	4.63E-03	0
100	2.24E-03	2.24E-03	0
200	5.24E-04	5.24E-04	0
500	6.73E-06	6.73E-06	0
1,000	4.73E-09	4.73E-09	0.01
2,000	2.35E-15	N/A	N/A
5,000	2.85E-34	N/A	N/A
Maximum:			-0.01

B.7.142.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.96E-01	9.96E-01	0
2	9.87E-01	9.87E-01	0
5	9.49E-01	9.49E-01	0
10	8.82E-01	8.82E-01	0
20	7.63E-01	7.63E-01	0
50	4.94E-01	4.94E-01	0
100	2.39E-01	2.39E-01	0
200	5.59E-02	5.59E-02	0
500	7.18E-04	7.18E-04	0
1,000	5.05E-07	5.05E-07	0.01
2,000	2.50E-13	N/A	N/A
5,000	3.04E-32	N/A	N/A
Maximum:			+0.01

B.7.143. Polonium – Inhalation of ²⁰⁹Po (type “F”)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: -0.01%.

B.7.143.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.87E-04	7.87E-04	-0.02
2	1.33E-03	1.33E-03	-0.02
5	1.32E-03	1.32E-03	-0.01
10	1.23E-03	1.23E-03	-0.01
20	1.07E-03	1.07E-03	-0.02
50	7.04E-04	7.05E-04	-0.01
100	3.52E-04	3.52E-04	-0.01
200	8.78E-05	8.78E-05	-0.01
500	1.36E-06	1.36E-06	-0.02
1,000	1.32E-09	1.32E-09	-0.01
2,000	1.24E-15	N/A	N/A

5,000	1.01E-33	N/A	N/A
Maximum:			-0.02

B.7.143.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.19E-02	5.19E-02	0
2	7.10E-02	7.10E-02	0
5	8.15E-03	8.15E-03	0
10	2.54E-03	2.54E-03	-0.01
20	2.18E-03	2.18E-03	-0.01
50	1.44E-03	1.44E-03	0
100	7.18E-04	7.18E-04	-0.01
200	1.79E-04	1.79E-04	-0.01
500	2.79E-06	2.79E-06	0

1,000	2.70E-09	2.70E-09	0
2,000	2.52E-15	N/A	N/A
5,000	2.07E-33	N/A	N/A
Maximum:			-0.01

B.7.143.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.53E-01	5.53E-01	0
2	4.02E-01	4.02E-01	-0.01
5	2.92E-01	2.92E-01	-0.01

10	2.67E-01	2.68E-01	-0.01
20	2.33E-01	2.33E-01	-0.01
50	1.54E-01	1.54E-01	-0.01
100	7.67E-02	7.67E-02	-0.01
200	1.91E-02	1.91E-02	-0.01
500	2.97E-04	2.97E-04	0
1,000	2.88E-07	2.88E-07	0
2,000	2.69E-13	N/A	N/A
5,000	2.21E-31	N/A	N/A
Maximum:			-0.01

B.7.144. Polonium – Inhalation of ²⁰⁹Po (type “M”)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: -0.01%.

Maximum difference for **Lungs**: -0.01%.

B.7.144.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.49E-04	1.49E-04	-0.02
2	2.96E-04	2.96E-04	-0.02
5	3.02E-04	3.02E-04	-0.01
10	2.89E-04	2.89E-04	-0.01
20	2.63E-04	2.63E-04	-0.01
50	1.97E-04	1.97E-04	-0.02
100	1.20E-04	1.20E-04	-0.02
200	4.78E-05	4.78E-05	-0.02
500	5.60E-06	5.60E-06	-0.02
1,000	2.93E-07	2.94E-07	-0.02
2,000	1.01E-09	1.01E-09	-0.02
5,000	1.20E-16	N/A	N/A
10,000	9.99E-28	N/A	N/A
Maximum:			-0.02

B.7.144.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.05E-01	5.05E-01	0
2	2.88E-01	2.88E-01	0
5	1.30E-01	1.30E-01	-0.01
10	1.14E-01	1.14E-01	0
20	1.02E-01	1.02E-01	0
50	7.44E-02	7.44E-02	-0.01
100	4.67E-02	4.67E-02	-0.01
200	2.11E-02	2.11E-02	-0.01
500	3.05E-03	3.05E-03	-0.01
1,000	1.66E-04	1.66E-04	-0.01
2,000	5.80E-07	5.81E-07	-0.01
5,000	7.11E-14	N/A	N/A
10,000	5.98E-25	N/A	N/A
Maximum:			-0.01

B.7.144.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.00E-01	1.00E-01	-0.01
2	1.39E-01	1.39E-01	-0.01
5	1.23E-02	1.23E-02	0
10	1.10E-03	1.10E-03	-0.01
20	8.60E-04	8.60E-04	-0.01
50	5.46E-04	5.46E-04	-0.01
100	2.90E-04	2.90E-04	-0.01
200	1.07E-04	1.07E-04	-0.01
500	1.26E-05	1.26E-05	-0.01
1,000	6.58E-07	6.58E-07	-0.01
2,000	2.21E-09	2.21E-09	-0.01
5,000	2.46E-16	N/A	N/A
10,000	2.03E-27	N/A	N/A
Maximum:			-0.01

B.7.144.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.76E-02	5.76E-02	-0.01
2	5.59E-02	5.59E-02	-0.01
5	5.34E-02	5.34E-02	-0.01
10	4.97E-02	4.97E-02	-0.01
20	4.34E-02	4.34E-02	-0.01
50	3.09E-02	3.09E-02	-0.01
100	2.02E-02	2.02E-02	-0.01
200	1.05E-02	1.05E-02	-0.01
500	1.80E-03	1.80E-03	-0.01
1,000	9.98E-05	9.98E-05	-0.01
2,000	3.50E-07	3.50E-07	-0.01
5,000	4.26E-14	N/A	N/A
10,000	3.50E-25	N/A	N/A
Maximum:			-0.01

B.7.145. Polonium – Ingestion of ²⁰⁹Po (f₁ = 0.1)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: +0.01%.

Maximum difference for **Whole Body**: +0.01%.

B.7.145.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.94E-04	1.94E-04	-0.02
2	4.32E-04	4.32E-04	-0.01
5	4.38E-04	4.38E-04	-0.01
10	4.09E-04	4.09E-04	-0.01
20	3.56E-04	3.56E-04	-0.01
50	2.35E-04	2.35E-04	-0.01
100	1.17E-04	1.17E-04	-0.01
200	2.92E-05	2.92E-05	-0.01
500	4.54E-07	4.54E-07	-0.01
1,000	4.39E-10	4.39E-10	0
2,000	4.11E-16	N/A	N/A
5,000	3.37E-34	N/A	N/A
Maximum:			-0.02

B.7.145.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.61E-01	2.61E-01	0
2	3.49E-01	3.49E-01	0
5	2.86E-02	2.86E-02	0
10	1.03E-03	1.03E-03	0
20	7.26E-04	7.26E-04	0

50	4.79E-04	4.79E-04	0
100	2.39E-04	2.39E-04	0
200	5.97E-05	5.97E-05	0
500	9.27E-07	9.27E-07	0
1,000	8.97E-10	8.97E-10	0.01
2,000	8.40E-16	N/A	N/A
5,000	6.89E-34	N/A	N/A
Maximum:			+0.01

B.7.145.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.39E-01	7.39E-01	0
2	3.90E-01	3.90E-01	0
5	1.12E-01	1.12E-01	0
10	8.91E-02	8.91E-02	0
20	7.75E-02	7.75E-02	0
50	5.11E-02	5.11E-02	0
100	2.55E-02	2.55E-02	0
200	6.37E-03	6.37E-03	0
500	9.90E-05	9.90E-05	0
1,000	9.58E-08	9.57E-08	0.01
2,000	8.96E-14	N/A	N/A
5,000	7.35E-32	N/A	N/A
Maximum:			+0.01

B.7.146. Polonium – Injection of ²⁰⁹Po

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: +0.01%.

B.7.146.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.69E-03	2.69E-03	-0.02
2	4.43E-03	4.43E-03	-0.01
5	4.37E-03	4.37E-03	-0.01
10	4.08E-03	4.08E-03	-0.01
20	3.55E-03	3.55E-03	-0.01
50	2.34E-03	2.34E-03	-0.01
100	1.17E-03	1.17E-03	-0.01
200	2.92E-04	2.92E-04	-0.01
500	4.53E-06	4.53E-06	0
1,000	4.38E-09	4.38E-09	0
2,000	4.10E-15	N/A	N/A
5,000	3.37E-33	N/A	N/A
Maximum:			-0.02

B.7.146.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.89E-04	6.89E-04	-0.01
2	3.97E-03	3.97E-03	-0.01
5	8.55E-03	8.55E-03	0
10	8.32E-03	8.32E-03	0
20	7.24E-03	7.24E-03	0
50	4.78E-03	4.78E-03	0
100	2.39E-03	2.39E-03	0
200	5.95E-04	5.95E-04	0
500	9.25E-06	9.25E-06	0
1,000	8.95E-09	8.95E-09	0.01
2,000	8.38E-15	N/A	N/A
5,000	6.87E-33	N/A	N/A
Maximum:			-0.01

B.7.146.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES (d ⁻¹)	Difference (%)
1	9.97E-01	9.97E-01	0
2	9.88E-01	9.88E-01	0
5	9.52E-01	9.52E-01	0
10	8.88E-01	8.88E-01	0
20	7.73E-01	7.73E-01	0

50	5.10E-01	5.10E-01	0
100	2.55E-01	2.55E-01	0
200	6.35E-02	6.35E-02	0
500	9.87E-04	9.87E-04	0
1,000	9.55E-07	9.55E-07	0.01
2,000	8.94E-13	N/A	N/A
5,000	7.33E-31	N/A	N/A
Maximum:			+0.01

B.7.147. Polonium – Inhalation of ²¹⁰Po (type “F”)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: +0.03%.

Maximum difference for **Whole Body**: +0.03%.

B.7.147.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.833E-04	7.834E-04	-0.02
2	1.317E-03	1.317E-03	-0.02
5	1.283E-03	1.283E-03	-0.01
10	1.168E-03	1.168E-03	-0.01
20	9.668E-04	9.669E-04	-0.01
50	5.488E-04	5.489E-04	-0.01
100	2.136E-04	2.136E-04	-0.01
200	3.237E-05	3.237E-05	0.00
500	1.126E-07	1.125E-07	0.02
1,000	8.986E-12	N/A	N/A
2,000	5.726E-20	N/A	N/A
5,000	1.541E-44	N/A	N/A
Maximum:			-0.02

50	1.121E-03	1.121E-03	0.00
100	4.361E-04	4.361E-04	0.00
200	6.608E-05	6.607E-05	0.01
500	2.298E-07	2.297E-07	0.03
1,000	1.835E-11	N/A	N/A
2,000	1.169E-19	N/A	N/A
5,000	3.083E-44	N/A	N/A
Maximum:			0.03

B.7.147.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.501E-01	5.501E-01	0.00
2	3.978E-01	3.979E-01	-0.01
5	2.850E-01	2.850E-01	-0.01
10	2.544E-01	2.544E-01	-0.01
20	2.106E-01	2.106E-01	0.00
50	1.196E-01	1.196E-01	-0.01
100	4.655E-02	4.655E-02	0.00
200	7.052E-03	7.051E-03	0.01
500	2.453E-05	2.452E-05	0.03
1,000	1.958E-09	N/A	N/A
2,000	1.248E-17	N/A	N/A
5,000	3.229E-42	N/A	N/A
Maximum:			0.03

B.7.147.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.167E-02	5.167E-02	0.00
2	7.029E-02	7.029E-02	0.00
5	7.946E-03	7.946E-03	0.00
10	2.420E-03	2.420E-03	-0.01
20	1.974E-03	1.974E-03	-0.01

B.7.148. Polonium – Inhalation of ²¹⁰Po (type “M”)

Maximum difference for **Urine**: +0.05%.

Maximum difference for **Feces**: +0.06%.

Maximum difference for **Whole Body**: +0.06%.

Maximum difference for **Lungs**: +0.06%.

B.7.148.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.484E-04	1.484E-04	-0.03
2	2.930E-04	2.930E-04	-0.02
5	2.947E-04	2.947E-04	-0.02
10	2.748E-04	2.748E-04	-0.01

20	2.383E-04	2.383E-04	-0.01
50	1.535E-04	1.536E-04	-0.01
100	7.308E-05	7.309E-05	-0.01
200	1.761E-05	1.761E-05	0.00
500	4.621E-07	4.620E-07	0.01
1,000	1.998E-09	1.997E-09	0.05
2,000	4.686E-14	N/A	N/A
5,000	1.748E-27	N/A	N/A
Maximum:			0.05

B.7.148.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.963E-02	9.964E-02	-0.01
2	1.374E-01	1.374E-01	-0.01
5	1.202E-02	1.202E-02	0.00
10	1.043E-03	1.043E-03	-0.01
20	7.786E-04	7.787E-04	-0.01
50	4.255E-04	4.255E-04	0.00
100	1.759E-04	1.759E-04	0.00
200	3.940E-05	3.940E-05	0.00
500	1.042E-06	1.042E-06	0.02
1,000	4.481E-09	4.479E-09	0.06
2,000	1.024E-13	N/A	N/A
5,000	3.600E-27	N/A	N/A
Maximum:			0.06

B.7.148.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.028E-01	5.028E-01	0.00
2	2.846E-01	2.846E-01	0.00
5	1.263E-01	1.263E-01	-0.01
10	1.083E-01	1.083E-01	-0.01
20	9.206E-02	9.207E-02	-0.01

50	5.796E-02	5.796E-02	-0.01
100	2.836E-02	2.836E-02	0.00
200	7.763E-03	7.763E-03	0.00
500	2.516E-04	2.515E-04	0.02
1,000	1.127E-06	1.126E-06	0.06
2,000	2.690E-11	N/A	N/A
5,000	1.040E-24	N/A	N/A
Maximum:			0.06

B.7.148.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.734E-02	5.735E-02	-0.01
2	5.538E-02	5.539E-02	-0.01
5	5.204E-02	5.205E-02	-0.01
10	4.723E-02	4.724E-02	-0.01
20	3.927E-02	3.928E-02	-0.01
50	2.407E-02	2.408E-02	-0.01
100	1.226E-02	1.226E-02	-0.01
200	3.877E-03	3.877E-03	0.00
500	1.488E-04	1.487E-04	0.02
1,000	6.795E-07	6.791E-07	0.06
2,000	1.623E-11	N/A	N/A
5,000	6.223E-25	N/A	N/A
Maximum:			0.06

B.7.149. Polonium – Ingestion of ²¹⁰Po (f₁ = 0.1)

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: +0.04%.

Maximum difference for **Whole Body**: +0.04%.

B.7.149.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.926E-04	1.926E-04	-0.02
2	4.278E-04	4.278E-04	-0.01
5	4.272E-04	4.272E-04	-0.01
10	3.887E-04	3.887E-04	-0.01
20	3.219E-04	3.219E-04	-0.01
50	1.827E-04	1.827E-04	0.00
100	7.112E-05	7.112E-05	0.00
200	1.078E-05	1.078E-05	0.01
500	3.748E-08	3.746E-08	0.03
1,000	2.992E-12	N/A	N/A
2,000	1.907E-20	N/A	N/A
5,000	5.605E-45	N/A	N/A
Maximum:			0.03

100	1.452E-04	1.452E-04	0.01
200	2.200E-05	2.200E-05	0.02
500	7.651E-08	7.648E-08	0.04
1,000	6.107E-12	N/A	N/A
2,000	3.892E-20	N/A	N/A
5,000	9.809E-45	N/A	N/A
Maximum:			0.04

B.7.149.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.353E-01	7.353E-01	0.00
2	3.860E-01	3.860E-01	0.00
5	1.092E-01	1.092E-01	0.00
10	8.480E-02	8.480E-02	0.00
20	7.013E-02	7.013E-02	0.00
50	3.981E-02	3.981E-02	0.00
100	1.550E-02	1.550E-02	0.00
200	2.348E-03	2.347E-03	0.01
500	8.165E-06	8.162E-06	0.04
1,000	6.518E-10	N/A	N/A
2,000	4.154E-18	N/A	N/A
5,000	1.075E-42	N/A	N/A
Maximum:			0.04

B.7.149.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.595E-01	2.595E-01	0.00
2	3.452E-01	3.452E-01	0.00
5	2.789E-02	2.788E-02	0.00
10	9.776E-04	9.776E-04	0.00
20	6.571E-04	6.571E-04	0.00
50	3.730E-04	3.730E-04	0.00

B.7.150. Polonium – Injection of ²¹⁰Po

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: +0.04%.

Maximum difference for **Whole Body**: +0.04%.

B.7.150.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.678E-03	2.678E-03	-0.02
2	4.382E-03	4.383E-03	-0.01
5	4.260E-03	4.261E-03	-0.01
10	3.877E-03	3.877E-03	-0.01
20	3.210E-03	3.210E-03	-0.01
50	1.822E-03	1.822E-03	0.00
100	7.094E-04	7.094E-04	0.00
200	1.075E-04	1.075E-04	0.01
500	3.738E-07	3.736E-07	0.03
1,000	2.984E-11	N/A	N/A
2,000	1.901E-19	N/A	N/A
5,000	4.905E-44	N/A	N/A
Maximum:			0.03

B.7.150.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.852E-04	6.853E-04	-0.01
2	3.926E-03	3.927E-03	-0.01
5	8.336E-03	8.336E-03	0.00
10	7.912E-03	7.912E-03	0.00
20	6.553E-03	6.553E-03	0.00

50	3.720E-03	3.720E-03	0.00
100	1.448E-03	1.448E-03	0.01
200	2.194E-04	2.194E-04	0.01
500	7.630E-07	7.627E-07	0.04
1,000	6.091E-11	N/A	N/A
2,000	3.882E-19	N/A	N/A
5,000	1.009E-43	N/A	N/A
Maximum:			0.04

B.7.150.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.916E-01	9.916E-01	0.00
2	9.784E-01	9.784E-01	0.00
5	9.280E-01	9.280E-01	0.00
10	8.447E-01	8.447E-01	0.00
20	6.994E-01	6.994E-01	0.00
50	3.971E-01	3.970E-01	0.00
100	1.546E-01	1.545E-01	0.01
200	2.342E-02	2.341E-02	0.02
500	8.144E-05	8.140E-05	0.04
1,000	6.501E-09	N/A	N/A
2,000	4.143E-17	N/A	N/A
5,000	1.072E-41	N/A	N/A
Maximum:			0.04

B.7.151. Praseodymium – Inhalation of ¹⁴³Pr (type “M”)

Maximum difference for **Urine**: +0.05%.

Maximum difference for **Feces**: +0.05%.

Maximum difference for **Whole Body**: +0.14%.

Maximum difference for **Lungs**: +0.04%.

B.7.151.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.16E-03	6.16E-03	-0.01
2	1.06E-03	1.06E-03	0.02
5	1.79E-04	1.79E-04	-0.01
10	1.05E-04	1.05E-04	-0.01
20	3.77E-05	3.77E-05	0
50	2.98E-06	2.98E-06	0.01
100	1.42E-07	1.42E-07	0.02
200	6.83E-10	6.83E-10	0.05
500	1.19E-16	N/A	N/A
1,000	8.24E-28	N/A	N/A
Maximum:			+0.05

B.7.151.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

1	7.92E-02	7.92E-02	-0.01
2	9.88E-02	9.89E-02	0
5	7.27E-03	7.27E-03	0
10	3.52E-04	3.52E-04	-0.01
20	1.32E-04	1.32E-04	-0.01
50	1.19E-05	1.19E-05	0.01
100	3.57E-07	3.56E-07	0.02
200	9.72E-10	9.71E-10	0.05
500	1.27E-16	N/A	N/A
1,000	8.27E-28	N/A	N/A
Maximum:			+0.05

B.7.151.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.90E-01	4.90E-01	0
2	2.95E-01	2.95E-01	0
5	1.50E-01	1.50E-01	-0.01
10	1.10E-01	1.10E-01	0

20	6.37E-02	6.37E-02	0
50	1.31E-02	1.31E-02	0.01
100	9.77E-04	9.77E-04	0.02
200	5.68E-06	5.67E-06	0.05
500	1.16E-12	1.15E-12	0.14
1,000	8.30E-24	N/A	N/A
Maximum:			+0.14

B.7.151.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
-------------	------	----------	-------------------

1	5.48E-02	5.48E-02	-0.01
2	5.05E-02	5.05E-02	-0.01
5	4.13E-02	4.13E-02	-0.01
10	2.98E-02	2.98E-02	-0.01
20	1.56E-02	1.56E-02	-0.01
50	2.40E-03	2.40E-03	0
100	1.22E-04	1.22E-04	0.01
200	3.83E-07	3.83E-07	0.04
500	1.45E-14	N/A	N/A
1,000	6.42E-27	N/A	N/A
Maximum:			+0.04

B.7.152. Praseodymium – Inhalation of ¹⁴³Pr (type “S”)

Maximum difference for **Urine**: **+0.04%**.

Maximum difference for **Feces**: **+0.05%**.

Maximum difference for **Whole Body**: **+0.05%**.

Maximum difference for **Lungs**: **+0.04%**.

B.7.152.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.10E-05	2.10E-05	-0.01
2	3.56E-06	3.56E-06	0.01
5	8.16E-07	8.16E-07	-0.01
10	5.30E-07	5.30E-07	-0.01
20	2.41E-07	2.41E-07	-0.01
50	3.40E-08	3.40E-08	0
100	2.20E-09	2.20E-09	0.02
200	1.25E-11	1.25E-11	0.04
500	2.75E-18	N/A	N/A
1,000	2.17E-29	N/A	N/A
Maximum:			+0.04

B.7.152.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.08E-01	1.08E-01	0
2	1.47E-01	1.47E-01	0
5	1.09E-02	1.09E-02	0
10	3.89E-04	3.89E-04	-0.01
20	1.58E-04	1.58E-04	-0.01
50	1.77E-05	1.77E-05	0
100	5.49E-07	5.49E-07	0.02
200	1.21E-09	1.21E-09	0.05
500	1.53E-16	N/A	N/A
1,000	7.20E-28	N/A	N/A
Maximum:			+0.05

B.7.152.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.67E-01	4.67E-01	0
2	2.25E-01	2.25E-01	0
5	5.64E-02	5.64E-02	-0.01
10	3.58E-02	3.58E-02	-0.01
20	1.97E-02	1.97E-02	-0.01
50	3.50E-03	3.50E-03	0
100	2.28E-04	2.28E-04	0.01
200	1.18E-06	1.18E-06	0.05
500	2.01E-13	N/A	N/A
1,000	1.12E-24	N/A	N/A
Maximum:			+0.05

B.7.152.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.11E-02	6.11E-02	-0.01
2	5.66E-02	5.66E-02	-0.01
5	4.70E-02	4.70E-02	-0.01
10	3.47E-02	3.47E-02	-0.01
20	1.91E-02	1.91E-02	-0.01
50	3.40E-03	3.40E-03	0
100	2.21E-04	2.21E-04	0.02
200	1.13E-06	1.13E-06	0.04
500	1.86E-13	N/A	N/A
1,000	9.57E-25	N/A	N/A
Maximum:			+0.04

B.7.153. Praseodymium – Ingestion of ¹⁴³Po (f₁ = 0.0005)

Maximum difference for **Urine**: **+0.06%**.

Maximum difference for **Feces**: **+0.06%**.

Maximum difference for **Whole Body**: **+0.06%**.

B.7.153.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.02E-05	2.02E-05	0
2	4.21E-06	4.21E-06	0.02
5	5.48E-07	5.48E-07	0
10	3.07E-07	3.07E-07	0
20	9.95E-08	9.95E-08	0.01
50	5.51E-09	5.51E-09	0.02
100	2.54E-10	2.54E-10	0.03
200	1.47E-12	1.47E-12	0.06
500	3.03E-19	N/A	N/A
1,000	2.18E-30	N/A	N/A
Maximum:			+0.06

B.7.153.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.68E-01	2.68E-01	0
2	3.51E-01	3.51E-01	0
5	2.43E-02	2.43E-02	0
10	1.32E-04	1.32E-04	0

20	1.13E-07	1.13E-07	0.01
50	5.77E-09	5.77E-09	0.02
100	2.55E-10	2.55E-10	0.03
200	1.47E-12	1.47E-12	0.06
500	3.03E-19	N/A	N/A
1,000	2.18E-30	N/A	N/A
Maximum:			+0.06

B.7.153.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.82E-01	6.82E-01	0
2	2.97E-01	2.97E-01	0
5	1.49E-02	1.49E-02	0
10	3.39E-04	3.39E-04	0
20	1.55E-04	1.55E-04	0.01
50	3.27E-05	3.27E-05	0.01
100	2.51E-06	2.51E-06	0.03
200	1.48E-08	1.48E-08	0.06
500	3.06E-15	N/A	N/A
1,000	2.20E-26	N/A	N/A
Maximum:			+0.06

B.7.154. Praseodymium – Injection of ¹⁴³Pr

Maximum difference for **Urine**: +0.06%.

Maximum difference for **Feces**: +0.06%.

Maximum difference for **Whole Body**: +0.15%.

B.7.154.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.46E-02	4.46E-02	0
2	4.92E-03	4.92E-03	0.02
5	1.08E-03	1.08E-03	-0.01
10	6.06E-04	6.06E-04	0
20	1.97E-04	1.97E-04	0.01
50	1.10E-05	1.10E-05	0.03
100	5.08E-07	5.08E-07	0.03
200	2.94E-09	2.94E-09	0.06
500	6.06E-16	N/A	N/A
1,000	4.36E-27	N/A	N/A
Maximum:			+0.06

B.7.154.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.10E-02	1.10E-02	-0.01
2	1.82E-02	1.82E-02	0
5	2.62E-03	2.62E-03	0
10	6.75E-04	6.75E-04	0

20	2.15E-04	2.15E-04	0.01
50	1.15E-05	1.15E-05	0.02
100	5.10E-07	5.09E-07	0.03
200	2.94E-09	2.94E-09	0.06
500	6.06E-16	N/A	N/A
1,000	4.36E-27	N/A	N/A
Maximum:			+0.06

B.7.154.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.95E-01	8.95E-01	0
2	8.27E-01	8.27E-01	0
5	6.89E-01	6.89E-01	0
10	5.25E-01	5.25E-01	0
20	3.10E-01	3.10E-01	0.01
50	6.55E-02	6.55E-02	0.01
100	5.02E-03	5.02E-03	0.03
200	2.97E-05	2.97E-05	0.06
500	6.12E-12	6.11E-12	0.15
1,000	4.40E-23	N/A	N/A
2,000	2.80E-45	N/A	N/A
Maximum:			+0.15

B.7.155. Praseodymium – Inhalation of ¹⁴⁷Pr (type “M”)

Maximum difference for **Urine**: 0.0%.
Maximum difference for **Feces**: 0.0%.
Maximum difference for **Whole Body**: 0.0%.
Maximum difference for **Lungs**: 0.0%.

B.7.155.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.64E-35	N/A	N/A
Maximum:			0.0

B.7.155.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.11E-33	N/A	N/A
Maximum:			0.0

B.7.155.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.87E-33	N/A	N/A
Maximum:			0.0

B.7.155.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.68E-34	N/A	N/A
Maximum:			0.0

B.7.156. Praseodymium – Inhalation of ¹⁴⁷Pr (type “S”)

Maximum difference for **Urine**: 0.0%.
Maximum difference for **Feces**: 0.0%.
Maximum difference for **Whole Body**: 0.0%.
Maximum difference for **Lungs**: 0.0%.

B.7.156.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.95E-37	N/A	N/A
Maximum:			0.0

B.7.156.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.52E-33	N/A	N/A
Maximum:			0.0

B.7.156.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.55E-33	N/A	N/A
Maximum:			0.0

B.7.156.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.57E-34	N/A	N/A
Maximum:			0.0

B.7.157. Praseodymium – Ingestion of ¹⁴⁷Po (f₁ = 0.0005)

Maximum difference for **Urine**: 0.0%.
Maximum difference for **Feces**: 0.0%.
Maximum difference for **Whole Body**: 0.0%.

B.7.157.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.83E-37	N/A	N/A
Maximum:			0.0

B.7.157.2. Fecal Excretion Rate

TIME	IMBA	PLEIADES	Difference
------	------	----------	------------

(d)	(d ⁻¹)	(d ⁻¹)	(%)
1	3.76E-33	N/A	N/A
Maximum:			0.0

B.7.157.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.57E-33	N/A	N/A
Maximum:			0.0

B.7.158. Praseodymium – Injection of ¹⁴⁷Pr

Maximum difference for **Urine**: 0.0%.

Maximum difference for **Feces**: 0.0%.

Maximum difference for **Whole Body**: 0.0%.

B.7.158.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.26E-34	N/A	N/A
Maximum:			0.0

B.7.158.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

1	1.54E-34	N/A	N/A
Maximum:			0.0

B.7.158.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.26E-32	N/A	N/A
Maximum:			0.0

B.7.159. Promethium – Injection of ¹⁴⁷Pm

Maximum difference for **Urine**: +0.04%.

Maximum difference for **Feces**: +0.01%.

B.7.159.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.596E-02	4.596E-02	0.00
2	3.891E-03	3.889E-03	0.04
5	8.965E-05	8.965E-05	0.00
10	8.832E-05	8.832E-05	0.00
20	8.751E-05	8.751E-05	0.00
50	8.512E-05	8.512E-05	0.00
100	8.129E-05	8.128E-05	0.00
200	7.413E-05	7.413E-05	0.00
500	5.622E-05	5.621E-05	0.00
1,000	3.545E-05	3.545E-05	0.00
2,000	1.410E-05	1.410E-05	0.00
5,000	8.873E-07	8.873E-07	-0.01
10,000	8.832E-09	N/A	N/A
20,000	8.751E-13	N/A	N/A
Maximum:			0.04

B.7.159.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.145E-02	1.145E-02	0.00
2	1.941E-02	1.941E-02	0.00
5	2.005E-03	2.005E-03	0.01
10	1.019E-04	1.019E-04	0.00
20	8.753E-05	8.753E-05	0.00
50	8.515E-05	8.514E-05	0.00
100	8.131E-05	8.131E-05	0.00
200	7.415E-05	7.415E-05	0.00
500	5.623E-05	5.623E-05	0.00
1,000	3.546E-05	3.546E-05	0.00
2,000	1.411E-05	1.411E-05	0.00
5,000	8.875E-07	8.876E-07	-0.01
10,000	8.834E-09	N/A	N/A
Maximum:			0.01

B.7.160. Protactinium – Injection of ²³¹Pa

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: -0.03%.

Maximum difference for **Whole Body**: 0.00%.

B.7.160.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.999E-01	1.999E-01	0.00
2	2.013E-02	2.013E-02	0.03
5	3.197E-03	3.197E-03	0.00
10	2.339E-03	2.339E-03	0.00
20	1.295E-03	1.295E-03	0.00

50	3.298E-04	3.298E-04	0.01
100	1.199E-04	1.199E-04	-0.01
200	3.913E-05	3.914E-05	-0.03
500	4.867E-06	4.868E-06	-0.02
1,000	3.730E-06	3.730E-06	0.00
2,000	3.656E-06	3.656E-06	0.00
5,000	3.453E-06	3.453E-06	0.00
10,000	3.139E-06	3.139E-06	0.00
20,000	2.595E-06	2.595E-06	0.00
Maximum:			0.03

B.7.160.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.956E-02	4.956E-02	-0.01
2	8.512E-02	8.512E-02	0.00
5	1.163E-02	1.163E-02	0.00
10	2.626E-03	2.626E-03	0.00
20	1.412E-03	1.412E-03	0.01
50	3.473E-04	3.472E-04	0.01
100	1.223E-04	1.223E-04	0.00
200	3.974E-05	3.975E-05	-0.03
500	4.886E-06	4.887E-06	-0.02
1,000	3.730E-06	3.730E-06	0.00
2,000	3.656E-06	3.656E-06	0.00
5,000	3.453E-06	3.453E-06	0.00
10,000	3.140E-06	3.139E-06	0.00
20,000	2.595E-06	2.595E-06	0.00
Maximum:			-0.03

B.7.160.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.506E-01	7.505E-01	0.00
2	6.453E-01	6.453E-01	0.00
5	5.472E-01	5.472E-01	0.00
10	5.144E-01	5.144E-01	0.00
20	4.786E-01	4.786E-01	0.00
50	4.381E-01	4.380E-01	0.00
100	4.188E-01	4.188E-01	0.00
200	4.046E-01	4.046E-01	0.00
500	3.964E-01	3.964E-01	0.00
1,000	3.925E-01	3.925E-01	0.00
2,000	3.851E-01	3.851E-01	0.00
5,000	3.637E-01	3.637E-01	0.00
10,000	3.306E-01	3.306E-01	0.00
Maximum:			0.00

B.7.161. Protactinium – Inhalation of ²³³Pa (type “M”)

Maximum difference for **Urine**: -0.13%.

Maximum difference for **Feces**: -0.12%.

Maximum difference for **Whole Body**: -0.11%.

Maximum difference for **Lungs**: -0.12%.

B.7.161.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.96E-02	1.96E-02	-0.01
2	3.25E-03	3.25E-03	0.02
5	3.82E-04	3.82E-04	-0.01
10	2.61E-04	2.61E-04	-0.01
20	1.30E-04	1.30E-04	-0.01
50	2.54E-05	2.54E-05	-0.02
100	3.69E-06	3.69E-06	-0.03
200	1.32E-07	1.32E-07	-0.06
500	1.02E-11	1.02E-11	-0.13
1,000	5.11E-18	N/A	N/A
2,000	2.68E-29	N/A	N/A
Maximum:			-0.13

B.7.161.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.78E-01	4.78E-01	0
2	2.62E-01	2.62E-01	0
5	1.08E-01	1.08E-01	-0.01
10	8.35E-02	8.35E-02	-0.01
20	5.93E-02	5.93E-02	-0.01
50	2.35E-02	2.35E-02	-0.02
100	5.73E-03	5.73E-03	-0.03
200	3.89E-04	3.90E-04	-0.05
500	1.57E-07	1.57E-07	-0.11
1,000	4.05E-13	N/A	N/A
2,000	2.82E-24	N/A	N/A
Maximum:			-0.11

B.7.161.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.30E-02	9.30E-02	-0.01
2	1.25E-01	1.25E-01	-0.01
5	1.03E-02	1.03E-02	-0.01
10	6.37E-04	6.37E-04	-0.01
20	3.12E-04	3.12E-04	-0.01
50	6.22E-05	6.22E-05	-0.02
100	6.85E-06	6.85E-06	-0.03
200	1.86E-07	1.87E-07	-0.06
500	1.35E-11	1.35E-11	-0.12
1,000	5.55E-18	N/A	N/A
2,000	2.68E-29	N/A	N/A
Maximum:			-0.12

B.7.161.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.62E-02	5.62E-02	-0.01
2	5.31E-02	5.31E-02	-0.01
5	4.69E-02	4.69E-02	-0.01
10	3.84E-02	3.84E-02	-0.02
20	2.60E-02	2.60E-02	-0.02
50	8.57E-03	8.57E-03	-0.02
100	1.55E-03	1.55E-03	-0.03
200	6.22E-05	6.22E-05	-0.06
500	4.85E-09	4.85E-09	-0.12
1,000	7.21E-16	N/A	N/A
2,000	1.83E-29	N/A	N/A
Maximum:			-0.12

B.7.162. Protactinium – Inhalation of ²³³Pa (type “S”)

Maximum difference for **Urine**: -0.12%.

Maximum difference for **Feces**: -0.12%.

Maximum difference for **Whole Body**: -0.12%.

Maximum difference for **Lungs**: -0.12%

B.7.162.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.18E-05	9.18E-05	-0.01
2	1.46E-05	1.46E-05	0.02
5	2.69E-06	2.69E-06	-0.01
10	2.05E-06	2.05E-06	-0.01
20	1.27E-06	1.27E-06	-0.02
50	4.07E-07	4.07E-07	-0.02
100	8.99E-08	9.00E-08	-0.03
200	5.76E-09	5.76E-09	-0.06
500	1.94E-12	1.94E-12	-0.12
1,000	3.39E-18	N/A	N/A
2,000	1.21E-29	N/A	N/A
Maximum:			-0.12

B.7.162.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.11E-01	1.11E-01	0
2	1.55E-01	1.55E-01	-0.01
5	1.24E-02	1.24E-02	0
10	5.03E-04	5.03E-04	-0.01
20	2.64E-04	2.64E-04	-0.02
50	6.36E-05	6.36E-05	-0.02
100	7.05E-06	7.06E-06	-0.03
200	2.00E-07	2.00E-07	-0.06
500	5.24E-11	5.24E-11	-0.12
1,000	8.19E-17	N/A	N/A
2,000	2.08E-28	N/A	N/A
Maximum:			-0.12

B.7.162.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.79E-01	4.79E-01	0
2	2.37E-01	2.37E-01	0
5	6.38E-02	6.39E-02	-0.01
10	4.60E-02	4.60E-02	-0.02
20	3.26E-02	3.26E-02	-0.02
50	1.24E-02	1.24E-02	-0.03
100	2.87E-03	2.87E-03	-0.04
200	1.89E-04	1.89E-04	-0.05
500	6.52E-08	6.53E-08	-0.12
1,000	1.18E-13	N/A	N/A
2,000	4.56E-25	N/A	N/A
Maximum:			-0.12

B.7.162.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.27E-02	6.27E-02	-0.01
2	5.96E-02	5.96E-02	-0.01
5	5.34E-02	5.34E-02	-0.01
10	4.48E-02	4.48E-02	-0.02
20	3.18E-02	3.18E-02	-0.02
50	1.22E-02	1.22E-02	-0.02
100	2.81E-03	2.81E-03	-0.03
200	1.84E-04	1.84E-04	-0.05
500	6.23E-08	6.24E-08	-0.12
1,000	1.08E-13	N/A	N/A
2,000	3.66E-25	N/A	N/A
Maximum:			-0.12

B.7.163. Protactinium – Ingestion of ²³³Pa (f₁ = 0.0005)

Maximum difference for **Urine**: -0.07%.

Maximum difference for **Feces**: -0.06%.

Maximum difference for **Whole Body**: -0.1%.

B.7.163.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.83E-05	8.83E-05	-0.01
2	1.75E-05	1.75E-05	0.02
5	1.43E-06	1.43E-06	0
10	9.16E-07	9.16E-07	0
20	3.92E-07	3.92E-07	0
50	4.60E-08	4.60E-08	0
100	4.62E-09	4.62E-09	-0.02
200	1.16E-10	1.16E-10	-0.07
500	6.48E-15	N/A	N/A
1,000	1.32E-20	N/A	N/A
2,000	9.20E-32	N/A	N/A

Maximum:	-0.07
----------	-------

B.7.163.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.75E-01	2.75E-01	0
2	3.70E-01	3.70E-01	0
5	2.76E-02	2.76E-02	0
10	1.71E-04	1.71E-04	0
20	4.34E-07	4.34E-07	0
50	4.85E-08	4.85E-08	0
100	4.71E-09	4.71E-09	-0.02
200	1.17E-10	1.17E-10	-0.06
500	6.51E-15	N/A	N/A
1,000	1.32E-20	N/A	N/A

2,000	9.20E-32	N/A	N/A
Maximum:			-0.06

B.7.163.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.99E-01	6.99E-01	0
2	3.12E-01	3.12E-01	0
5	1.67E-02	1.67E-02	0

10	2.98E-04	2.98E-04	0
20	1.43E-04	1.43E-04	0
50	6.07E-05	6.07E-05	-0.01
100	1.61E-05	1.61E-05	-0.02
200	1.19E-06	1.19E-06	-0.04
500	5.28E-10	5.28E-10	-0.1
1,000	1.39E-15	N/A	N/A
2,000	9.68E-27	N/A	N/A
Maximum:			-0.1

B.7.164. Protactinium – Injection of ²³³Pa

Maximum difference for **Urine**: -0.13%.

Maximum difference for **Feces**: -0.13%.

Maximum difference for **Whole Body**: -0.21%.

B.7.164.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.95E-01	1.95E-01	-0.01
2	1.91E-02	1.91E-02	0.02
5	2.81E-03	2.81E-03	0
10	1.81E-03	1.81E-03	-0.01
20	7.75E-04	7.75E-04	0
50	9.14E-05	9.14E-05	0
100	9.21E-06	9.21E-06	-0.02
200	2.31E-07	2.31E-07	-0.07
500	1.30E-11	1.30E-11	-0.13
1,000	2.65E-17	N/A	N/A
2,000	1.84E-28	N/A	N/A
Maximum:			-0.13

B.7.164.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.83E-02	4.83E-02	-0.01
2	8.09E-02	8.09E-02	0
5	1.02E-02	1.02E-02	0.01
10	2.03E-03	2.03E-03	0

20	8.45E-04	8.45E-04	0
50	9.62E-05	9.62E-05	0
100	9.39E-06	9.39E-06	-0.02
200	2.34E-07	2.34E-07	-0.07
500	1.30E-11	1.30E-11	-0.13
1,000	2.65E-17	N/A	N/A
2,000	1.84E-28	N/A	N/A
Maximum:			-0.13

B.7.164.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.32E-01	7.32E-01	0
2	6.13E-01	6.13E-01	0
5	4.81E-01	4.81E-01	0
10	3.98E-01	3.98E-01	0
20	2.86E-01	2.86E-01	0
50	1.21E-01	1.21E-01	-0.01
100	3.22E-02	3.22E-02	-0.02
200	2.38E-03	2.38E-03	-0.04
500	1.06E-06	1.06E-06	-0.1
1,000	2.78E-12	2.79E-12	-0.21
2,000	1.94E-23	N/A	N/A
Maximum:			-0.21

B.7.165. Protactinium – Inhalation of ²³⁴Pa (type “M”)

Maximum difference for **Urine**: +0.18%.

Maximum difference for **Feces**: +0.19%.

Maximum difference for **Whole Body**: +0.37%.

Maximum difference for **Lungs**: +0.18%.

B.7.165.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.68E-03	1.68E-03	0.03
2	2.38E-05	2.38E-05	0.1
5	1.76E-09	1.76E-09	0.18
10	5.58E-15	N/A	N/A
20	5.95E-26	N/A	N/A
Maximum:			+0.18

B.7.165.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.97E-03	7.96E-03	0.03
2	9.19E-04	9.18E-04	0.07
5	4.77E-08	4.76E-08	0.19
10	1.36E-14	N/A	N/A
20	1.43E-25	N/A	N/A
Maximum:			+0.19

B.7.165.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.09E-02	4.09E-02	0.04
2	1.93E-03	1.93E-03	0.07
5	4.98E-07	4.97E-07	0.18
10	1.78E-12	1.78E-12	0.37
20	2.71E-23	N/A	N/A
Maximum:			+0.37

B.7.165.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.81E-03	4.81E-03	0.03
2	3.90E-04	3.90E-04	0.06
5	2.17E-07	2.17E-07	0.18
10	8.21E-13	N/A	N/A
20	1.19E-23	N/A	N/A
Maximum:			+0.18

B.7.166. Protactinium – Inhalation of ²³⁴Pa (type “S”)

Maximum difference for **Urine**: +0.18%.

Maximum difference for **Feces**: +0.19%.

Maximum difference for **Whole Body**: +0.18%.

Maximum difference for **Lungs**: +0.18%.

B.7.166.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.87E-06	7.86E-06	0.03
2	1.07E-07	1.07E-07	0.09
5	1.25E-11	1.24E-11	0.18
10	4.38E-17	N/A	N/A
20	5.78E-28	N/A	N/A
Maximum:			+0.18

B.7.166.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.11E-02	4.10E-02	0.04
2	1.74E-03	1.74E-03	0.07
5	2.95E-07	2.95E-07	0.18
10	9.82E-13	N/A	N/A
20	1.49E-23	N/A	N/A
Maximum:			+0.18

B.7.166.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.53E-03	9.53E-03	0.03
2	1.14E-03	1.14E-03	0.07
5	5.72E-08	5.71E-08	0.19
10	1.08E-14	N/A	N/A
20	1.21E-25	N/A	N/A
Maximum:			+0.19

B.7.166.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.37E-03	5.37E-03	0.03
2	4.37E-04	4.37E-04	0.06
5	2.47E-07	2.46E-07	0.18
10	9.57E-13	N/A	N/A
20	1.45E-23	N/A	N/A
Maximum:			+0.18

B.7.167. Protactinium – Ingestion of ²³⁴Pa (f₁ = 0.0005)

Maximum difference for **Urine**: +0.19%.

Maximum difference for **Feces**: +0.19%.

Maximum difference for **Whole Body**: +0.19%.

B.7.167.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.57E-06	7.56E-06	0.03
2	1.29E-07	1.29E-07	0.1
5	6.59E-12	6.58E-12	0.19
10	1.96E-17	N/A	N/A
20	1.79E-28	N/A	N/A
Maximum:			+0.19

2	2.71E-03	2.71E-03	0.08
5	1.28E-07	1.27E-07	0.19
10	3.65E-15	N/A	N/A
20	1.98E-28	N/A	N/A
Maximum:			+0.19

B.7.167.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.36E-02	2.36E-02	0.04

B.7.167.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.99E-02	5.99E-02	0.04
2	2.29E-03	2.29E-03	0.08
5	7.73E-08	7.71E-08	0.19
10	6.37E-15	N/A	N/A
20	6.54E-26	N/A	N/A
Maximum:			+0.19

B.7.168. Protactinium – Injection of ²³⁴Pa

Maximum difference for **Urine**: +0.19%.

Maximum difference for **Feces**: +0.19%.

Maximum difference for **Whole Body**: +0.38%.

B.7.168.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.67E-02	1.67E-02	0.04
2	1.40E-04	1.40E-04	0.1
5	1.30E-08	1.30E-08	0.19
10	3.87E-14	N/A	N/A
20	3.54E-25	N/A	N/A
Maximum:			+0.19

B.7.168.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.14E-03	4.14E-03	0.03

2	5.94E-04	5.93E-04	0.08
5	4.73E-08	4.72E-08	0.19
10	4.34E-14	N/A	N/A
20	3.86E-25	N/A	N/A
Maximum:			+0.19

B.7.168.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.27E-02	6.27E-02	0.04
2	4.50E-03	4.50E-03	0.08
5	2.22E-06	2.22E-06	0.19
10	8.50E-12	8.47E-12	0.38
20	1.31E-22	N/A	N/A
Maximum:			+0.38

B.7.169. Radium – Inhalation of ²²³Ra (type “M”)

Maximum difference for **Urine**: -0.48%.

Maximum difference for **Feces**: -0.47%.

Maximum difference for **Whole Body**: -0.46%.

Maximum difference for **Lungs**: -0.47%.

B.7.169.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.49E-03	1.49E-03	-0.02
2	2.76E-04	2.76E-04	-0.02
5	7.76E-05	7.76E-05	-0.02
10	1.48E-05	1.48E-05	-0.03
20	3.37E-06	3.37E-06	-0.07
50	3.46E-07	3.46E-07	-0.13
100	9.41E-09	9.44E-09	-0.24
200	9.53E-12	9.57E-12	-0.48
500	2.03E-20	N/A	N/A
1,000	1.90E-34	N/A	N/A
Maximum:			-0.48

B.7.169.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.98E-02	9.98E-02	-0.01
2	1.31E-01	1.31E-01	-0.01
5	1.32E-02	1.32E-02	-0.02
10	1.05E-03	1.05E-03	-0.04
20	2.14E-04	2.14E-04	-0.06
50	1.89E-05	1.90E-05	-0.13
100	4.38E-07	4.39E-07	-0.24
200	3.95E-10	3.97E-10	-0.47
500	8.16E-19	N/A	N/A
1,000	7.14E-33	N/A	N/A
Maximum:			-0.47

B.7.169.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.69E-01	4.69E-01	-0.01
2	2.41E-01	2.41E-01	0
5	6.85E-02	6.85E-02	-0.02
10	3.69E-02	3.69E-02	-0.04
20	1.71E-02	1.71E-02	-0.06
50	2.01E-03	2.01E-03	-0.12
100	6.48E-05	6.49E-05	-0.24
200	8.62E-08	8.66E-08	-0.46
500	4.10E-16	N/A	N/A
1,000	1.71E-29	N/A	N/A
Maximum:			-0.46

B.7.169.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.42E-02	5.42E-02	-0.01
2	4.96E-02	4.96E-02	-0.02
5	3.94E-02	3.94E-02	-0.03
10	2.71E-02	2.71E-02	-0.04
20	1.29E-02	1.29E-02	-0.06
50	1.49E-03	1.49E-03	-0.13
100	4.70E-05	4.71E-05	-0.24
200	5.70E-08	5.73E-08	-0.47
500	1.24E-16	N/A	N/A
1,000	4.68E-31	N/A	N/A
Maximum:			-0.47

B.7.170. Radium – Ingestion of ²²³Ra (f₁ = 0.2)

Maximum difference for **Urine**: -0.49%.

Maximum difference for **Feces**: -0.48%.

Maximum difference for **Whole Body**: -0.45%.

B.7.170.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.76E-03	2.76E-03	-0.01
2	5.07E-04	5.07E-04	-0.02
5	1.35E-04	1.35E-04	-0.02
10	1.94E-05	1.94E-05	-0.02
20	2.32E-06	2.32E-06	-0.07
50	2.07E-07	2.07E-07	-0.11
100	4.31E-09	4.32E-09	-0.22
200	2.10E-12	2.11E-12	-0.49
500	3.20E-21	N/A	N/A
1,000	1.66E-34	N/A	N/A
Maximum:			-0.49

B.7.170.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.48E-01	2.48E-01	0
2	3.14E-01	3.14E-01	0
5	2.81E-02	2.81E-02	-0.01
10	1.30E-03	1.30E-03	-0.03

20	9.20E-05	9.21E-05	-0.06
50	7.61E-06	7.62E-06	-0.11
100	1.59E-07	1.59E-07	-0.21
200	7.70E-11	7.74E-11	-0.48
500	1.15E-19	N/A	N/A
1,000	5.95E-33	N/A	N/A
Maximum:			-0.48

B.7.170.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.90E-01	6.90E-01	-0.01
2	3.35E-01	3.35E-01	0
5	5.12E-02	5.12E-02	-0.01
10	1.61E-02	1.61E-02	-0.04
20	6.61E-03	6.62E-03	-0.04
50	7.64E-04	7.65E-04	-0.11
100	2.42E-05	2.42E-05	-0.24
200	3.75E-08	3.77E-08	-0.45
500	3.83E-16	N/A	N/A
1,000	2.25E-29	N/A	N/A
Maximum:			-0.45

B.7.171. Radium – Injection of ²²³Ra

Maximum difference for **Urine**: -0.49%.

Maximum difference for **Feces**: -0.48%.

Maximum difference for **Whole Body**: -0.44%.

B.7.171.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.44E-02	1.44E-02	-0.01
2	2.27E-03	2.27E-03	-0.02
5	6.33E-04	6.33E-04	-0.02
10	9.22E-05	9.22E-05	-0.03
20	1.15E-05	1.15E-05	-0.07
50	1.03E-06	1.03E-06	-0.11
100	2.15E-08	2.16E-08	-0.22
200	1.05E-11	1.05E-11	-0.49
500	1.60E-20	N/A	N/A
1,000	8.27E-34	N/A	N/A
Maximum:			-0.49

B.7.171.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.61E-01	1.61E-01	0
2	2.00E-01	2.00E-01	0
5	4.74E-02	4.74E-02	-0.01

10	5.70E-03	5.70E-03	-0.02
20	4.55E-04	4.55E-04	-0.06
50	3.80E-05	3.80E-05	-0.11
100	7.92E-07	7.94E-07	-0.21
200	3.84E-10	3.86E-10	-0.48
500	5.77E-19	N/A	N/A
1,000	2.98E-32	N/A	N/A
Maximum:			-0.48

B.7.171.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.66E-01	7.66E-01	-0.02
2	5.19E-01	5.18E-01	0.01
5	1.95E-01	1.95E-01	0
10	7.91E-02	7.91E-02	-0.04
20	3.30E-02	3.30E-02	-0.04
50	3.81E-03	3.82E-03	-0.11
100	1.21E-04	1.21E-04	-0.24
200	1.87E-07	1.88E-07	-0.44
500	1.91E-15	N/A	N/A
1,000	1.13E-28	N/A	N/A
Maximum:			-0.44

B.7.172. Radium – Inhalation of ²²⁶Ra (type “M”)

Maximum difference for **Urine**: -0.17%.

Maximum difference for **Feces**: +0.17%.

Maximum difference for **Whole Body**: +0.04%.

Maximum difference for **Lungs**: -0.02%.

B.7.172.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.581E-03	1.581E-03	-0.01
2	3.112E-04	3.113E-04	-0.01
5	1.050E-04	1.050E-04	-0.02
10	2.713E-05	2.714E-05	-0.01
20	1.134E-05	1.134E-05	-0.03
50	7.170E-06	7.171E-06	-0.02
100	4.049E-06	4.049E-06	-0.02
200	1.763E-06	1.763E-06	-0.02
500	2.987E-07	2.987E-07	-0.02
1,000	4.127E-08	4.130E-08	-0.07
2,000	1.783E-08	1.782E-08	0.07
5,000	6.331E-09	6.330E-09	0.01
10,000	2.228E-09	2.232E-09	-0.17
20,000	8.306E-10	8.292E-10	0.16
Maximum:			-0.17

B.7.172.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.060E-01	1.060E-01	0.00
2	1.473E-01	1.473E-01	-0.01
5	1.785E-02	1.785E-02	0.00
10	1.927E-03	1.927E-03	-0.01
20	7.188E-04	7.189E-04	-0.01
50	3.928E-04	3.929E-04	-0.01
100	1.883E-04	1.883E-04	-0.01
200	7.310E-05	7.311E-05	-0.02
500	1.201E-05	1.202E-05	-0.01
1,000	1.549E-06	1.550E-06	-0.06
2,000	6.416E-07	6.412E-07	0.07
5,000	2.277E-07	2.277E-07	0.02
10,000	8.013E-08	8.025E-08	-0.16
20,000	2.987E-08	2.982E-08	0.17
Maximum:			0.17

B.7.172.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.980E-01	4.981E-01	0.00
2	2.717E-01	2.717E-01	0.00
5	9.276E-02	9.277E-02	-0.01
10	6.758E-02	6.759E-02	-0.02
20	5.757E-02	5.757E-02	-0.01
50	4.165E-02	4.165E-02	-0.01
100	2.785E-02	2.786E-02	-0.01
200	1.595E-02	1.595E-02	-0.01
500	6.040E-03	6.042E-03	-0.03
1,000	3.698E-03	3.698E-03	-0.01
2,000	2.783E-03	2.782E-03	0.04
5,000	1.574E-03	1.574E-03	-0.04
10,000	8.853E-04	8.855E-04	-0.03
20,000	3.768E-04	3.767E-04	0.04
Maximum:			0.04

B.7.172.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.763E-02	5.763E-02	-0.01
2	5.594E-02	5.594E-02	-0.01
5	5.336E-02	5.337E-02	-0.01
10	4.966E-02	4.966E-02	-0.01
20	4.341E-02	4.341E-02	-0.01
50	3.092E-02	3.093E-02	-0.01
100	2.023E-02	2.023E-02	-0.01
200	1.055E-02	1.056E-02	-0.02
500	1.819E-03	1.819E-03	-0.01
1,000	1.016E-04	1.016E-04	-0.01
2,000	3.627E-07	3.627E-07	-0.01
5,000	4.643E-14	N/A	N/A
10,000	4.160E-25	N/A	N/A
Maximum:			-0.02

B.7.173. Radium – Ingestion of ²²⁶Ra (f₁ = 0.2)

Maximum difference for **Urine**: +0.17%.

Maximum difference for **Feces**: +0.18%.

Maximum difference for **Whole Body**: +0.04%.

B.7.173.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.928E-03	2.928E-03	-0.01
2	5.721E-04	5.721E-04	-0.01
5	1.825E-04	1.825E-04	0.00

10	3.559E-05	3.559E-05	0.00
20	7.798E-06	7.800E-06	-0.02
50	4.282E-06	4.282E-06	0.00
100	1.855E-06	1.855E-06	0.01
200	3.877E-07	3.879E-07	-0.04
500	4.717E-08	4.719E-08	-0.03
1,000	3.589E-08	3.592E-08	-0.08
2,000	2.409E-08	2.407E-08	0.08

5,000	8.612E-09	8.611E-09	0.01
10,000	3.050E-09	3.055E-09	-0.16
20,000	1.140E-09	1.138E-09	0.17
Maximum:			0.17

B.7.173.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.636E-01	2.636E-01	0.00
2	3.543E-01	3.543E-01	0.00
5	3.803E-02	3.803E-02	0.00
10	2.383E-03	2.383E-03	0.00
20	3.095E-04	3.095E-04	-0.01
50	1.579E-04	1.579E-04	0.00
100	6.836E-05	6.835E-05	0.02
200	1.424E-05	1.425E-05	-0.03
500	1.700E-06	1.700E-06	-0.02
1,000	1.291E-06	1.292E-06	-0.08
2,000	8.667E-07	8.660E-07	0.09
5,000	3.098E-07	3.097E-07	0.02
10,000	1.097E-07	1.098E-07	-0.15

20,000	4.098E-08	4.091E-08	0.18
Maximum:			0.18

B.7.173.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.334E-01	7.335E-01	0.00
2	3.786E-01	3.786E-01	0.01
5	6.930E-02	6.929E-02	0.00
10	2.943E-02	2.943E-02	-0.02
20	2.224E-02	2.223E-02	0.01
50	1.584E-02	1.584E-02	0.01
100	1.040E-02	1.040E-02	-0.01
200	6.938E-03	6.937E-03	0.01
500	5.637E-03	5.639E-03	-0.03
1,000	4.890E-03	4.890E-03	0.00
2,000	3.794E-03	3.793E-03	0.04
5,000	2.153E-03	2.154E-03	-0.04
10,000	1.214E-03	1.214E-03	-0.02
Maximum:			0.04

B.7.174. Radium – Injection of ²²⁶Ra

Maximum difference for **Urine**: +0.17%.

Maximum difference for **Feces**: +0.18%.

Maximum difference for **Whole Body**: +0.04%.

B.7.174.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.532E-02	1.532E-02	-0.01
2	2.561E-03	2.561E-03	-0.01
5	8.569E-04	8.569E-04	-0.01
10	1.691E-04	1.691E-04	0.00
20	3.867E-05	3.868E-05	-0.02
50	2.135E-05	2.135E-05	0.00
100	9.249E-06	9.248E-06	0.01
200	1.934E-06	1.934E-06	-0.04
500	2.358E-07	2.359E-07	-0.03
1,000	1.795E-07	1.796E-07	-0.08
2,000	1.204E-07	1.204E-07	0.07
5,000	4.306E-08	4.305E-08	0.01
10,000	1.525E-08	1.527E-08	-0.16
20,000	5.698E-09	5.688E-09	0.17
Maximum:			0.17

B.7.174.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.711E-01	1.711E-01	0.00
2	2.258E-01	2.258E-01	0.00
5	6.412E-02	6.412E-02	0.00
10	1.045E-02	1.045E-02	0.00
20	1.529E-03	1.529E-03	-0.01

50	7.870E-04	7.870E-04	0.01
100	3.408E-04	3.408E-04	0.02
200	7.104E-05	7.106E-05	-0.03
500	8.496E-06	8.498E-06	-0.02
1,000	6.457E-06	6.462E-06	-0.07
2,000	4.333E-06	4.330E-06	0.09
5,000	1.549E-06	1.549E-06	0.02
10,000	5.484E-07	5.492E-07	-0.15
20,000	2.049E-07	2.045E-07	0.18
Maximum:			0.18

B.7.174.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.135E-01	8.136E-01	-0.01
2	5.854E-01	5.853E-01	0.02
5	2.646E-01	2.646E-01	0.01
10	1.450E-01	1.450E-01	-0.02
20	1.109E-01	1.109E-01	0.00
50	7.905E-02	7.904E-02	0.01
100	5.193E-02	5.194E-02	-0.01
200	3.468E-02	3.467E-02	0.01
500	2.818E-02	2.819E-02	-0.03
1,000	2.445E-02	2.445E-02	-0.01
2,000	1.897E-02	1.896E-02	0.04
5,000	1.077E-02	1.077E-02	-0.04
10,000	6.071E-03	6.072E-03	-0.02
Maximum:			0.04

B.7.175. Radium – Inhalation of ²²⁸Ra (type “M”)

Maximum difference for **Urine**: +0.31%.

Maximum difference for **Feces**: +0.32%.

Maximum difference for **Whole Body**: +0.19%.

Maximum difference for **Lungs**: -0.01%.

B.7.175.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.581E-03	1.581E-03	-0.01
2	3.110E-04	3.111E-04	-0.01
5	1.048E-04	1.049E-04	-0.01
10	2.704E-05	2.705E-05	-0.01
20	1.126E-05	1.127E-05	-0.02
50	7.053E-06	7.054E-06	-0.02
100	3.918E-06	3.918E-06	-0.01
200	1.651E-06	1.651E-06	-0.02
500	2.534E-07	2.534E-07	-0.02
1,000	2.970E-08	2.972E-08	-0.06
2,000	9.233E-09	9.226E-09	0.08
5,000	1.222E-09	1.221E-09	0.04
10,000	8.297E-11	8.304E-11	-0.09
20,000	1.152E-12	1.148E-12	0.31
Maximum:			0.31

B.7.175.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.060E-01	1.060E-01	-0.01
2	1.472E-01	1.472E-01	-0.01
5	1.782E-02	1.782E-02	0.00
10	1.920E-03	1.920E-03	-0.01
20	7.141E-04	7.142E-04	-0.01
50	3.864E-04	3.865E-04	-0.01
100	1.822E-04	1.822E-04	-0.01
200	6.844E-05	6.845E-05	-0.01
500	1.019E-05	1.019E-05	-0.01
1,000	1.115E-06	1.115E-06	-0.05
2,000	3.323E-07	3.320E-07	0.09
5,000	4.395E-08	4.392E-08	0.05
10,000	2.984E-09	2.986E-09	-0.09
20,000	4.142E-11	4.129E-11	0.32
Maximum:			0.32

B.7.175.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.979E-01	4.979E-01	-0.01
2	2.715E-01	2.715E-01	0.00
5	9.261E-02	9.262E-02	-0.01
10	6.736E-02	6.737E-02	-0.02
20	5.719E-02	5.720E-02	-0.01
50	4.097E-02	4.097E-02	-0.01
100	2.695E-02	2.696E-02	-0.01
200	1.493E-02	1.493E-02	-0.01
500	5.124E-03	5.125E-03	-0.02
1,000	2.661E-03	2.661E-03	-0.01
2,000	1.441E-03	1.441E-03	0.05
5,000	3.037E-04	3.037E-04	-0.01
10,000	3.297E-05	3.295E-05	0.05
20,000	5.226E-07	5.216E-07	0.19
Maximum:			0.19

B.7.175.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.761E-02	5.762E-02	-0.01
2	5.590E-02	5.591E-02	-0.01
5	5.328E-02	5.328E-02	-0.01
10	4.949E-02	4.950E-02	-0.01
20	4.312E-02	4.313E-02	-0.01
50	3.042E-02	3.042E-02	-0.01
100	1.958E-02	1.958E-02	-0.01
200	9.882E-03	9.883E-03	-0.01
500	1.543E-03	1.543E-03	-0.01
1,000	7.309E-05	7.309E-05	-0.01
2,000	1.878E-07	1.878E-07	0.00
5,000	8.959E-15	N/A	N/A
10,000	1.549E-26	N/A	N/A
Maximum:			-0.01

B.7.176. Radium – Ingestion of ²²⁸Ra (f₁ = 0.2)

Maximum difference for **Urine**: +0.32%.

Maximum difference for **Feces**: +0.32%.

Maximum difference for **Whole Body**: +0.06%.

B.7.176.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.927E-03	2.927E-03	-0.01
2	5.717E-04	5.718E-04	-0.01
5	1.822E-04	1.822E-04	0.00

10	3.547E-05	3.547E-05	0.00
20	7.747E-06	7.749E-06	-0.02
50	4.212E-06	4.212E-06	0.00
100	1.795E-06	1.795E-06	0.01
200	3.630E-07	3.632E-07	-0.03
500	4.002E-08	4.003E-08	-0.03
1,000	2.583E-08	2.585E-08	-0.08
2,000	1.248E-08	1.246E-08	0.09

5,000	1.662E-09	1.661E-09	0.05
10,000	1.136E-10	1.137E-10	-0.08
20,000	1.580E-12	1.575E-12	0.32
Maximum:			0.32

B.7.176.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.635E-01	2.635E-01	0.00
2	3.540E-01	3.540E-01	0.00
5	3.797E-02	3.797E-02	0.00
10	2.376E-03	2.376E-03	0.00
20	3.075E-04	3.075E-04	-0.01
50	1.553E-04	1.553E-04	0.01
100	6.615E-05	6.613E-05	0.02
200	1.334E-05	1.334E-05	-0.02
500	1.442E-06	1.442E-06	-0.02
1,000	9.293E-07	9.300E-07	-0.07
2,000	4.488E-07	4.484E-07	0.10
5,000	5.978E-08	5.975E-08	0.06
10,000	4.084E-09	4.088E-09	-0.08

20,000	5.683E-11	5.664E-11	0.32
Maximum:			0.32

B.7.176.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.332E-01	7.332E-01	0.00
2	3.784E-01	3.784E-01	0.01
5	6.918E-02	6.918E-02	0.00
10	2.933E-02	2.933E-02	-0.02
20	2.209E-02	2.209E-02	0.00
50	1.558E-02	1.558E-02	0.01
100	1.006E-02	1.006E-02	-0.01
200	6.496E-03	6.495E-03	0.01
500	4.782E-03	4.783E-03	-0.03
1,000	3.519E-03	3.519E-03	0.00
2,000	1.965E-03	1.964E-03	0.06
5,000	4.155E-04	4.155E-04	0.00
10,000	4.521E-05	4.519E-05	0.06
Maximum:			0.06

B.7.177. Radium – Injection of ²²⁸Ra

Maximum difference for **Urine**: +0.31%.

Maximum difference for **Feces**: +0.33%.

Maximum difference for **Whole Body**: +0.06%.

B.7.177.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.532E-02	1.532E-02	-0.01
2	2.560E-03	2.560E-03	-0.01
5	8.555E-04	8.555E-04	-0.01
10	1.686E-04	1.686E-04	-0.01
20	3.842E-05	3.843E-05	-0.02
50	2.100E-05	2.100E-05	0.00
100	8.950E-06	8.949E-06	0.01
200	1.811E-06	1.811E-06	-0.04
500	2.000E-07	2.001E-07	-0.03
1,000	1.291E-07	1.292E-07	-0.08
2,000	6.237E-08	6.231E-08	0.09
5,000	8.309E-09	8.305E-09	0.05
10,000	5.678E-10	5.683E-10	-0.09
20,000	7.901E-12	7.876E-12	0.31
Maximum:			0.31

B.7.177.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.710E-01	1.710E-01	0.00
2	2.256E-01	2.256E-01	0.00
5	6.402E-02	6.401E-02	0.00
10	1.042E-02	1.042E-02	-0.01
20	1.519E-03	1.519E-03	-0.01

50	7.742E-04	7.741E-04	0.01
100	3.298E-04	3.297E-04	0.02
200	6.651E-05	6.653E-05	-0.03
500	7.207E-06	7.209E-06	-0.02
1,000	4.646E-06	4.649E-06	-0.07
2,000	2.244E-06	2.242E-06	0.10
5,000	2.989E-07	2.987E-07	0.06
10,000	2.042E-08	2.044E-08	-0.08
20,000	2.841E-10	2.832E-10	0.33
Maximum:			0.33

B.7.177.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.132E-01	8.133E-01	-0.01
2	5.850E-01	5.849E-01	0.02
5	2.642E-01	2.641E-01	0.01
10	1.445E-01	1.445E-01	-0.02
20	1.102E-01	1.102E-01	0.00
50	7.776E-02	7.775E-02	0.01
100	5.025E-02	5.026E-02	-0.01
200	3.247E-02	3.246E-02	0.01
500	2.391E-02	2.391E-02	-0.03
1,000	1.759E-02	1.759E-02	0.00
2,000	9.824E-03	9.818E-03	0.06
5,000	2.078E-03	2.078E-03	0.00
10,000	2.261E-04	2.259E-04	0.05
Maximum:			0.06

B.7.178. Ruthenium – Inhalation of ¹⁰⁶Ru (type “F”)

Maximum difference for **Urine**: +0.21%.

Maximum difference for **Feces**: +0.21%.

Maximum difference for **Whole Body**: +0.20%.

B.7.178.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.474E-02	3.474E-02	0.00
2	1.143E-02	1.143E-02	0.01
5	6.267E-03	6.266E-03	0.02
10	4.357E-03	4.357E-03	0.01
20	2.262E-03	2.262E-03	-0.02
50	5.983E-04	5.985E-04	-0.03
100	1.875E-04	1.876E-04	-0.02
200	3.776E-05	3.777E-05	-0.03
500	8.940E-06	8.938E-06	0.02
1,000	2.459E-06	2.458E-06	0.04
2,000	1.871E-07	1.869E-07	0.08
5,000	8.247E-11	8.229E-11	0.21
10,000	2.105E-16	N/A	N/A
20,000	1.372E-27	N/A	N/A
Maximum:			0.21

B.7.178.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.571E-02	5.571E-02	0.00
2	7.777E-02	7.777E-02	0.00
5	7.909E-03	7.909E-03	0.00
10	1.254E-03	1.254E-03	0.01
20	6.189E-04	6.190E-04	-0.02

50	1.564E-04	1.565E-04	-0.03
100	4.813E-05	4.814E-05	-0.02
200	9.582E-06	9.585E-06	-0.03
500	2.237E-06	2.237E-06	0.02
1,000	6.153E-07	6.150E-07	0.04
2,000	4.682E-08	4.678E-08	0.08
5,000	2.064E-11	2.059E-11	0.21
10,000	5.268E-17	N/A	N/A
20,000	3.433E-28	N/A	N/A
Maximum:			0.21

B.7.178.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.140E-01	5.140E-01	0.00
2	3.454E-01	3.454E-01	-0.01
5	2.136E-01	2.136E-01	-0.01
10	1.736E-01	1.736E-01	-0.02
20	1.316E-01	1.316E-01	-0.02
50	8.254E-02	8.256E-02	-0.02
100	5.519E-02	5.520E-02	-0.01
200	3.596E-02	3.596E-02	0.00
500	1.607E-02	1.607E-02	0.01
1,000	4.433E-03	4.431E-03	0.03
2,000	3.374E-04	3.371E-04	0.08
5,000	1.487E-07	1.484E-07	0.20
10,000	3.796E-13	N/A	N/A
Maximum:			0.20

B.7.179. Ruthenium – Inhalation of ¹⁰⁶Ru (type “M”)

Maximum difference for **Urine**: +0.21%.

Maximum difference for **Feces**: +0.21%.

Maximum difference for **Whole Body**: +0.20%.

Maximum difference for **Lungs**: +0.08%.

B.7.179.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.435E-03	5.435E-03	0.01
2	2.102E-03	2.102E-03	0.01
5	1.104E-03	1.103E-03	0.02
10	8.088E-04	8.087E-04	0.01
20	4.795E-04	4.795E-04	-0.01
50	1.945E-04	1.945E-04	-0.02
100	9.551E-05	9.552E-05	-0.01
200	3.622E-05	3.622E-05	-0.01
500	5.330E-06	5.330E-06	0.01
1,000	7.886E-07	7.883E-07	0.04
2,000	5.561E-08	5.556E-08	0.08
5,000	2.449E-11	2.444E-11	0.21
10,000	6.252E-17	N/A	N/A
20,000	4.074E-28	N/A	N/A

Maximum:			0.21
----------	--	--	------

B.7.179.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.044E-01	1.044E-01	0.00
2	1.468E-01	1.468E-01	-0.01
5	1.274E-02	1.274E-02	0.00
10	7.515E-04	7.516E-04	0.00
20	4.603E-04	4.604E-04	-0.01
50	1.905E-04	1.906E-04	-0.01
100	6.410E-05	6.411E-05	-0.01
200	1.651E-05	1.651E-05	-0.01
500	1.891E-06	1.891E-06	0.01
1,000	2.083E-07	2.082E-07	0.04
2,000	1.392E-08	1.391E-08	0.08
5,000	6.130E-12	6.117E-12	0.21

10,000	1.565E-17	N/A	N/A
20,000	1.020E-28	N/A	N/A
Maximum:			0.21

B.7.179.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.947E-01	4.947E-01	0.00
2	2.665E-01	2.665E-01	0.00
5	9.883E-02	9.884E-02	-0.01
10	8.048E-02	8.049E-02	-0.01
20	6.750E-02	6.751E-02	-0.02
50	4.676E-02	4.677E-02	-0.01
100	3.090E-02	3.091E-02	-0.01
200	1.739E-02	1.739E-02	0.00
500	5.444E-03	5.443E-03	0.01
1,000	1.331E-03	1.331E-03	0.03
2,000	1.002E-04	1.001E-04	0.07
5,000	4.417E-08	4.408E-08	0.20
10,000	1.127E-13	N/A	N/A
20,000	7.346E-25	N/A	N/A

Maximum:	0.20
----------	------

B.7.179.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.752E-02	5.753E-02	-0.01
2	5.573E-02	5.573E-02	-0.01
5	5.286E-02	5.287E-02	-0.01
10	4.873E-02	4.874E-02	-0.01
20	4.181E-02	4.181E-02	-0.01
50	2.815E-02	2.815E-02	-0.01
100	1.676E-02	1.676E-02	-0.01
200	7.245E-03	7.245E-03	0.00
500	7.100E-04	7.099E-04	0.01
1,000	1.548E-05	1.547E-05	0.04
2,000	8.422E-09	8.415E-09	0.08
5,000	3.815E-18	N/A	N/A
10,000	2.809E-33	N/A	N/A
Maximum:	0.08		

B.7.180. Ruthenium – Inhalation of ¹⁰⁶Ru (type “S”)

Maximum difference for **Urine**: +0.22%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: +0.22%.

Maximum difference for **Lungs**: +0.22%.

B.7.180.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.187E-03	2.186E-03	0.01
2	1.031E-03	1.030E-03	0.01
5	4.698E-04	4.697E-04	0.02
10	3.311E-04	3.311E-04	0.01
20	1.783E-04	1.783E-04	-0.01
50	5.347E-05	5.349E-05	-0.02
100	1.919E-05	1.920E-05	-0.02
200	5.313E-06	5.313E-06	-0.01
500	1.617E-06	1.617E-06	0.02
1,000	4.385E-07	4.383E-07	0.04
2,000	3.422E-08	3.419E-08	0.08
5,000	2.650E-11	2.644E-11	0.22
10,000	5.905E-16	N/A	N/A
20,000	8.677E-25	N/A	N/A
Maximum:	0.22		

1,000	1.711E-06	1.710E-06	0.03
2,000	9.409E-08	9.401E-08	0.08
5,000	3.051E-11	3.044E-11	0.22
10,000	5.245E-16	N/A	N/A
20,000	4.931E-25	N/A	N/A
Maximum:	0.22		

B.7.180.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.926E-01	4.926E-01	0.00
2	2.578E-01	2.578E-01	0.00
5	8.644E-02	8.645E-02	-0.01
10	7.089E-02	7.090E-02	-0.01
20	6.204E-02	6.205E-02	-0.01
50	4.694E-02	4.694E-02	-0.01
100	3.514E-02	3.514E-02	-0.01
200	2.459E-02	2.459E-02	0.00
500	1.063E-02	1.063E-02	0.01
1,000	2.760E-03	2.759E-03	0.04
2,000	2.091E-04	2.090E-04	0.08
5,000	2.190E-07	2.185E-07	0.22
10,000	6.745E-12	N/A	N/A
20,000	1.056E-20	N/A	N/A
Maximum:	0.22		

B.7.180.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.416E-02	6.416E-02	-0.01
2	6.246E-02	6.247E-02	-0.01
5	6.013E-02	6.014E-02	-0.01

10	5.681E-02	5.681E-02	-0.01
20	5.118E-02	5.119E-02	-0.01
50	3.991E-02	3.992E-02	-0.01
100	3.037E-02	3.037E-02	-0.01
200	2.143E-02	2.143E-02	0.00
500	9.133E-03	9.132E-03	0.01

1,000	2.307E-03	2.306E-03	0.03
2,000	1.686E-04	1.684E-04	0.08
5,000	1.849E-07	1.845E-07	0.22
10,000	5.946E-12	N/A	N/A
Maximum:			0.22

B.7.181. Ruthenium – Ingestion of ¹⁰⁶Ru (f₁ = 0.05)

Maximum difference for **Urine**: +0.22%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: +0.21%.

B.7.181.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.258E-03	5.257E-03	0.01
2	2.381E-03	2.381E-03	0.01
5	1.092E-03	1.091E-03	0.03
10	7.582E-04	7.581E-04	0.01
20	3.928E-04	3.928E-04	-0.01
50	1.033E-04	1.034E-04	-0.02
100	3.232E-05	3.232E-05	-0.01
200	6.498E-06	6.499E-06	-0.02
500	1.536E-06	1.535E-06	0.03
1,000	4.224E-07	4.221E-07	0.05
2,000	3.214E-08	3.211E-08	0.09
5,000	1.417E-11	1.414E-11	0.22
10,000	3.616E-17	N/A	N/A
20,000	2.356E-28	N/A	N/A
Maximum:			0.22

B.7.181.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.714E-01	2.714E-01	0.00
2	3.680E-01	3.680E-01	0.00
5	2.965E-02	2.965E-02	0.00
10	4.139E-04	4.139E-04	0.01
20	1.075E-04	1.075E-04	-0.01

50	2.702E-05	2.703E-05	-0.02
100	8.295E-06	8.296E-06	-0.01
200	1.649E-06	1.649E-06	-0.02
500	3.844E-07	3.843E-07	0.03
1,000	1.057E-07	1.056E-07	0.05
2,000	8.044E-09	8.036E-09	0.09
5,000	3.545E-12	3.538E-12	0.22
10,000	9.050E-18	N/A	N/A
20,000	5.897E-29	N/A	N/A
Maximum:			0.22

B.7.181.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.214E-01	7.214E-01	0.00
2	3.497E-01	3.497E-01	0.00
5	5.343E-02	5.343E-02	-0.01
10	3.010E-02	3.010E-02	-0.01
20	2.269E-02	2.269E-02	-0.01
50	1.420E-02	1.420E-02	-0.01
100	9.487E-03	9.488E-03	0.00
200	6.178E-03	6.178E-03	0.00
500	2.761E-03	2.760E-03	0.02
1,000	7.616E-04	7.612E-04	0.04
2,000	5.796E-05	5.791E-05	0.08
5,000	2.554E-08	2.549E-08	0.21
10,000	6.521E-14	N/A	N/A
Maximum:			0.21

B.7.182. Ruthenium – Injection of ¹⁰⁶Ru

Maximum difference for **Urine**: +0.22%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: +0.22%.

B.7.182.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.203E-01	1.202E-01	0.01
2	3.877E-02	3.876E-02	0.02
5	2.151E-02	2.150E-02	0.03
10	1.496E-02	1.495E-02	0.01
20	7.764E-03	7.765E-03	-0.01
50	2.055E-03	2.055E-03	-0.02
100	6.441E-04	6.442E-04	-0.01
200	1.297E-04	1.297E-04	-0.02

500	3.071E-05	3.070E-05	0.03
1,000	8.446E-06	8.442E-06	0.05
2,000	6.428E-07	6.422E-07	0.09
5,000	2.833E-10	2.827E-10	0.22
10,000	7.232E-16	N/A	N/A
20,000	4.712E-27	N/A	N/A
Maximum:			0.22

B.7.182.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

1	6.733E-03	6.732E-03	0.02
2	1.425E-02	1.425E-02	0.01
5	6.934E-03	6.932E-03	0.03
10	4.163E-03	4.162E-03	0.02
20	2.125E-03	2.125E-03	-0.01
50	5.372E-04	5.373E-04	-0.02
100	1.653E-04	1.653E-04	-0.01
200	3.291E-05	3.292E-05	-0.02
500	7.686E-06	7.684E-06	0.03
1,000	2.114E-06	2.113E-06	0.05
2,000	1.609E-07	1.607E-07	0.09
5,000	7.090E-11	7.074E-11	0.22
10,000	1.810E-16	N/A	N/A
20,000	1.179E-27	N/A	N/A
Maximum:			0.22

B.7.182.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.711E-01	8.711E-01	0.00
2	8.165E-01	8.165E-01	0.00
5	7.137E-01	7.137E-01	-0.01
10	5.959E-01	5.960E-01	-0.01
20	4.518E-01	4.519E-01	-0.01
50	2.835E-01	2.836E-01	-0.01
100	1.896E-01	1.896E-01	0.00
200	1.235E-01	1.235E-01	0.01
500	5.521E-02	5.520E-02	0.02
1,000	1.523E-02	1.522E-02	0.04
2,000	1.159E-03	1.158E-03	0.09
5,000	5.108E-07	5.097E-07	0.21
10,000	1.304E-12	N/A	N/A
Maximum:			0.21

B.7.183. Samarium – Inhalation of ¹⁵¹Sm (type “M”)

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.01%.

Maximum difference for **Lungs**: -0.02%.

B.7.183.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.31E-03	1.31E-03	-0.01
2	1.27E-04	1.27E-04	0.03
5	1.62E-05	1.62E-05	-0.01
10	1.54E-05	1.54E-05	-0.01
20	1.40E-05	1.40E-05	-0.01
50	1.13E-05	1.13E-05	-0.01
100	9.05E-06	9.05E-06	-0.01
200	7.17E-06	7.17E-06	-0.01
500	5.32E-06	5.32E-06	-0.01
1,000	4.50E-06	4.50E-06	-0.01
2,000	3.60E-06	3.60E-06	-0.01
5,000	1.87E-06	1.87E-06	-0.01
10,000	6.24E-07	6.24E-07	-0.01
20,000	6.97E-08	6.98E-08	-0.01
Maximum:			+0.03

B.7.183.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.09E-01	1.09E-01	0
2	1.55E-01	1.55E-01	0
5	1.34E-02	1.34E-02	0
10	5.85E-04	5.85E-04	-0.01
20	3.77E-04	3.77E-04	-0.02
50	1.74E-04	1.74E-04	-0.02
100	5.96E-05	5.96E-05	-0.01
200	1.84E-05	1.84E-05	-0.01
500	6.79E-06	6.79E-06	-0.01
1,000	4.58E-06	4.58E-06	-0.01
2,000	3.60E-06	3.60E-06	-0.01
5,000	1.87E-06	1.87E-06	-0.01
10,000	6.24E-07	6.24E-07	-0.01
20,000	6.98E-08	6.98E-08	-0.01

Maximum:	-0.02
----------	-------

B.7.183.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.96E-01	4.96E-01	0
2	2.62E-01	2.62E-01	0
5	9.12E-02	9.12E-02	-0.01
10	7.86E-02	7.86E-02	-0.01
20	7.41E-02	7.41E-02	-0.01
50	6.60E-02	6.60E-02	-0.01
100	6.03E-02	6.03E-02	-0.01
200	5.62E-02	5.62E-02	-0.01
500	5.09E-02	5.09E-02	-0.01
1,000	4.53E-02	4.53E-02	-0.01
2,000	3.64E-02	3.64E-02	-0.01
5,000	1.89E-02	1.89E-02	-0.01
10,000	6.30E-03	6.30E-03	-0.01
Maximum:			-0.01

B.7.183.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.76E-02	5.76E-02	-0.01
2	5.59E-02	5.59E-02	-0.01
5	5.34E-02	5.34E-02	-0.01
10	4.97E-02	4.97E-02	-0.01
20	4.34E-02	4.34E-02	-0.01
50	3.09E-02	3.09E-02	-0.01
100	2.02E-02	2.02E-02	-0.01
200	1.05E-02	1.05E-02	-0.02
500	1.80E-03	1.80E-03	-0.01
1,000	9.96E-05	9.96E-05	-0.01
2,000	3.49E-07	3.49E-07	-0.01
5,000	4.20E-14	N/A	N/A
10,000	3.41E-25	N/A	N/A
Maximum:			-0.02

B.7.184. Samarium – Ingestion of ¹⁵¹Sm (f₁ = 0.0005)

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: 0.0%

Maximum difference for **Whole Body**: 0.0%.

B.7.184.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.09E-05	2.09E-05	0
2	3.90E-06	3.90E-06	0.03
5	4.55E-08	4.55E-08	0
10	4.45E-08	4.45E-08	0
20	4.44E-08	4.44E-08	0
50	4.41E-08	4.41E-08	0
100	4.36E-08	4.36E-08	0
200	4.27E-08	4.27E-08	0
500	3.99E-08	3.99E-08	0
1,000	3.58E-08	3.58E-08	0
2,000	2.88E-08	2.88E-08	0
5,000	1.49E-08	1.49E-08	0
10,000	4.98E-09	4.98E-09	0
20,000	5.57E-10	5.57E-10	0
Maximum:			+0.03

B.7.184.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.82E-01	2.82E-01	0
2	3.89E-01	3.89E-01	0
5	3.14E-02	3.14E-02	0
10	2.20E-04	2.20E-04	0
20	5.44E-08	5.44E-08	0

50	4.41E-08	4.41E-08	0
100	4.36E-08	4.36E-08	0
200	4.27E-08	4.27E-08	0
500	4.00E-08	4.00E-08	0
1,000	3.58E-08	3.58E-08	0
2,000	2.88E-08	2.88E-08	0
5,000	1.49E-08	1.49E-08	0
10,000	4.98E-09	4.98E-09	0
20,000	5.57E-10	5.57E-10	0
Maximum:			0

B.7.184.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.18E-01	7.18E-01	0
2	3.29E-01	3.29E-01	0
5	1.92E-02	1.92E-02	0
10	5.77E-04	5.77E-04	0
20	4.48E-04	4.48E-04	0
50	4.45E-04	4.45E-04	0
100	4.40E-04	4.40E-04	0
200	4.31E-04	4.31E-04	0
500	4.03E-04	4.03E-04	0
1,000	3.62E-04	3.62E-04	0
2,000	2.90E-04	2.90E-04	0
5,000	1.51E-04	1.51E-04	0
10,000	5.03E-05	5.03E-05	0
Maximum:			0

B.7.185. Samarium – Injection of ¹⁵¹Sm

Maximum difference for **Urine**: +0.05%.

Maximum difference for **Feces**: +0.01%.

Maximum difference for **Whole Body**: 0.0%.

B.7.185.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.60E-02	4.60E-02	0
2	3.90E-03	3.90E-03	0.05
5	9.00E-05	9.00E-05	0
10	8.89E-05	8.89E-05	0
20	8.88E-05	8.88E-05	0
50	8.82E-05	8.82E-05	0
100	8.72E-05	8.72E-05	0
200	8.53E-05	8.53E-05	0
500	7.99E-05	7.99E-05	0
1,000	7.16E-05	7.16E-05	0
2,000	5.75E-05	5.75E-05	0
5,000	2.98E-05	2.98E-05	0
10,000	9.96E-06	9.96E-06	0
20,000	1.11E-06	1.11E-06	0
Maximum:			+0.05

B.7.185.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.15E-02	1.15E-02	0
2	1.94E-02	1.94E-02	0
5	2.01E-03	2.01E-03	0.01
10	1.03E-04	1.03E-04	0
20	8.88E-05	8.88E-05	0
50	8.82E-05	8.82E-05	0
100	8.72E-05	8.72E-05	0
200	8.53E-05	8.53E-05	0
500	7.99E-05	7.99E-05	0
1,000	7.16E-05	7.16E-05	0
2,000	5.75E-05	5.75E-05	0
5,000	2.98E-05	2.98E-05	0
10,000	9.97E-06	9.97E-06	0
20,000	1.11E-06	1.11E-06	0
Maximum:			+0.01

B.7.185.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.43E-01	9.43E-01	0
2	9.19E-01	9.19E-01	0
5	9.00E-01	9.00E-01	0
10	8.98E-01	8.98E-01	0
20	8.96E-01	8.96E-01	0
50	8.90E-01	8.90E-01	0

100	8.81E-01	8.81E-01	0
200	8.62E-01	8.62E-01	0
500	8.07E-01	8.07E-01	0
1,000	7.23E-01	7.23E-01	0
2,000	5.81E-01	5.81E-01	0
5,000	3.01E-01	3.01E-01	0
10,000	1.01E-01	1.01E-01	0
Maximum:			0

B.7.186. Scandium – Inhalation of ⁴⁶Sc (type “S”)

Maximum difference for **Urine**: -0.08%.

Maximum difference for **Feces**: -0.06%.

Maximum difference for **Whole Body**: -0.11%.

Maximum difference for **Lungs**: -0.11%.

B.7.186.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.22E-06	1.22E-06	0
2	1.95E-06	1.95E-06	0.01
5	1.43E-06	1.43E-06	0
10	8.66E-07	8.66E-07	-0.01
20	4.37E-07	4.37E-07	-0.03
50	2.34E-07	2.34E-07	-0.02
100	1.52E-07	1.52E-07	-0.03
200	7.23E-08	7.23E-08	-0.03
500	7.49E-09	7.50E-09	-0.05
1,000	1.36E-10	1.36E-10	-0.08
2,000	3.27E-14	N/A	N/A
5,000	2.74E-25	N/A	N/A
10,000	9.95E-44	N/A	N/A
Maximum:			-0.08

B.7.186.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.88E-01	4.88E-01	0
2	2.46E-01	2.46E-01	0
5	6.97E-02	6.97E-02	-0.01
10	5.48E-02	5.48E-02	-0.02
20	4.62E-02	4.62E-02	-0.01
50	2.97E-02	2.98E-02	-0.02
100	1.65E-02	1.65E-02	-0.02
200	6.21E-03	6.21E-03	-0.02
500	4.03E-04	4.03E-04	-0.04
1,000	4.44E-06	4.45E-06	-0.06
2,000	6.21E-10	6.22E-10	-0.11
5,000	3.77E-21	N/A	N/A
10,000	1.59E-39	N/A	N/A
Maximum:			-0.11

B.7.186.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.13E-01	1.13E-01	-0.01
2	1.61E-01	1.61E-01	0
5	1.35E-02	1.35E-02	0
10	5.98E-04	5.98E-04	-0.01
20	3.73E-04	3.73E-04	-0.02
50	1.51E-04	1.51E-04	-0.02
100	3.99E-05	3.99E-05	-0.02
200	6.40E-06	6.40E-06	-0.02
500	3.11E-07	3.11E-07	-0.04
1,000	2.98E-09	2.98E-09	-0.06
2,000	2.88E-13	N/A	N/A
5,000	6.15E-25	N/A	N/A
10,000	1.72E-43	N/A	N/A
Maximum:			-0.06

B.7.186.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.38E-02	6.38E-02	-0.01
2	6.17E-02	6.17E-02	-0.01
5	5.82E-02	5.83E-02	-0.01
10	5.33E-02	5.33E-02	-0.01
20	4.50E-02	4.51E-02	-0.01
50	2.90E-02	2.90E-02	-0.02
100	1.60E-02	1.60E-02	-0.02
200	5.97E-03	5.98E-03	-0.02
500	3.75E-04	3.75E-04	-0.04
1,000	3.89E-06	3.89E-06	-0.06
2,000	4.79E-10	4.79E-10	-0.11
5,000	2.51E-21	N/A	N/A
10,000	1.10E-39	N/A	N/A
Maximum:			-0.11

B.7.187. Scandium – Ingestion of ⁴⁶Sc (f₁ = 0.0001)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.06%.

Maximum difference for **Whole Body**: -0.08%.

B.7.187.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.78E-07	2.78E-07	0.01
2	5.86E-07	5.86E-07	0.01
5	4.11E-07	4.11E-07	0.01
10	2.07E-07	2.07E-07	-0.01
20	6.07E-08	6.07E-08	-0.03
50	1.40E-08	1.40E-08	-0.02
100	8.69E-09	8.69E-09	-0.03
200	3.63E-09	3.63E-09	-0.03
500	2.65E-10	2.65E-10	-0.04
1,000	3.36E-12	3.36E-12	-0.06
2,000	5.43E-16	N/A	N/A
5,000	2.29E-27	N/A	N/A
Maximum:			-0.06

B.7.187.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.80E-01	2.80E-01	0
2	3.83E-01	3.83E-01	0
5	3.01E-02	3.01E-02	0
10	2.02E-04	2.02E-04	0
20	7.96E-08	7.97E-08	-0.02

50	1.41E-08	1.41E-08	-0.03
100	8.70E-09	8.70E-09	-0.03
200	3.63E-09	3.63E-09	-0.03
500	2.65E-10	2.65E-10	-0.04
1,000	3.36E-12	3.37E-12	-0.06
2,000	5.44E-16	N/A	N/A
5,000	2.29E-27	N/A	N/A
Maximum:			-0.06

B.7.187.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.12E-01	7.12E-01	0
2	3.23E-01	3.23E-01	0
5	1.81E-02	1.81E-02	0
10	2.03E-04	2.03E-04	0
20	7.63E-05	7.63E-05	0
50	5.82E-05	5.82E-05	0
100	3.76E-05	3.76E-05	0
200	1.57E-05	1.57E-05	-0.01
500	1.15E-06	1.15E-06	-0.02
1,000	1.46E-08	1.46E-08	-0.04
2,000	2.35E-12	2.35E-12	-0.08
5,000	9.92E-24	N/A	N/A
10,000	1.09E-42	N/A	N/A
Maximum:			-0.08

B.7.188. Scandium – Injection of ⁴⁶ScMaximum difference for **Urine**: -0.1%.Maximum difference for **Feces**: -0.1%.Maximum difference for **Whole Body**: -0.08%.**B.7.188.1. Urinary Excretion Rate**

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.95E-03	3.95E-03	0.01
2	5.90E-03	5.90E-03	0.02
5	4.00E-03	4.00E-03	0.01
10	2.01E-03	2.01E-03	-0.01
20	5.94E-04	5.94E-04	-0.03
50	1.40E-04	1.40E-04	-0.03
100	8.69E-05	8.69E-05	-0.03
200	3.63E-05	3.63E-05	-0.03
500	2.64E-06	2.65E-06	-0.04
1,000	3.36E-08	3.36E-08	-0.06
2,000	5.43E-12	5.44E-12	-0.1
5,000	2.29E-23	N/A	N/A
10,000	2.52E-42	N/A	N/A
Maximum:			-0.1

B.7.188.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.13E-04	5.13E-04	0.01
2	2.81E-03	2.81E-03	0.01
5	4.61E-03	4.61E-03	0.01
10	2.45E-03	2.45E-03	0
20	6.96E-04	6.97E-04	-0.03

50	1.41E-04	1.41E-04	-0.03
100	8.70E-05	8.70E-05	-0.03
200	3.63E-05	3.63E-05	-0.03
500	2.65E-06	2.65E-06	-0.04
1,000	3.36E-08	3.37E-08	-0.06
2,000	5.43E-12	5.44E-12	-0.1
5,000	2.29E-23	N/A	N/A
10,000	2.52E-42	N/A	N/A
Maximum:			-0.1

B.7.188.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.87E-01	9.87E-01	0
2	9.71E-01	9.71E-01	0
5	9.19E-01	9.19E-01	0
10	8.53E-01	8.53E-01	0
20	7.63E-01	7.63E-01	0
50	5.82E-01	5.82E-01	0
100	3.76E-01	3.76E-01	0
200	1.57E-01	1.57E-01	-0.01
500	1.15E-02	1.15E-02	-0.02
1,000	1.46E-04	1.46E-04	-0.04
2,000	2.35E-08	2.35E-08	-0.08
5,000	9.91E-20	N/A	N/A
10,000	1.09E-38	N/A	N/A
Maximum:			-0.08

B.7.189. Silver – Injection of ^{110m}Ag

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.02%.

B.7.189.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.234E-04	8.233E-04	0.01
2	1.246E-03	1.246E-03	0.01
5	9.172E-04	9.171E-04	0.02
10	6.127E-04	6.126E-04	0.02
20	4.103E-04	4.102E-04	0.01
50	2.383E-04	2.383E-04	0.01
100	1.057E-04	1.057E-04	0.00
200	2.208E-05	2.209E-05	-0.02
500	9.564E-07	9.563E-07	0.00
1,000	1.032E-07	1.032E-07	0.02
2,000	1.610E-09	1.610E-09	0.02
5,000	6.122E-15	N/A	N/A
10,000	5.670E-24	N/A	N/A
20,000	4.864E-42	N/A	N/A
Maximum:			-0.02

B.7.189.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.137E-03	2.137E-03	0.01
2	1.180E-02	1.180E-02	0.00
5	2.037E-02	2.037E-02	0.01
10	1.359E-02	1.359E-02	0.01
20	8.521E-03	8.520E-03	0.01

50	4.864E-03	4.863E-03	0.01
100	2.157E-03	2.157E-03	0.00
200	4.497E-04	4.498E-04	-0.02
500	1.922E-05	1.921E-05	0.00
1,000	2.068E-06	2.068E-06	0.02
2,000	3.227E-08	3.226E-08	0.02
5,000	1.227E-13	N/A	N/A
10,000	1.136E-22	N/A	N/A
20,000	9.747E-41	N/A	N/A
Maximum:			-0.02

B.7.189.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.943E-01	9.943E-01	0.00
2	9.785E-01	9.785E-01	0.00
5	9.073E-01	9.073E-01	0.00
10	8.112E-01	8.112E-01	0.00
20	6.835E-01	6.835E-01	0.00
50	4.387E-01	4.388E-01	-0.01
100	2.216E-01	2.217E-01	-0.02
200	7.309E-02	7.310E-02	-0.02
500	1.273E-02	1.273E-02	0.00
1,000	1.565E-03	1.565E-03	0.00
2,000	2.442E-05	2.442E-05	0.00
5,000	9.286E-11	N/A	N/A
10,000	8.600E-20	N/A	N/A
Maximum:			-0.02

B.7.190. Sodium – Injection of ²²Na

Maximum difference for **Urine**: -0.27%.

Maximum difference for **Feces**: -0.28%.

Maximum difference for **Whole Body**: -0.32%.

B.7.190.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.903E-02	3.903E-02	0.01
2	6.161E-02	6.161E-02	0.01
5	5.150E-02	5.149E-02	0.01
10	3.628E-02	3.628E-02	0.01
20	1.801E-02	1.801E-02	-0.01
50	2.206E-03	2.207E-03	-0.03
100	6.969E-05	6.974E-05	-0.07
200	2.761E-06	2.760E-06	0.03
500	1.431E-06	1.431E-06	0.01
1,000	4.968E-07	4.969E-07	-0.02
2,000	5.986E-08	5.991E-08	-0.08
5,000	1.047E-10	1.050E-10	-0.27
10,000	2.660E-15	N/A	N/A
20,000	1.716E-24	N/A	N/A
Maximum:			-0.27

B.7.190.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.029E-05	5.029E-05	0.00
2	2.838E-04	2.837E-04	0.01
5	5.432E-04	5.431E-04	0.01
10	4.029E-04	4.029E-04	0.01
20	2.001E-04	2.001E-04	0.00
50	2.450E-05	2.451E-05	-0.03
100	7.706E-07	7.712E-07	-0.07
200	2.773E-08	2.772E-08	0.03
500	1.434E-08	1.434E-08	0.01
1,000	4.978E-09	4.979E-09	-0.02
2,000	5.999E-10	6.004E-10	-0.09
5,000	1.049E-12	1.052E-12	-0.27
10,000	2.666E-17	N/A	N/A
20,000	1.720E-26	N/A	N/A
Maximum:			-0.28

B.7.190.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.602E-01	9.602E-01	0.00
2	8.976E-01	8.976E-01	0.00
5	7.284E-01	7.284E-01	0.00
10	5.140E-01	5.141E-01	-0.01
20	2.566E-01	2.566E-01	-0.01
50	3.372E-02	3.374E-02	-0.04

100	3.364E-03	3.365E-03	-0.03
200	1.967E-03	1.967E-03	-0.01
500	1.042E-03	1.042E-03	-0.03
1,000	3.617E-04	3.619E-04	-0.06
2,000	4.358E-05	4.364E-05	-0.13
5,000	7.625E-08	7.649E-08	-0.32
10,000	1.937E-12	N/A	N/A
Maximum:			-0.32

B.7.191. Strontium – Inhalation of ⁸⁵Sr (type “F”)

Maximum difference for **Urine**: -0.03%.

Maximum difference for **Feces**: -0.03%.

Maximum difference for **Whole Body**: -0.02%.

B.7.191.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.752E-02	6.753E-02	-0.01
2	2.290E-02	2.290E-02	-0.01
5	8.742E-03	8.743E-03	-0.01
10	3.731E-03	3.731E-03	-0.01
20	1.459E-03	1.459E-03	-0.01
50	1.922E-04	1.922E-04	-0.01
100	3.402E-05	3.402E-05	-0.01
200	5.937E-06	5.937E-06	-0.01
500	6.248E-08	6.249E-08	-0.01
1,000	1.565E-10	1.565E-10	-0.03
2,000	2.404E-15	N/A	N/A
5,000	1.104E-29	N/A	N/A
Maximum:			-0.03

50	6.252E-05	6.252E-05	-0.01
100	1.049E-05	1.049E-05	-0.01
200	1.817E-06	1.817E-06	-0.01
500	1.904E-08	1.905E-08	-0.01
1,000	4.752E-11	4.753E-11	-0.03
2,000	7.298E-16	N/A	N/A
5,000	3.353E-30	N/A	N/A
Maximum:			-0.03

B.7.191.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.845E-01	4.845E-01	0.01
2	3.174E-01	3.175E-01	-0.01
5	1.745E-01	1.745E-01	0.01
10	1.254E-01	1.254E-01	-0.02
20	8.431E-02	8.431E-02	0.00
50	4.241E-02	4.242E-02	-0.01
100	2.118E-02	2.118E-02	0.00
200	6.194E-03	6.195E-03	-0.01
500	2.027E-04	2.028E-04	-0.02
1,000	8.372E-07	8.373E-07	-0.02
2,000	1.526E-11	N/A	N/A
5,000	1.100E-25	N/A	N/A
Maximum:			-0.02

B.7.191.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.717E-02	4.717E-02	0.00
2	6.191E-02	6.191E-02	0.00
5	8.211E-03	8.211E-03	0.00
10	1.436E-03	1.436E-03	-0.01
20	4.922E-04	4.922E-04	-0.01

B.7.192. Strontium – Inhalation of ⁸⁵Sr (type “S”)

Maximum difference for **Urine**: -0.03%.

Maximum difference for **Feces**: -0.03%.

Maximum difference for **Whole Body**: -0.02%.

Maximum difference for **Lungs**: -0.03%.

B.7.192.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.997E-04	7.997E-04	-0.01
2	3.367E-04	3.367E-04	0.00
5	1.231E-04	1.231E-04	0.00

10	5.444E-05	5.445E-05	-0.01
20	2.365E-05	2.366E-05	-0.01
50	5.101E-06	5.101E-06	-0.01
100	1.509E-06	1.509E-06	-0.01
200	3.561E-07	3.561E-07	-0.01
500	9.269E-09	9.271E-09	-0.02
1,000	2.886E-11	2.887E-11	-0.03
2,000	3.422E-16	N/A	N/A

5,000	1.410E-30	N/A	N/A
Maximum:			-0.03

B.7.192.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.121E-01	1.121E-01	-0.01
2	1.582E-01	1.582E-01	-0.01
5	1.324E-02	1.324E-02	0.00
10	5.967E-04	5.967E-04	-0.01
20	3.591E-04	3.591E-04	-0.02
50	1.339E-04	1.339E-04	-0.02
100	3.132E-05	3.132E-05	-0.01
200	3.965E-06	3.966E-06	-0.02
500	9.231E-08	9.232E-08	-0.02
1,000	2.584E-10	2.584E-10	-0.03
2,000	2.099E-15	N/A	N/A
5,000	2.292E-30	N/A	N/A
Maximum:			-0.03

B.7.192.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.863E-01	4.863E-01	0.00
2	2.455E-01	2.455E-01	0.00
5	7.072E-02	7.072E-02	-0.01
10	5.482E-02	5.483E-02	-0.01

20	4.487E-02	4.487E-02	-0.01
50	2.668E-02	2.668E-02	-0.01
100	1.304E-02	1.305E-02	-0.02
200	3.817E-03	3.818E-03	-0.02
500	1.169E-04	1.169E-04	-0.02
1,000	3.696E-07	3.696E-07	-0.02
2,000	4.287E-12	N/A	N/A
5,000	1.825E-26	N/A	N/A
Maximum:			-0.02

B.7.192.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.360E-02	6.360E-02	-0.01
2	6.137E-02	6.138E-02	-0.01
5	5.754E-02	5.755E-02	-0.01
10	5.202E-02	5.202E-02	-0.01
20	4.291E-02	4.292E-02	-0.01
50	2.570E-02	2.570E-02	-0.01
100	1.259E-02	1.259E-02	-0.01
200	3.681E-03	3.681E-03	-0.01
500	1.117E-04	1.117E-04	-0.02
1,000	3.451E-07	3.452E-07	-0.03
2,000	3.773E-12	N/A	N/A
5,000	1.385E-26	N/A	N/A
Maximum:			-0.03

B.7.193. Strontium – Ingestion of ⁸⁵Sr (f₁ = 0.3)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.01%.

B.7.193.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.590E-02	5.590E-02	0.00
2	2.153E-02	2.153E-02	0.00
5	7.904E-03	7.904E-03	0.00
10	3.330E-03	3.330E-03	0.00
20	1.294E-03	1.294E-03	0.00
50	1.700E-04	1.700E-04	0.00
100	2.996E-05	2.996E-05	0.00
200	5.226E-06	5.226E-06	0.00
500	5.498E-08	5.498E-08	-0.01
1,000	1.376E-10	1.377E-10	-0.02
2,000	2.114E-15	N/A	N/A
5,000	9.714E-30	N/A	N/A
Maximum:			-0.02

B.7.193.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.149E-01	2.149E-01	0.00
2	2.700E-01	2.700E-01	0.00
5	2.359E-02	2.359E-02	0.00
10	1.394E-03	1.394E-03	0.00
20	4.367E-04	4.367E-04	0.00

50	5.531E-05	5.531E-05	0.00
100	9.236E-06	9.236E-06	0.00
200	1.600E-06	1.600E-06	0.00
500	1.676E-08	1.676E-08	0.00
1,000	4.180E-11	4.181E-11	-0.02
2,000	6.419E-16	N/A	N/A
5,000	2.949E-30	N/A	N/A
Maximum:			-0.02

B.7.193.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.186E-01	7.186E-01	0.00
2	4.194E-01	4.194E-01	-0.01
5	1.625E-01	1.625E-01	0.01
10	1.108E-01	1.108E-01	-0.01
20	7.436E-02	7.435E-02	0.01
50	3.733E-02	3.733E-02	-0.01
100	1.863E-02	1.863E-02	0.00
200	5.449E-03	5.449E-03	0.00
500	1.783E-04	1.783E-04	-0.01
1,000	7.363E-07	7.364E-07	-0.01
2,000	1.342E-11	N/A	N/A
5,000	9.675E-26	N/A	N/A
Maximum:			-0.01

B.7.194. Strontium – Ingestion of ⁸⁵Sr (f₁ = 0.01)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.01%.

B.7.194.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.806E-03	1.806E-03	0.00
2	7.448E-04	7.448E-04	0.00
5	2.665E-04	2.665E-04	0.00
10	1.117E-04	1.117E-04	0.00
20	4.328E-05	4.328E-05	0.00
50	5.678E-06	5.678E-06	0.00
100	9.992E-07	9.993E-07	0.00
200	1.742E-07	1.742E-07	0.00
500	1.833E-09	1.833E-09	-0.01
1,000	4.588E-12	4.589E-12	-0.02
2,000	7.047E-17	N/A	N/A
5,000	3.238E-31	N/A	N/A
Maximum:			-0.02

B.7.194.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.774E-01	2.774E-01	0.00
2	3.771E-01	3.771E-01	0.00
5	2.956E-02	2.956E-02	0.00
10	2.374E-04	2.374E-04	0.00
20	1.462E-05	1.461E-05	0.00

50	1.848E-06	1.848E-06	0.00
100	3.080E-07	3.080E-07	-0.01
200	5.334E-08	5.334E-08	0.00
500	5.586E-10	5.586E-10	-0.01
1,000	1.393E-12	1.394E-12	-0.02
2,000	2.140E-17	N/A	N/A
5,000	9.831E-32	N/A	N/A
Maximum:			-0.02

B.7.194.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.102E-01	7.102E-01	0.00
2	3.247E-01	3.247E-01	0.00
5	2.260E-02	2.260E-02	0.01
10	3.813E-03	3.813E-03	-0.01
20	2.481E-03	2.481E-03	0.01
50	1.245E-03	1.245E-03	-0.01
100	6.210E-04	6.210E-04	0.00
200	1.816E-04	1.816E-04	0.00
500	5.944E-06	5.944E-06	-0.01
1,000	2.455E-08	2.455E-08	-0.01
2,000	4.474E-13	N/A	N/A
5,000	3.225E-27	N/A	N/A
Maximum:			-0.01

B.7.195. Strontium – Injection of ⁸⁵Sr

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.02%.

B.7.195.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.011E-01	2.011E-01	0.00
2	6.590E-02	6.590E-02	0.00
5	2.544E-02	2.544E-02	0.00
10	1.089E-02	1.089E-02	0.00
20	4.268E-03	4.268E-03	0.00
50	5.625E-04	5.625E-04	0.00
100	9.971E-05	9.971E-05	0.00
200	1.740E-05	1.740E-05	0.00
500	1.832E-07	1.832E-07	-0.01
1,000	4.587E-10	4.588E-10	-0.02
2,000	7.047E-15	N/A	N/A
5,000	3.238E-29	N/A	N/A

Maximum:			-0.02
----------	--	--	-------

B.7.195.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.629E-02	1.629E-02	0.00
2	2.768E-02	2.768E-02	0.00
5	1.233E-02	1.233E-02	0.00
10	4.113E-03	4.113E-03	0.00
20	1.440E-03	1.439E-03	0.00
50	1.830E-04	1.830E-04	0.00
100	3.073E-05	3.073E-05	0.00
200	5.327E-06	5.327E-06	0.00
500	5.583E-08	5.583E-08	-0.01
1,000	1.393E-10	1.393E-10	-0.02
2,000	2.140E-15	N/A	N/A
5,000	9.830E-30	N/A	N/A
Maximum:			-0.02

B.7.195.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.721E-01	7.720E-01	0.01
2	6.701E-01	6.702E-01	-0.02
5	4.971E-01	4.970E-01	0.01
10	3.669E-01	3.670E-01	-0.01
20	2.470E-01	2.470E-01	0.01

50	1.243E-01	1.243E-01	0.00
100	6.208E-02	6.208E-02	0.00
200	1.816E-02	1.816E-02	0.00
500	5.943E-04	5.944E-04	-0.01
1,000	2.454E-06	2.455E-06	-0.01
2,000	4.474E-11	N/A	N/A
5,000	3.225E-25	N/A	N/A
Maximum:			-0.02

B.7.196. Strontium – Inhalation of ⁸⁹Sr (type “F”)

Maximum difference for **Urine**: **+0.42%**.

Maximum difference for **Feces**: **+0.42%**.

Maximum difference for **Whole Body**: **+0.43%**.

B.7.196.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.732E-02	6.732E-02	-0.01
2	2.276E-02	2.276E-02	0.00
5	8.611E-03	8.611E-03	0.00
10	3.619E-03	3.620E-03	0.00
20	1.373E-03	1.373E-03	0.00
50	1.651E-04	1.651E-04	0.02
100	2.511E-05	2.511E-05	0.03
200	3.235E-06	3.233E-06	0.08
500	1.370E-08	1.367E-08	0.21
1,000	7.518E-12	7.486E-12	0.42
2,000	5.549E-18	N/A	N/A
5,000	2.828E-36	N/A	N/A
Maximum:			0.42

50	5.372E-05	5.371E-05	0.02
100	7.741E-06	7.738E-06	0.03
200	9.903E-07	9.895E-07	0.08
500	4.174E-09	4.166E-09	0.21
1,000	2.283E-12	2.274E-12	0.42
2,000	1.685E-18	N/A	N/A
5,000	8.585E-37	N/A	N/A
Maximum:			0.42

B.7.196.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.831E-01	4.830E-01	0.01
2	3.155E-01	3.155E-01	-0.01
5	1.719E-01	1.718E-01	0.01
10	1.216E-01	1.216E-01	-0.01
20	7.934E-02	7.933E-02	0.01
50	3.644E-02	3.644E-02	0.01
100	1.563E-02	1.562E-02	0.04
200	3.375E-03	3.373E-03	0.08
500	4.444E-05	4.434E-05	0.21
1,000	4.022E-08	4.005E-08	0.43
2,000	3.523E-14	N/A	N/A
5,000	2.817E-32	N/A	N/A
Maximum:			0.43

B.7.196.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.703E-02	4.703E-02	0.00
2	6.154E-02	6.154E-02	0.00
5	8.087E-03	8.088E-03	0.00
10	1.393E-03	1.393E-03	0.00
20	4.632E-04	4.632E-04	0.00

B.7.197. Strontium – Inhalation of ⁸⁹Sr (type “S”)

Maximum difference for **Urine**: **+0.42%**.

Maximum difference for **Feces**: **+0.42%**.

Maximum difference for **Whole Body**: **+0.42%**.

Maximum difference for **Lungs**: **+0.42%**.

B.7.197.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.972E-04	7.973E-04	0.00
2	3.347E-04	3.347E-04	0.00
5	1.212E-04	1.212E-04	0.00
10	5.282E-05	5.282E-05	0.00

20	2.226E-05	2.226E-05	0.00
50	4.383E-06	4.382E-06	0.01
100	1.114E-06	1.113E-06	0.03
200	1.940E-07	1.939E-07	0.07
500	2.032E-09	2.028E-09	0.20
1,000	1.387E-12	1.381E-12	0.42
2,000	7.900E-19	N/A	N/A
5,000	3.610E-37	N/A	N/A
Maximum:			0.42

B.7.197.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.118E-01	1.118E-01	-0.01
2	1.572E-01	1.572E-01	-0.01
5	1.304E-02	1.304E-02	0.00
10	5.788E-04	5.789E-04	-0.01
20	3.379E-04	3.379E-04	-0.01
50	1.150E-04	1.150E-04	0.00
100	2.312E-05	2.311E-05	0.03
200	2.161E-06	2.159E-06	0.07
500	2.023E-08	2.019E-08	0.20
1,000	1.241E-11	1.236E-11	0.42
2,000	4.845E-18	N/A	N/A
5,000	5.869E-37	N/A	N/A
Maximum:			0.42

B.7.197.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.848E-01	4.848E-01	0.00
2	2.441E-01	2.441E-01	0.00
5	6.965E-02	6.966E-02	-0.01
10	5.318E-02	5.318E-02	-0.01
20	4.222E-02	4.223E-02	-0.01

50	2.292E-02	2.292E-02	0.01
100	9.629E-03	9.626E-03	0.03
200	2.080E-03	2.078E-03	0.08
500	2.562E-05	2.557E-05	0.20
1,000	1.776E-08	1.768E-08	0.42
2,000	9.896E-15	N/A	N/A
5,000	4.674E-33	N/A	N/A
Maximum:			0.42

B.7.197.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.340E-02	6.341E-02	-0.01
2	6.100E-02	6.101E-02	-0.01
5	5.667E-02	5.668E-02	-0.01
10	5.046E-02	5.047E-02	-0.01
20	4.039E-02	4.039E-02	0.00
50	2.208E-02	2.208E-02	0.01
100	9.291E-03	9.288E-03	0.03
200	2.006E-03	2.004E-03	0.07
500	2.448E-05	2.443E-05	0.20
1,000	1.658E-08	1.651E-08	0.42
2,000	8.709E-15	N/A	N/A
5,000	3.547E-33	N/A	N/A
Maximum:			0.42

B.7.198. Strontium – Ingestion of ⁸⁹Sr (f₁ = 0.3)

Maximum difference for **Urine**: +0.42%.

Maximum difference for **Feces**: +0.43%.

Maximum difference for **Whole Body**: +0.43%.

B.7.198.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.573E-02	5.573E-02	0.00
2	2.140E-02	2.140E-02	0.00
5	7.785E-03	7.785E-03	0.00
10	3.231E-03	3.231E-03	0.00
20	1.218E-03	1.218E-03	0.01
50	1.460E-04	1.460E-04	0.02
100	2.212E-05	2.211E-05	0.04
200	2.848E-06	2.845E-06	0.09
500	1.205E-08	1.202E-08	0.22
1,000	6.613E-12	6.585E-12	0.42
2,000	4.881E-18	N/A	N/A
5,000	2.488E-36	N/A	N/A
Maximum:			0.42

B.7.198.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.142E-01	2.142E-01	0.00
2	2.684E-01	2.684E-01	0.00
5	2.324E-02	2.323E-02	0.00
10	1.352E-03	1.352E-03	0.01
20	4.110E-04	4.109E-04	0.01

50	4.752E-05	4.751E-05	0.02
100	6.818E-06	6.815E-06	0.04
200	8.717E-07	8.709E-07	0.09
500	3.673E-09	3.665E-09	0.22
1,000	2.008E-12	2.000E-12	0.43
2,000	1.482E-18	N/A	N/A
5,000	7.552E-37	N/A	N/A
Maximum:			0.43

B.7.198.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.164E-01	7.164E-01	0.00
2	4.168E-01	4.169E-01	-0.01
5	1.601E-01	1.600E-01	0.02
10	1.075E-01	1.075E-01	-0.01
20	6.998E-02	6.997E-02	0.02
50	3.207E-02	3.207E-02	0.02
100	1.375E-02	1.375E-02	0.05
200	2.969E-03	2.967E-03	0.09
500	3.909E-05	3.900E-05	0.21
1,000	3.538E-08	3.523E-08	0.43
2,000	3.099E-14	N/A	N/A
5,000	2.477E-32	N/A	N/A
Maximum:			0.43

B.7.199. Strontium – Ingestion of ⁸⁹Sr (f₁ = 0.01)

Maximum difference for **Urine**: +0.21%.

Maximum difference for **Feces**: +0.21%.

Maximum difference for **Whole Body**: +0.22%.

B.7.199.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.801E-03	1.801E-03	0.00
2	7.403E-04	7.403E-04	0.00
5	2.625E-04	2.625E-04	0.00
10	1.083E-04	1.083E-04	0.00
20	4.073E-05	4.073E-05	0.01
50	4.879E-06	4.877E-06	0.02
100	7.376E-07	7.373E-07	0.04
200	9.495E-08	9.486E-08	0.09
500	4.017E-10	4.009E-10	0.21
1,000	2.204E-13	N/A	N/A
2,000	1.627E-19	N/A	N/A
5,000	8.292E-38	N/A	N/A
Maximum:			0.21

B.7.199.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.766E-01	2.766E-01	0.00
2	3.749E-01	3.748E-01	0.00
5	2.911E-02	2.911E-02	0.00
10	2.303E-04	2.303E-04	0.00
20	1.375E-05	1.375E-05	0.01

50	1.588E-06	1.587E-06	0.03
100	2.274E-07	2.273E-07	0.04
200	2.906E-08	2.904E-08	0.09
500	1.224E-10	1.222E-10	0.21
1,000	6.694E-14	N/A	N/A
2,000	4.940E-20	N/A	N/A
5,000	2.517E-38	N/A	N/A
Maximum:			0.21

B.7.199.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.080E-01	7.080E-01	0.00
2	3.228E-01	3.228E-01	0.00
5	2.226E-02	2.226E-02	0.00
10	3.699E-03	3.699E-03	-0.01
20	2.335E-03	2.335E-03	0.02
50	1.069E-03	1.069E-03	0.01
100	4.585E-04	4.582E-04	0.05
200	9.898E-05	9.889E-05	0.09
500	1.303E-06	1.300E-06	0.22
1,000	1.179E-09	N/A	N/A
2,000	1.033E-15	N/A	N/A
5,000	8.258E-34	N/A	N/A
Maximum:			0.22

B.7.200. Strontium – Injection of ⁸⁹Sr

Maximum difference for **Urine**: +0.42%.

Maximum difference for **Feces**: +0.42%.

Maximum difference for **Whole Body**: +0.44%.

B.7.200.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.005E-01	2.005E-01	0.00
2	6.550E-02	6.550E-02	0.00
5	2.505E-02	2.505E-02	0.00
10	1.057E-02	1.057E-02	0.01
20	4.016E-03	4.016E-03	0.01
50	4.833E-04	4.832E-04	0.02
100	7.361E-05	7.358E-05	0.04
200	9.483E-06	9.475E-06	0.09
500	4.015E-08	4.006E-08	0.21
1,000	2.204E-11	2.195E-11	0.42
2,000	1.627E-17	N/A	N/A
5,000	8.291E-36	N/A	N/A
Maximum:			0.42

B.7.200.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.624E-02	1.624E-02	0.00

2	2.751E-02	2.751E-02	0.00
5	1.215E-02	1.215E-02	0.00
10	3.990E-03	3.990E-03	0.01
20	1.355E-03	1.355E-03	0.01
50	1.572E-04	1.572E-04	0.02
100	2.269E-05	2.268E-05	0.04
200	2.903E-06	2.900E-06	0.09
500	1.224E-08	1.221E-08	0.22
1,000	6.694E-12	6.665E-12	0.42
2,000	4.939E-18	N/A	N/A
5,000	2.517E-36	N/A	N/A
Maximum:			0.42

B.7.200.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.697E-01	7.696E-01	0.01
2	6.660E-01	6.661E-01	-0.01
5	4.896E-01	4.895E-01	0.02
10	3.560E-01	3.560E-01	-0.01
20	2.324E-01	2.324E-01	0.02
50	1.068E-01	1.068E-01	0.02

100	4.583E-02	4.580E-02	0.05
200	9.895E-03	9.887E-03	0.09
500	1.303E-04	1.300E-04	0.22
1,000	1.179E-07	1.174E-07	0.44

2,000	1.033E-13	N/A	N/A
5,000	8.257E-32	N/A	N/A
Maximum:			0.44

B.7.201. Strontium – Inhalation of ⁹⁰Sr (type “F”)

Maximum difference for **Urine**: +0.02%.

Maximum difference for **Feces**: +0.02%.

Maximum difference for **Whole Body**: -0.02%.

B.7.201.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.824E-02	6.825E-02	-0.01
2	2.339E-02	2.339E-02	-0.01
5	9.219E-03	9.220E-03	-0.01
10	4.149E-03	4.150E-03	-0.01
20	1.805E-03	1.805E-03	-0.01
50	3.269E-04	3.269E-04	-0.01
100	9.844E-05	9.845E-05	-0.01
200	4.971E-05	4.971E-05	-0.01
500	1.267E-05	1.268E-05	-0.01
1,000	6.438E-06	6.439E-06	-0.01
2,000	4.069E-06	4.069E-06	0.00
5,000	1.303E-06	1.303E-06	0.00
10,000	3.704E-07	3.704E-07	-0.02
20,000	7.803E-08	7.802E-08	0.02
Maximum:			0.02

B.7.201.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.767E-02	4.767E-02	0.00
2	6.324E-02	6.324E-02	0.00
5	8.659E-03	8.659E-03	0.00
10	1.597E-03	1.597E-03	-0.01
20	6.087E-04	6.087E-04	-0.01

50	1.064E-04	1.064E-04	0.00
100	3.034E-05	3.035E-05	-0.01
200	1.522E-05	1.522E-05	-0.01
500	3.863E-06	3.863E-06	-0.01
1,000	1.955E-06	1.956E-06	-0.01
2,000	1.236E-06	1.236E-06	0.00
5,000	3.955E-07	3.955E-07	0.00
10,000	1.124E-07	1.124E-07	-0.01
20,000	2.368E-08	2.368E-08	0.02
Maximum:			0.02

B.7.201.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.897E-01	4.897E-01	0.00
2	3.243E-01	3.243E-01	-0.01
5	1.840E-01	1.840E-01	0.01
10	1.394E-01	1.394E-01	-0.02
20	1.043E-01	1.043E-01	0.00
50	7.214E-02	7.215E-02	-0.01
100	6.127E-02	6.127E-02	0.00
200	5.186E-02	5.186E-02	-0.01
500	4.112E-02	4.113E-02	-0.01
1,000	3.445E-02	3.445E-02	-0.01
2,000	2.584E-02	2.584E-02	0.00
5,000	1.297E-02	1.297E-02	0.00
10,000	5.601E-03	5.601E-03	-0.01
Maximum:			-0.02

B.7.202. Strontium – Inhalation of ⁹⁰Sr (type “S”)

Maximum difference for **Urine**: -0.01%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.01%.

Maximum difference for **Lungs**: -0.02%.

B.7.202.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.082E-04	8.082E-04	-0.01
2	3.440E-04	3.440E-04	0.00
5	1.298E-04	1.298E-04	0.00
10	6.055E-05	6.055E-05	0.00
20	2.925E-05	2.926E-05	-0.01
50	8.677E-06	8.678E-06	-0.01
100	4.366E-06	4.367E-06	-0.01
200	2.981E-06	2.982E-06	-0.01
500	1.880E-06	1.880E-06	-0.01

1,000	1.188E-06	1.188E-06	-0.01
2,000	5.794E-07	5.795E-07	-0.01
5,000	1.663E-07	1.663E-07	-0.01
10,000	5.035E-08	5.036E-08	-0.01
20,000	7.651E-09	7.652E-09	0.00
Maximum:			-0.01

B.7.202.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.133E-01	1.133E-01	-0.01
2	1.616E-01	1.616E-01	0.00
5	1.396E-02	1.396E-02	0.00

10	6.635E-04	6.636E-04	-0.01
20	4.441E-04	4.441E-04	-0.02
50	2.278E-04	2.278E-04	-0.02
100	9.062E-05	9.064E-05	-0.01
200	3.320E-05	3.320E-05	-0.01
500	1.872E-05	1.873E-05	-0.01
1,000	1.063E-05	1.063E-05	-0.01
2,000	3.553E-06	3.553E-06	-0.01
5,000	2.704E-07	2.704E-07	-0.01
10,000	4.594E-08	4.595E-08	-0.01
20,000	4.076E-09	4.077E-09	-0.01
Maximum:			-0.02

B.7.202.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.915E-01	4.915E-01	0.00
2	2.508E-01	2.508E-01	0.00
5	7.458E-02	7.458E-02	-0.01
10	6.096E-02	6.097E-02	-0.01
20	5.549E-02	5.550E-02	-0.01
50	4.538E-02	4.539E-02	-0.01
100	3.774E-02	3.775E-02	-0.01
200	3.196E-02	3.196E-02	-0.01
500	2.371E-02	2.371E-02	-0.01

1,000	1.521E-02	1.521E-02	-0.01
2,000	7.258E-03	7.259E-03	-0.01
5,000	2.153E-03	2.153E-03	-0.01
10,000	7.087E-04	7.088E-04	-0.01
20,000	1.149E-04	1.149E-04	0.00
Maximum:			-0.01

B.7.202.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.428E-02	6.428E-02	-0.01
2	6.269E-02	6.270E-02	-0.01
5	6.068E-02	6.069E-02	-0.01
10	5.785E-02	5.786E-02	-0.01
20	5.307E-02	5.308E-02	-0.01
50	4.371E-02	4.372E-02	-0.01
100	3.642E-02	3.642E-02	-0.01
200	3.082E-02	3.082E-02	-0.01
500	2.266E-02	2.266E-02	-0.01
1,000	1.420E-02	1.420E-02	-0.02
2,000	6.387E-03	6.388E-03	-0.01
5,000	1.634E-03	1.634E-03	-0.01
10,000	4.643E-04	4.643E-04	-0.01
Maximum:			-0.02

B.7.203. Strontium – Ingestion of ⁹⁰Sr (f₁ = 0.3)

Maximum difference for **Urine**: +0.02%.

Maximum difference for **Feces**: +0.02%.

Maximum difference for **Whole Body**: +0.01%.

B.7.203.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.650E-02	5.649E-02	0.00
2	2.199E-02	2.199E-02	0.00
5	8.336E-03	8.335E-03	0.00
10	3.704E-03	3.704E-03	0.00
20	1.601E-03	1.601E-03	0.00
50	2.891E-04	2.891E-04	0.00
100	8.670E-05	8.670E-05	0.00
200	4.375E-05	4.375E-05	0.00
500	1.115E-05	1.115E-05	0.00
1,000	5.663E-06	5.663E-06	-0.01
2,000	3.579E-06	3.579E-06	0.01
5,000	1.146E-06	1.146E-06	0.00
10,000	3.258E-07	3.258E-07	-0.01
20,000	6.864E-08	6.862E-08	0.02
Maximum:			0.02

B.7.203.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.172E-01	2.172E-01	0.00
2	2.758E-01	2.758E-01	0.00
5	2.488E-02	2.488E-02	0.00
10	1.550E-03	1.550E-03	0.00
20	5.401E-04	5.401E-04	0.00

50	9.409E-05	9.408E-05	0.00
100	2.672E-05	2.672E-05	0.00
200	1.339E-05	1.339E-05	0.00
500	3.399E-06	3.399E-06	0.00
1,000	1.720E-06	1.720E-06	-0.01
2,000	1.087E-06	1.087E-06	0.01
5,000	3.479E-07	3.478E-07	0.00
10,000	9.888E-08	9.889E-08	-0.01
20,000	2.083E-08	2.083E-08	0.02
Maximum:			0.02

B.7.203.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.263E-01	7.263E-01	0.00
2	4.284E-01	4.284E-01	-0.01
5	1.714E-01	1.714E-01	0.01
10	1.233E-01	1.233E-01	-0.01
20	9.197E-02	9.196E-02	0.01
50	6.350E-02	6.350E-02	-0.01
100	5.391E-02	5.390E-02	0.00
200	4.562E-02	4.562E-02	0.00
500	3.617E-02	3.617E-02	0.00
1,000	3.030E-02	3.030E-02	0.00
2,000	2.272E-02	2.272E-02	0.00
5,000	1.141E-02	1.141E-02	0.00
10,000	4.926E-03	4.926E-03	0.00
Maximum:			0.01

B.7.204. Strontium – Ingestion of ⁹⁰Sr (f₁ = 0.01)

Maximum difference for **Urine**: +0.02%.

Maximum difference for **Feces**: +0.02%.

Maximum difference for **Whole Body**: -0.01%.

B.7.204.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.826E-03	1.826E-03	0.00
2	7.608E-04	7.608E-04	0.00
5	2.810E-04	2.810E-04	0.00
10	1.242E-04	1.242E-04	0.00
20	5.353E-05	5.353E-05	0.00
50	9.659E-06	9.659E-06	0.00
100	2.891E-06	2.891E-06	0.00
200	1.459E-06	1.459E-06	0.00
500	3.718E-07	3.718E-07	0.00
1,000	1.888E-07	1.888E-07	-0.01
2,000	1.193E-07	1.193E-07	0.00
5,000	3.819E-08	3.819E-08	0.00
10,000	1.086E-08	1.086E-08	-0.01
20,000	2.288E-09	2.287E-09	0.02
Maximum:			0.02

B.7.204.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.804E-01	2.804E-01	0.00
2	3.852E-01	3.852E-01	0.00
5	3.117E-02	3.117E-02	0.00
10	2.641E-04	2.640E-04	0.00
20	1.808E-05	1.807E-05	0.00

50	3.143E-06	3.143E-06	0.00
100	8.913E-07	8.913E-07	0.00
200	4.466E-07	4.466E-07	0.00
500	1.133E-07	1.133E-07	0.00
1,000	5.733E-08	5.733E-08	-0.01
2,000	3.623E-08	3.622E-08	0.01
5,000	1.160E-08	1.159E-08	0.00
10,000	3.296E-09	3.296E-09	-0.01
20,000	6.944E-10	6.942E-10	0.02
Maximum:			0.02

B.7.204.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.178E-01	7.177E-01	0.00
2	3.317E-01	3.317E-01	0.00
5	2.383E-02	2.383E-02	0.00
10	4.240E-03	4.240E-03	-0.01
20	3.069E-03	3.069E-03	0.01
50	2.117E-03	2.117E-03	0.00
100	1.797E-03	1.797E-03	0.00
200	1.521E-03	1.521E-03	0.00
500	1.206E-03	1.206E-03	0.00
1,000	1.010E-03	1.010E-03	0.01
2,000	7.575E-04	7.574E-04	0.00
5,000	3.804E-04	3.804E-04	0.00
10,000	1.642E-04	1.642E-04	0.00
Maximum:			-0.01

B.7.205. Strontium – Injection of ⁹⁰Sr

Maximum difference for **Urine**: +0.02%.

Maximum difference for **Feces**: +0.02%.

Maximum difference for **Whole Body**: -0.02%.

B.7.205.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.033E-01	2.032E-01	0.00
2	6.731E-02	6.731E-02	0.00
5	2.682E-02	2.682E-02	0.00
10	1.212E-02	1.212E-02	0.00
20	5.278E-03	5.278E-03	0.00
50	9.569E-04	9.568E-04	0.00
100	2.885E-04	2.885E-04	0.00
200	1.457E-04	1.457E-04	0.00
500	3.716E-05	3.716E-05	0.00
1,000	1.888E-05	1.888E-05	-0.01
2,000	1.193E-05	1.193E-05	0.00
5,000	3.819E-06	3.819E-06	0.00
10,000	1.086E-06	1.086E-06	-0.01
20,000	2.288E-07	2.287E-07	0.02
Maximum:			0.02

B.7.205.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.647E-02	1.647E-02	0.00
2	2.827E-02	2.827E-02	0.00
5	1.301E-02	1.300E-02	0.00
10	4.574E-03	4.574E-03	0.00
20	1.780E-03	1.780E-03	0.00
50	3.113E-04	3.113E-04	0.00
100	8.893E-05	8.893E-05	0.00
200	4.460E-05	4.460E-05	0.00
500	1.132E-05	1.132E-05	0.00
1,000	5.732E-06	5.733E-06	-0.01
2,000	3.622E-06	3.622E-06	0.01
5,000	1.160E-06	1.159E-06	0.01
10,000	3.296E-07	3.296E-07	-0.01
20,000	6.944E-08	6.942E-08	0.02
Maximum:			0.02

B.7.205.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.803E-01	7.802E-01	0.01
2	6.845E-01	6.846E-01	-0.02
5	5.242E-01	5.242E-01	0.01
10	4.081E-01	4.081E-01	-0.01
20	3.055E-01	3.054E-01	0.01
50	2.115E-01	2.115E-01	-0.01

100	1.796E-01	1.796E-01	0.01
200	1.520E-01	1.520E-01	0.00
500	1.206E-01	1.206E-01	0.00
1,000	1.010E-01	1.010E-01	0.00
2,000	7.575E-02	7.574E-02	0.00
5,000	3.804E-02	3.804E-02	0.00
10,000	1.642E-02	1.642E-02	0.00
Maximum:			-0.02

B.7.206. Strontium – Inhalation of ⁹¹Sr (type “F”)

Maximum difference for **Urine**: -0.27%.

Maximum difference for **Feces**: -0.26%.

Maximum difference for **Whole Body**: -0.28%.

B.7.206.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.19E-02	1.19E-02	-0.03
2	7.05E-04	7.05E-04	-0.06
5	1.45E-06	1.45E-06	-0.13
10	1.03E-10	1.03E-10	-0.27
20	1.11E-18	N/A	N/A
50	3.07E-42	N/A	N/A
Maximum:			-0.27

5	1.36E-06	1.37E-06	-0.13
10	3.96E-11	3.97E-11	-0.26
20	3.75E-19	N/A	N/A
50	1.00E-42	N/A	N/A
Maximum:			-0.26

B.7.206.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.27E-03	8.28E-03	-0.03
2	1.91E-03	1.91E-03	-0.05

B.7.206.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.50E-02	8.50E-02	-0.02
2	9.77E-03	9.77E-03	-0.07
5	2.90E-05	2.90E-05	-0.12
10	3.46E-09	3.47E-09	-0.28
20	6.42E-17	N/A	N/A
50	6.79E-40	N/A	N/A
Maximum:			-0.28

B.7.207. Strontium – Inhalation of ⁹¹Sr (type “S”)

Maximum difference for **Urine**: -0.26%.

Maximum difference for **Feces**: -0.27%.

Maximum difference for **Whole Body**: -0.27%.

Maximum difference for **Lungs**: -0.27%.

B.7.207.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.40E-04	1.40E-04	-0.03
2	1.04E-05	1.04E-05	-0.05
5	2.05E-08	2.05E-08	-0.13
10	1.50E-12	1.51E-12	-0.26
20	1.80E-20	N/A	N/A
50	8.13E-44	N/A	N/A
Maximum:			-0.26

2	4.87E-03	4.87E-03	-0.06
5	2.20E-06	2.20E-06	-0.13
10	1.65E-11	1.65E-11	-0.27
20	2.73E-19	N/A	N/A
50	2.14E-42	N/A	N/A
Maximum:			-0.27

B.7.207.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.97E-02	1.97E-02	-0.03

B.7.207.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.53E-02	8.53E-02	-0.03
2	7.56E-03	7.56E-03	-0.05
5	1.18E-05	1.18E-05	-0.14
10	1.51E-09	1.52E-09	-0.27
20	3.42E-17	N/A	N/A
50	4.27E-40	N/A	N/A

Maximum:	-0.27
----------	-------

B.7.207.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.12E-02	1.12E-02	-0.04

2	1.89E-03	1.89E-03	-0.06
5	9.56E-06	9.57E-06	-0.14
10	1.44E-09	1.44E-09	-0.27
20	3.27E-17	N/A	N/A
50	4.11E-40	N/A	N/A
Maximum:			-0.27

B.7.208. Strontium – Ingestion of ⁹¹Sr (f₁ = 0.3)

Maximum difference for **Urine**: -0.26%.

Maximum difference for **Feces**: -0.26%.

Maximum difference for **Whole Body**: -0.27%.

B.7.208.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.81E-03	9.81E-03	-0.03
2	6.63E-04	6.63E-04	-0.05
5	1.31E-06	1.32E-06	-0.13
10	9.19E-11	9.21E-11	-0.26
20	9.85E-19	N/A	N/A
50	2.72E-42	N/A	N/A
Maximum:			-0.26

B.7.208.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.77E-02	3.77E-02	-0.02
2	8.31E-03	8.31E-03	-0.05

5	3.92E-06	3.92E-06	-0.13
10	3.85E-11	3.86E-11	-0.26
20	3.33E-19	N/A	N/A
50	8.84E-43	N/A	N/A
Maximum:			-0.26

B.7.208.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.26E-01	1.26E-01	-0.02
2	1.29E-02	1.29E-02	-0.06
5	2.70E-05	2.70E-05	-0.12
10	3.06E-09	3.07E-09	-0.27
20	5.66E-17	N/A	N/A
50	5.97E-40	N/A	N/A
Maximum:			-0.27

B.7.209. Strontium – Injection of ⁹¹Sr

Maximum difference for **Urine**: -0.26%.

Maximum difference for **Feces**: -0.26%.

Maximum difference for **Whole Body**: -0.27%.

B.7.209.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.53E-02	3.53E-02	-0.02
2	2.03E-03	2.03E-03	-0.05
5	4.23E-06	4.23E-06	-0.13
10	3.01E-10	3.01E-10	-0.26
20	3.25E-18	N/A	N/A
50	9.00E-42	N/A	N/A
Maximum:			-0.26

B.7.209.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.86E-03	2.86E-03	-0.03
2	8.52E-04	8.52E-04	-0.05

5	2.05E-06	2.05E-06	-0.13
10	1.14E-10	1.14E-10	-0.26
20	1.10E-18	N/A	N/A
50	2.93E-42	N/A	N/A
Maximum:			-0.26

B.7.209.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.35E-01	1.36E-01	-0.01
2	2.06E-02	2.06E-02	-0.07
5	8.26E-05	8.27E-05	-0.12
10	1.01E-08	1.02E-08	-0.27
20	1.88E-16	N/A	N/A
50	1.99E-39	N/A	N/A
Maximum:			-0.27

B.7.210. Sulfur – Injection of ³⁵S (Inorganic)

Maximum difference for **Urine**: -0.09%.

Maximum difference for **Feces**: +0.23%.

Maximum difference for **Whole Body**: -0.02%.

B.7.210.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.590E-01	6.590E-01	0.00
2	5.833E-02	5.831E-02	0.03
5	3.936E-03	3.935E-03	0.00
10	3.173E-03	3.173E-03	0.00
20	2.076E-03	2.077E-03	-0.01
50	5.853E-04	5.856E-04	-0.04
100	7.521E-05	7.527E-05	-0.09
200	3.949E-06	3.951E-06	-0.05
500	2.492E-07	2.492E-07	0.00
1,000	3.980E-09	3.981E-09	-0.01
2,000	1.016E-12	N/A	N/A
5,000	1.687E-23	N/A	N/A
10,000	1.824E-41	N/A	N/A
Maximum:			-0.09

B.7.210.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.822E-02	1.822E-02	-0.01
2	3.076E-02	3.076E-02	0.00
5	3.402E-03	3.400E-03	0.04
10	3.913E-04	3.904E-04	0.23
20	2.429E-04	2.423E-04	0.23

50	6.844E-05	6.830E-05	0.20
100	8.761E-06	8.749E-06	0.14
200	4.447E-07	4.446E-07	0.01
500	2.770E-08	2.770E-08	0.00
1,000	4.425E-10	4.425E-10	-0.01
2,000	1.129E-13	N/A	N/A
5,000	1.875E-24	N/A	N/A
10,000	2.028E-42	N/A	N/A
Maximum:			0.23

B.7.210.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.149E-01	3.149E-01	0.01
2	2.234E-01	2.234E-01	0.00
5	1.735E-01	1.735E-01	0.00
10	1.461E-01	1.461E-01	0.00
20	1.077E-01	1.077E-01	-0.01
50	5.128E-02	5.129E-02	-0.02
100	2.403E-02	2.403E-02	-0.01
200	9.590E-03	9.590E-03	0.00
500	7.988E-04	7.989E-04	-0.01
1,000	1.276E-05	1.276E-05	-0.01
2,000	3.256E-09	N/A	N/A
5,000	5.407E-20	N/A	N/A
10,000	5.846E-38	N/A	N/A
Maximum:			-0.02

B.7.211. Sulfur – Injection of ³⁵S (Organic)

Maximum difference for **Urine**: -0.01%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: -0.01%.

B.7.211.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.583E-03	2.583E-03	-0.01
2	4.242E-03	4.242E-03	0.00
5	4.198E-03	4.198E-03	0.00
10	3.936E-03	3.936E-03	0.00
20	3.460E-03	3.460E-03	0.00
50	2.351E-03	2.351E-03	0.00
100	1.235E-03	1.235E-03	0.00
200	3.407E-04	3.407E-04	0.00
500	7.153E-06	7.154E-06	0.00
1,000	1.143E-08	1.143E-08	-0.01
2,000	2.918E-14	N/A	N/A
5,000	4.857E-31	N/A	N/A
Maximum:			-0.01

B.7.211.2. Fecal Excretion Rate

TIME	IMBA	PLEIADES	Difference
------	------	----------	------------

(d)	(d ⁻¹)	(d ⁻¹)	(%)
1	3.668E-05	3.668E-05	-0.01
2	2.102E-04	2.102E-04	0.00
5	4.509E-04	4.509E-04	0.00
10	4.404E-04	4.404E-04	0.00
20	3.873E-04	3.873E-04	0.00
50	2.632E-04	2.632E-04	0.00
100	1.382E-04	1.382E-04	0.00
200	3.813E-05	3.813E-05	0.00
500	8.007E-07	8.007E-07	0.00
1,000	1.279E-09	1.279E-09	-0.01
2,000	3.266E-15	N/A	N/A
5,000	5.436E-32	N/A	N/A
Maximum:			-0.01

B.7.211.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.895E-01	9.895E-01	0.00
2	9.772E-01	9.772E-01	0.00

5	9.404E-01	9.404E-01	0.00
10	8.818E-01	8.817E-01	0.00
20	7.752E-01	7.752E-01	0.00
50	5.268E-01	5.268E-01	0.00
100	2.767E-01	2.767E-01	0.00
200	7.633E-02	7.633E-02	0.00

500	1.603E-03	1.603E-03	0.00
1,000	2.561E-06	2.561E-06	-0.01
2,000	6.538E-12	6.539E-12	-0.01
5,000	1.088E-28	N/A	N/A
Maximum:			-0.01

B.7.212. Tantalum – Inhalation of ¹⁸²Ta (type “M”)

Maximum difference for **Urine**: -0.03%.

Maximum difference for **Feces**: -0.04%.

Maximum difference for **Whole Body**: -0.06%.

Maximum difference for **Lungs**: -0.09%.

B.7.212.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.05E-04	5.05E-04	-0.02
2	7.60E-04	7.60E-04	-0.01
5	5.05E-04	5.05E-04	-0.01
10	2.67E-04	2.67E-04	-0.01
20	1.23E-04	1.23E-04	-0.01
50	7.00E-05	7.00E-05	-0.02
100	4.20E-05	4.20E-05	-0.02
200	1.51E-05	1.51E-05	-0.02
500	5.92E-07	5.92E-07	-0.02
1,000	2.07E-09	2.07E-09	-0.03
2,000	1.98E-14	N/A	N/A
5,000	2.95E-29	N/A	N/A
Maximum:			-0.03

B.7.212.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.94E-01	4.94E-01	0
2	2.59E-01	2.59E-01	0
5	8.63E-02	8.63E-02	-0.01
10	6.84E-02	6.84E-02	-0.01
20	5.72E-02	5.72E-02	-0.01
50	3.75E-02	3.75E-02	-0.01
100	2.05E-02	2.05E-02	-0.01
200	6.76E-03	6.76E-03	-0.02
500	2.39E-04	2.39E-04	-0.02
1,000	7.85E-07	7.86E-07	-0.03
2,000	7.34E-12	7.34E-12	-0.06
5,000	1.16E-26	N/A	N/A
Maximum:			-0.06

B.7.212.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.08E-01	1.08E-01	-0.01
2	1.53E-01	1.53E-01	0
5	1.35E-02	1.35E-02	0
10	8.54E-04	8.55E-04	-0.01
20	4.53E-04	4.53E-04	-0.01
50	1.91E-04	1.91E-04	-0.02
100	7.00E-05	7.00E-05	-0.02
200	1.86E-05	1.86E-05	-0.02
500	6.70E-07	6.70E-07	-0.03
1,000	2.27E-09	2.27E-09	-0.04
2,000	2.11E-14	N/A	N/A
5,000	3.02E-29	N/A	N/A
Maximum:			-0.04

B.7.212.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.73E-02	5.73E-02	-0.01
2	5.53E-02	5.53E-02	-0.01
5	5.18E-02	5.18E-02	-0.01
10	4.68E-02	4.68E-02	-0.01
20	3.85E-02	3.85E-02	-0.01
50	2.29E-02	2.29E-02	-0.02
100	1.11E-02	1.11E-02	-0.02
200	3.16E-03	3.16E-03	-0.02
500	8.94E-05	8.94E-05	-0.03
1,000	2.45E-07	2.45E-07	-0.05
2,000	2.12E-12	2.12E-12	-0.09
5,000	3.81E-27	N/A	N/A
Maximum:			-0.09

B.7.213. Tantalum – Inhalation of ¹⁸²Ta (type “S”)

Maximum difference for **Urine**: -0.09%.

Maximum difference for **Feces**: -0.09%.

Maximum difference for **Whole Body**: -0.09%.

Maximum difference for **Lungs**: -0.09%.

B.7.213.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.01E-05	1.01E-05	-0.02
2	1.85E-05	1.85E-05	-0.02
5	1.26E-05	1.26E-05	-0.01
10	6.65E-06	6.65E-06	-0.01
20	3.07E-06	3.07E-06	-0.01
50	1.84E-06	1.84E-06	-0.02
100	1.22E-06	1.22E-06	-0.02
200	5.66E-07	5.66E-07	-0.02
500	6.53E-08	6.54E-08	-0.03
1,000	2.04E-09	2.04E-09	-0.05
2,000	2.33E-12	2.33E-12	-0.09
5,000	9.98E-21	N/A	N/A
10,000	3.27E-34	N/A	N/A
Maximum:			-0.09

B.7.213.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.13E-01	1.13E-01	-0.01
2	1.61E-01	1.61E-01	-0.01
5	1.37E-02	1.37E-02	0
10	6.18E-04	6.18E-04	-0.01
20	3.92E-04	3.92E-04	-0.02
50	1.70E-04	1.70E-04	-0.01
100	5.09E-05	5.09E-05	-0.02
200	1.05E-05	1.05E-05	-0.02
500	9.95E-07	9.95E-07	-0.03
1,000	2.87E-08	2.87E-08	-0.05
2,000	2.49E-11	2.49E-11	-0.09
5,000	3.51E-20	N/A	N/A
10,000	7.22E-34	N/A	N/A
Maximum:			-0.09

B.7.213.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.89E-01	4.89E-01	0
2	2.47E-01	2.47E-01	0
5	7.07E-02	7.07E-02	-0.01
10	5.62E-02	5.62E-02	-0.01
20	4.84E-02	4.84E-02	-0.01
50	3.32E-02	3.33E-02	-0.01
100	2.05E-02	2.05E-02	-0.02
200	9.55E-03	9.55E-03	-0.02
500	1.17E-03	1.17E-03	-0.03
1,000	3.75E-05	3.75E-05	-0.05
2,000	4.38E-08	4.38E-08	-0.09
5,000	1.97E-16	N/A	N/A
10,000	6.49E-30	N/A	N/A
Maximum:			-0.09

B.7.213.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.39E-02	6.39E-02	-0.01
2	6.20E-02	6.20E-02	-0.01
5	5.89E-02	5.89E-02	-0.01
10	5.45E-02	5.45E-02	-0.01
20	4.71E-02	4.71E-02	-0.01
50	3.24E-02	3.25E-02	-0.02
100	2.01E-02	2.01E-02	-0.01
200	9.35E-03	9.35E-03	-0.02
500	1.15E-03	1.15E-03	-0.03
1,000	3.66E-05	3.66E-05	-0.05
2,000	4.23E-08	4.24E-08	-0.09
5,000	1.85E-16	N/A	N/A
10,000	5.94E-30	N/A	N/A
Maximum:			-0.09

B.7.214. Tantalum – Ingestion of ¹⁸²Ta (f₁ = 0.001)

Maximum difference for **Urine**: -0.02%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: +0.02%.

B.7.214.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.26E-05	1.26E-05	-0.02
2	2.62E-05	2.62E-05	-0.01
5	1.73E-05	1.73E-05	0
10	8.18E-06	8.18E-06	0
20	2.78E-06	2.78E-06	0
50	1.19E-06	1.19E-06	0
100	6.21E-07	6.22E-07	-0.01
200	1.70E-07	1.70E-07	-0.01
500	3.49E-09	3.49E-09	0
1,000	5.35E-12	5.35E-12	0.01
2,000	1.26E-17	N/A	N/A
5,000	1.65E-34	N/A	N/A
Maximum:			-0.02

B.7.214.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.81E-01	2.81E-01	0
2	3.84E-01	3.84E-01	0
5	3.05E-02	3.05E-02	0
10	2.17E-04	2.17E-04	0
20	3.14E-06	3.14E-06	0
50	1.21E-06	1.21E-06	-0.01
100	6.28E-07	6.28E-07	-0.01
200	1.72E-07	1.72E-07	-0.01
500	3.52E-09	3.52E-09	0
1,000	5.40E-12	5.40E-12	0.01
2,000	1.27E-17	N/A	N/A
5,000	1.66E-34	N/A	N/A
Maximum:			-0.01

B.7.214.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.14E-01	7.14E-01	0
2	3.25E-01	3.25E-01	0
5	1.90E-02	1.90E-02	0
10	7.73E-04	7.73E-04	0
20	5.19E-04	5.19E-04	0

50	3.43E-04	3.43E-04	0
100	1.80E-04	1.80E-04	0
200	4.92E-05	4.92E-05	0
500	1.01E-06	1.01E-06	0
1,000	1.55E-09	1.55E-09	0.02
2,000	3.64E-15	N/A	N/A
5,000	4.76E-32	N/A	N/A
Maximum:			+0.02

B.7.215. Tantalum – Injection of ¹⁸²Ta (Organic)

Maximum difference for **Urine**: -0.01%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: +0.03%.

B.7.215.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.79E-02	1.79E-02	-0.01
2	2.63E-02	2.63E-02	-0.01
5	1.68E-02	1.68E-02	0
10	7.96E-03	7.96E-03	0
20	2.74E-03	2.74E-03	0
50	1.19E-03	1.19E-03	0
100	6.21E-04	6.21E-04	-0.01
200	1.70E-04	1.70E-04	0
500	3.48E-06	3.48E-06	0
1,000	5.34E-09	5.34E-09	0.01
2,000	1.26E-14	N/A	N/A
5,000	1.64E-31	N/A	N/A
Maximum:			-0.01

50	1.20E-03	1.21E-03	-0.01
100	6.27E-04	6.27E-04	-0.01
200	1.72E-04	1.72E-04	0
500	3.52E-06	3.52E-06	0
1,000	5.40E-09	5.40E-09	0.01
2,000	1.27E-14	N/A	N/A
5,000	1.66E-31	N/A	N/A
Maximum:			-0.02

B.7.215.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.74E-01	9.74E-01	0
2	9.29E-01	9.29E-01	0
5	7.93E-01	7.93E-01	0
10	6.49E-01	6.49E-01	0
20	5.18E-01	5.18E-01	0
50	3.43E-01	3.43E-01	0
100	1.79E-01	1.79E-01	0
200	4.91E-02	4.91E-02	0
500	1.01E-03	1.01E-03	0.01
1,000	1.54E-06	1.54E-06	0.02
2,000	3.64E-12	3.63E-12	0.03
5,000	4.75E-29	N/A	N/A
Maximum:			+0.03

B.7.215.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.33E-03	2.33E-03	-0.02
2	1.27E-02	1.27E-02	-0.02
5	1.99E-02	1.99E-02	0
10	9.87E-03	9.87E-03	0
20	3.08E-03	3.08E-03	0

B.7.216. Technetium – Inhalation of ⁹⁹Tc (type “F”)

Maximum difference for **Urine**: -0.27%.

Maximum difference for **Feces**: -0.25%.

Maximum difference for **Whole Body**: -0.16%.

B.7.216.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.167E-02	6.164E-02	0.04
2	4.712E-02	4.711E-02	0.02
5	1.436E-02	1.436E-02	-0.04
10	2.832E-03	2.836E-03	-0.14
20	4.087E-04	4.098E-04	-0.27
50	7.121E-05	7.124E-05	-0.04

100	1.458E-05	1.459E-05	-0.06
200	6.242E-07	6.250E-07	-0.13
500	4.902E-11	N/A	N/A
1,000	7.060E-18	N/A	N/A
2,000	1.464E-31	N/A	N/A
Maximum:			-0.27

B.7.216.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

1	2.426E-02	2.425E-02	0.02
2	5.025E-02	5.024E-02	0.03
5	2.670E-02	2.670E-02	0.01
10	4.812E-03	4.816E-03	-0.09
20	5.115E-04	5.128E-04	-0.25
50	7.487E-05	7.490E-05	-0.04
100	1.528E-05	1.529E-05	-0.05
200	6.543E-07	6.551E-07	-0.12
500	5.138E-11	N/A	N/A
1,000	7.400E-18	N/A	N/A
2,000	1.535E-31	N/A	N/A
Maximum:			-0.25

B.7.216.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.197E-01	5.197E-01	-0.01
2	3.436E-01	3.437E-01	-0.02
5	1.228E-01	1.229E-01	-0.08
10	3.883E-02	3.889E-02	-0.16
20	1.411E-02	1.413E-02	-0.13
50	4.516E-03	4.518E-03	-0.04
100	9.327E-04	9.334E-04	-0.07
200	3.994E-05	4.000E-05	-0.14
500	3.137E-09	N/A	N/A
1,000	4.518E-16	N/A	N/A
2,000	9.369E-30	N/A	N/A
Maximum:			-0.16

B.7.217. Technetium – Inhalation of ⁹⁹Tc (type “M”)

Maximum difference for **Urine**: -0.16%.

Maximum difference for **Feces**: -0.14%.

Maximum difference for **Whole Body**: -0.07%.

Maximum difference for **Lungs**: -0.02%.

B.7.217.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.563E-02	4.561E-02	0.04
2	3.777E-02	3.776E-02	0.02
5	1.172E-02	1.173E-02	-0.03
10	2.546E-03	2.549E-03	-0.12
20	5.782E-04	5.792E-04	-0.16
50	2.045E-04	2.045E-04	-0.03
100	8.606E-05	8.609E-05	-0.03
200	3.266E-05	3.267E-05	-0.03
500	5.334E-06	5.335E-06	-0.02
1,000	2.956E-07	2.957E-07	-0.02
2,000	1.036E-09	1.036E-09	-0.03
5,000	1.289E-16	N/A	N/A
10,000	1.180E-27	N/A	N/A
Maximum:			-0.16

B.7.217.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.262E-01	5.262E-01	-0.01
2	3.534E-01	3.535E-01	-0.02
5	1.546E-01	1.546E-01	-0.05
10	8.306E-02	8.312E-02	-0.07
20	5.705E-02	5.707E-02	-0.04
50	3.621E-02	3.622E-02	-0.02
100	2.194E-02	2.194E-02	-0.02
200	1.101E-02	1.101E-02	-0.02
500	1.892E-03	1.893E-03	-0.02
1,000	1.061E-04	1.061E-04	-0.02
2,000	3.828E-07	3.829E-07	-0.02
5,000	5.057E-14	N/A	N/A
10,000	4.681E-25	N/A	N/A
Maximum:			-0.07

B.7.217.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.380E-02	3.379E-02	0.01
2	5.630E-02	5.629E-02	0.02
5	2.288E-02	2.288E-02	0.01
10	4.229E-03	4.232E-03	-0.08
20	7.390E-04	7.401E-04	-0.14
50	2.435E-04	2.435E-04	-0.02
100	9.798E-05	9.800E-05	-0.02
200	3.527E-05	3.527E-05	-0.02
500	5.677E-06	5.678E-06	-0.02
1,000	3.131E-07	3.132E-07	-0.01
2,000	1.084E-09	1.084E-09	-0.01
5,000	1.311E-16	N/A	N/A
10,000	1.195E-27	N/A	N/A
Maximum:			-0.14

B.7.217.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.763E-02	5.763E-02	-0.01
2	5.594E-02	5.594E-02	-0.01
5	5.336E-02	5.337E-02	-0.01
10	4.966E-02	4.966E-02	-0.01
20	4.341E-02	4.342E-02	-0.01
50	3.092E-02	3.093E-02	-0.02
100	2.023E-02	2.024E-02	-0.01
200	1.056E-02	1.056E-02	-0.01
500	1.820E-03	1.820E-03	-0.01
1,000	1.017E-04	1.017E-04	-0.01
2,000	3.636E-07	3.636E-07	-0.01
5,000	4.670E-14	N/A	N/A
10,000	4.209E-25	N/A	N/A
Maximum:			-0.02

B.7.218. Technetium – Ingestion of ⁹⁹Tc (f₁ = 0.8)

Maximum difference for **Urine**: -0.26%.

Maximum difference for **Feces**: -0.25%.

Maximum difference for **Whole Body**: -0.16%.

B.7.218.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.074E-01	1.073E-01	0.04
2	8.706E-02	8.703E-02	0.03
5	2.645E-02	2.645E-02	-0.03
10	5.196E-03	5.203E-03	-0.14
20	7.452E-04	7.472E-04	-0.26
50	1.293E-04	1.294E-04	-0.04
100	2.647E-05	2.649E-05	-0.06
200	1.134E-06	1.135E-06	-0.12
500	8.903E-11	N/A	N/A
1,000	1.282E-17	N/A	N/A
2,000	2.659E-31	N/A	N/A
Maximum:			-0.26

B.7.218.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.613E-02	8.612E-02	0.01
2	1.366E-01	1.365E-01	0.03
5	5.250E-02	5.249E-02	0.01
10	8.867E-03	8.875E-03	-0.08

20	9.335E-04	9.358E-04	-0.25
50	1.360E-04	1.360E-04	-0.03
100	2.775E-05	2.776E-05	-0.04
200	1.188E-06	1.190E-06	-0.11
500	9.332E-11	N/A	N/A
1,000	1.344E-17	N/A	N/A
2,000	2.787E-31	N/A	N/A
Maximum:			-0.25

B.7.218.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.065E-01	8.066E-01	-0.01
2	5.829E-01	5.830E-01	-0.02
5	2.233E-01	2.234E-01	-0.08
10	7.092E-02	7.103E-02	-0.16
20	2.566E-02	2.569E-02	-0.12
50	8.202E-03	8.205E-03	-0.04
100	1.694E-03	1.695E-03	-0.07
200	7.254E-05	7.264E-05	-0.13
500	5.697E-09	N/A	N/A
1,000	8.204E-16	N/A	N/A
2,000	1.702E-29	N/A	N/A
Maximum:			-0.16

B.7.219. Technetium – Injection of ⁹⁹Tc

Maximum difference for **Urine**: -0.26%.

Maximum difference for **Feces**: -0.25%.

Maximum difference for **Whole Body**: -0.16%.

B.7.219.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.442E-01	1.442E-01	0.04
2	1.053E-01	1.052E-01	0.03
5	3.215E-02	3.216E-02	-0.03
10	6.360E-03	6.369E-03	-0.14
20	9.226E-04	9.250E-04	-0.26
50	1.613E-04	1.613E-04	-0.04
100	3.301E-05	3.303E-05	-0.05
200	1.414E-06	1.415E-06	-0.12
500	1.110E-10	N/A	N/A
1,000	1.599E-17	N/A	N/A
2,000	3.316E-31	N/A	N/A
Maximum:			-0.26

B.7.219.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.590E-02	2.589E-02	0.05
2	8.178E-02	8.174E-02	0.05
5	5.744E-02	5.744E-02	0.01
10	1.078E-02	1.079E-02	-0.09
20	1.154E-03	1.157E-03	-0.25
50	1.696E-04	1.696E-04	-0.03
100	3.460E-05	3.462E-05	-0.04
200	1.482E-06	1.483E-06	-0.11
N/A 500	1.164E-10	N/A	N/A
1,000	1.676E-17	N/A	N/A
2,000	3.476E-31	N/A	N/A
Maximum:			-0.25

B.7.219.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.299E-01	8.300E-01	-0.01
2	6.428E-01	6.430E-01	-0.03
5	2.693E-01	2.695E-01	-0.08
10	8.750E-02	8.764E-02	-0.16
20	3.192E-02	3.196E-02	-0.12

50	1.023E-02	1.023E-02	-0.04
100	2.113E-03	2.114E-03	-0.07
200	9.046E-05	9.058E-05	-0.13
500	7.104E-09	N/A	N/A
1,000	1.023E-15	N/A	N/A
2,000	2.122E-29	N/A	N/A
Maximum:			-0.16

B.7.220. Tellurium – Inhalation of ¹³¹Te (type “F”)

Maximum difference for **Urine**: 0.0%.

Maximum difference for **Feces**: 0.0%.

Maximum difference for **Whole Body**: 0.0%.

B.7.220.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.34E-19	N/A	N/A
2	8.04E-37	N/A	N/A
Maximum:			0.0

1	2.09E-19	N/A	N/A
2	1.32E-36	N/A	N/A
Maximum:			0.0

B.7.220.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.22E-18	N/A	N/A
2	6.38E-36	N/A	N/A
Maximum:			0.0

B.7.220.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

B.7.221. Tellurium – Inhalation of ¹³¹Te (type “M”)

Maximum difference for **Urine**: 0.0%.

Maximum difference for **Feces**: 0.0%.

Maximum difference for **Whole Body**: 0.0%.

Maximum difference for **Lungs**: 0.0%.

B.7.221.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.30E-19	N/A	N/A
2	3.82E-37	N/A	N/A
Maximum:			0.0

B.7.221.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.26E-18	N/A	N/A
2	5.97E-36	N/A	N/A
Maximum:			0.0

B.7.221.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.80E-19	N/A	N/A
2	2.30E-36	N/A	N/A
Maximum:			0.0

B.7.221.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.63E-19	N/A	N/A
2	1.17E-36	N/A	N/A
Maximum:			0.0

B.7.222. Tellurium – Ingestion of ¹³¹Te (f₁ = 0.3)

Maximum difference for **Urine**: 0.0%.

Maximum difference for **Feces**: 0.0%.

Maximum difference for **Whole Body**: 0.0%.

B.7.222.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.63E-19	N/A	N/A
2	7.86E-37	N/A	N/A
Maximum:			0.0

B.7.222.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)

1	9.85E-19	N/A	N/A
2	5.75E-36	N/A	N/A
Maximum:			0.0

B.7.222.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.32E-18	N/A	N/A
2	8.62E-36	N/A	N/A
Maximum:			0.0

B.7.223. Tellurium – Injection of ¹³¹Te

Maximum difference for **Urine**: 0.0%.

Maximum difference for **Feces**: 0.0%

Maximum difference for **Whole Body**: 0.0%.

B.7.223.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.01E-18	N/A	N/A
2	2.29E-36	N/A	N/A
Maximum:			0.0

B.7.223.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)

1	4.97E-20	N/A	N/A
2	6.00E-37	N/A	N/A
Maximum:			0.0

B.7.223.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.51E-18	N/A	N/A
2	1.31E-35	N/A	N/A
Maximum:			0.0

B.7.224. Tellurium – Inhalation of ^{131m}Te (type “F”)

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: -0.04%.

Maximum difference for **Whole Body**: -0.04%.

B.7.224.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.21E-02	4.21E-02	-0.01
2	1.27E-02	1.27E-02	-0.01
5	3.01E-04	3.01E-04	-0.03
10	7.11E-06	7.11E-06	-0.04
20	1.93E-08	1.93E-08	-0.05
50	4.09E-16	N/A	N/A
100	6.89E-29	N/A	N/A
Maximum:			-0.05

B.7.224.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.63E-02	2.63E-02	0
2	2.09E-02	2.09E-02	0

5	4.94E-04	4.94E-04	-0.02
10	2.26E-06	2.26E-06	-0.03
20	5.07E-09	5.08E-09	-0.04
50	1.08E-16	N/A	N/A
100	1.81E-29	N/A	N/A
Maximum:			-0.04

B.7.224.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.80E-01	2.80E-01	0
2	1.01E-01	1.01E-01	-0.01
5	1.07E-02	1.07E-02	-0.01
10	5.82E-04	5.83E-04	-0.02
20	1.99E-06	1.99E-06	-0.04
50	9.18E-14	N/A	N/A
100	7.24E-26	N/A	N/A
Maximum:			-0.04

B.7.225. Tellurium – Inhalation of ¹³¹MTe (type “M”)

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: -0.05%.

Maximum difference for **Whole Body**: -0.04%.

Maximum difference for **Lungs**: -0.05%.

B.7.225.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.64E-02	1.64E-02	0
2	6.05E-03	6.05E-03	-0.01
5	1.49E-04	1.49E-04	-0.02
10	3.78E-06	3.78E-06	-0.03
20	1.09E-08	1.09E-08	-0.05
50	2.93E-16	N/A	N/A
100	9.53E-29	N/A	N/A
Maximum:			-0.05

B.7.225.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.78E-02	4.78E-02	-0.01
2	3.65E-02	3.65E-02	-0.01
5	6.60E-04	6.60E-04	-0.01
10	2.66E-06	2.66E-06	-0.03
20	6.71E-09	6.72E-09	-0.05
50	1.79E-16	N/A	N/A
100	5.37E-29	N/A	N/A
Maximum:			-0.05

B.7.225.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.84E-01	2.84E-01	0
2	9.44E-02	9.45E-02	-0.01
5	8.42E-03	8.42E-03	-0.02
10	4.57E-04	4.57E-04	-0.02
20	1.58E-06	1.58E-06	-0.04
50	7.31E-14	N/A	N/A
100	5.38E-26	N/A	N/A
Maximum:			-0.04

B.7.225.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.31E-02	3.31E-02	-0.01
2	1.85E-02	1.85E-02	-0.02
5	3.34E-03	3.34E-03	-0.02
10	1.94E-04	1.94E-04	-0.03
20	6.62E-07	6.63E-07	-0.05
50	2.81E-14	N/A	N/A
100	1.67E-26	N/A	N/A
Maximum:			-0.05

B.7.226. Tellurium – Ingestion of ¹³¹MTe (f₁ = 0.3)

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.04%.

Maximum difference for **Whole Body**: -0.03%.

B.7.226.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.31E-02	3.31E-02	0
2	1.24E-02	1.24E-02	-0.01
5	2.83E-04	2.83E-04	-0.02
10	6.29E-06	6.29E-06	-0.03
20	1.70E-08	1.70E-08	-0.04
50	3.61E-16	N/A	N/A
100	6.09E-29	N/A	N/A
Maximum:			-0.04

B.7.226.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.24E-01	1.24E-01	-0.01
2	9.09E-02	9.09E-02	0

5	1.52E-03	1.52E-03	-0.01
10	2.49E-06	2.49E-06	-0.02
20	4.48E-09	4.48E-09	-0.04
50	9.50E-17	N/A	N/A
100	1.60E-29	N/A	N/A
Maximum:			-0.04

B.7.226.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.17E-01	4.17E-01	0
2	1.36E-01	1.36E-01	-0.01
5	9.95E-03	9.95E-03	-0.01
10	5.13E-04	5.14E-04	-0.02
20	1.75E-06	1.75E-06	-0.03
50	8.08E-14	N/A	N/A
100	6.37E-26	N/A	N/A
Maximum:			-0.03

B.7.227. Tellurium – Injection of ¹³¹Te

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.03%.

Maximum difference for **Whole Body**: -0.03%.

B.7.227.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.27E-01	1.27E-01	0
2	3.62E-02	3.62E-02	0
5	8.66E-04	8.66E-04	-0.02
10	2.08E-05	2.08E-05	-0.03
20	5.64E-08	5.65E-08	-0.04
50	1.20E-15	N/A	N/A
100	2.02E-28	N/A	N/A
Maximum:			-0.04

B.7.227.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.25E-03	6.25E-03	0
2	9.49E-03	9.49E-03	0

5	6.69E-04	6.70E-04	-0.01
10	6.25E-06	6.25E-06	-0.02
20	1.49E-08	1.49E-08	-0.03
50	3.15E-16	N/A	N/A
100	5.30E-29	N/A	N/A
Maximum:			-0.03

B.7.227.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.41E-01	4.41E-01	0
2	2.08E-01	2.08E-01	-0.01
5	3.04E-02	3.04E-02	-0.01
10	1.71E-03	1.71E-03	-0.02
20	5.82E-06	5.83E-06	-0.03
50	2.69E-13	N/A	N/A
100	2.12E-25	N/A	N/A
Maximum:			-0.03

B.7.228. Terbium – Injection of ¹⁶⁰Tb

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: -0.01%.

B.7.228.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.202E-02	9.202E-02	0.00
2	9.079E-03	9.076E-03	0.03
5	1.320E-03	1.320E-03	-0.01
10	9.083E-04	9.083E-04	0.00
20	4.431E-04	4.431E-04	0.00
50	8.136E-05	8.135E-05	0.01
100	2.861E-05	2.861E-05	0.00
200	1.049E-05	1.049E-05	0.00
500	5.573E-07	5.573E-07	0.00
1,000	4.181E-09	4.181E-09	-0.01
2,000	2.353E-13	N/A	N/A
5,000	4.195E-26	N/A	N/A
Maximum:			0.03

B.7.228.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.282E-02	2.282E-02	-0.01
2	3.879E-02	3.879E-02	0.00
5	5.058E-03	5.057E-03	0.00
10	1.026E-03	1.026E-03	0.00
20	4.855E-04	4.855E-04	0.00

50	8.535E-05	8.534E-05	0.01
100	2.870E-05	2.870E-05	0.00
200	1.050E-05	1.050E-05	0.00
500	5.574E-07	5.574E-07	0.00
1,000	4.182E-09	4.182E-09	-0.01
2,000	2.354E-13	N/A	N/A
5,000	4.196E-26	N/A	N/A
Maximum:			-0.01

B.7.228.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.756E-01	8.756E-01	0.00
2	8.194E-01	8.194E-01	0.00
5	7.532E-01	7.532E-01	0.00
10	7.050E-01	7.050E-01	0.00
20	6.281E-01	6.281E-01	0.00
50	4.610E-01	4.610E-01	0.00
100	2.820E-01	2.820E-01	0.00
200	1.060E-01	1.060E-01	0.00
500	5.628E-03	5.628E-03	-0.01
1,000	4.222E-05	4.223E-05	-0.01
2,000	2.376E-09	N/A	N/A
5,000	4.236E-22	N/A	N/A
10,000	2.396E-43	N/A	N/A
Maximum:			-0.01

B.7.229. Thallium – Inhalation of ²⁰¹Tl (type “F”)

Maximum difference for **Whole Body**: -0.02%.

B.7.229.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.68E-01	4.68E-01	0
2	3.07E-01	3.07E-01	-0.01
5	1.16E-01	1.16E-01	-0.01

10	2.61E-02	2.61E-02	-0.01
20	1.34E-03	1.34E-03	-0.02
50	1.81E-07	1.81E-07	-0.02
100	6.42E-14	N/A	N/A
200	8.09E-27	N/A	N/A
Maximum:			-0.02

B.7.230. Thallium – Ingestion of ²⁰¹Tl (f₁ = 0.99)

Maximum difference for **Whole Body**: -0.02%.

B.7.230.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.67E-01	7.67E-01	0
2	5.77E-01	5.77E-01	0
5	2.39E-01	2.39E-01	0

10	5.41E-02	5.41E-02	0
20	2.77E-03	2.77E-03	-0.01
50	3.74E-07	3.74E-07	-0.02
100	1.33E-13	N/A	N/A
200	1.67E-26	N/A	N/A
Maximum:			-0.02

B.7.231. Thallium – Injection of ²⁰¹Tl

Maximum difference for **Whole Body**: -0.02%.

B.7.231.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.68E-01	7.68E-01	0
2	5.79E-01	5.79E-01	0
5	2.40E-01	2.40E-01	0

10	5.45E-02	5.45E-02	0
20	2.79E-03	2.79E-03	-0.01
50	3.77E-07	3.77E-07	-0.02
100	1.34E-13	N/A	N/A
200	1.69E-26	N/A	N/A
Maximum:			-0.02

B.7.232. Thallium – Inhalation of ²⁰²Tl (type “F”)

Maximum difference for **Urine**: +0.08%.

Maximum difference for **Feces**: +0.08%.

Maximum difference for **Whole Body**: +0.18%.

B.7.232.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.36E-02	1.36E-02	-0.01
2	1.35E-02	1.35E-02	-0.01
5	9.23E-03	9.23E-03	-0.01
10	4.91E-03	4.91E-03	0
20	1.39E-03	1.39E-03	0.01
50	3.18E-05	3.18E-05	0.03
100	5.85E-08	5.84E-08	0.08
200	1.97E-13	N/A	N/A
500	7.59E-30	N/A	N/A
Maximum:			+0.08

B.7.232.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.96E-03	2.96E-03	-0.01
2	8.61E-03	8.61E-03	-0.01
5	9.94E-03	9.94E-03	-0.01
10	5.46E-03	5.46E-03	-0.01
20	1.55E-03	1.55E-03	0.01
50	3.54E-05	3.53E-05	0.03
100	6.50E-08	6.49E-08	0.08
200	2.19E-13	N/A	N/A
500	8.43E-30	N/A	N/A
Maximum:			+0.08

B.7.232.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.56E-01	5.56E-01	0
2	4.33E-01	4.33E-01	0
5	2.73E-01	2.73E-01	0
10	1.45E-01	1.45E-01	0

20	4.10E-02	4.10E-02	0.01
50	9.36E-04	9.36E-04	0.04
100	1.72E-06	1.72E-06	0.09
200	5.80E-12	5.79E-12	0.18
500	2.23E-28	N/A	N/A
Maximum:			+0.18

B.7.233. Thallium – Ingestion of ²⁰²Tl (f₁ = 0.99)

Maximum difference for **Urine**: +0.08%.

Maximum difference for **Feces**: +0.09%.

Maximum difference for **Whole Body**: +0.18%.

B.7.233.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.75E-02	2.75E-02	-0.01
2	2.79E-02	2.79E-02	-0.01
5	1.91E-02	1.91E-02	0
10	1.02E-02	1.02E-02	0
20	2.88E-03	2.88E-03	0.01
50	6.59E-05	6.58E-05	0.04
100	1.21E-07	1.21E-07	0.08
200	4.08E-13	N/A	N/A
500	1.57E-29	N/A	N/A
Maximum:			+0.08

10	1.13E-02	1.13E-02	0
20	3.21E-03	3.20E-03	0.01
50	7.32E-05	7.31E-05	0.04
100	1.34E-07	1.34E-07	0.09
200	4.54E-13	N/A	N/A
500	1.74E-29	N/A	N/A
Maximum:			+0.09

B.7.233.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.10E-01	9.10E-01	0
2	8.12E-01	8.12E-01	0
5	5.61E-01	5.61E-01	0
10	2.99E-01	2.99E-01	0.01
20	8.48E-02	8.48E-02	0.02
50	1.94E-03	1.94E-03	0.05
100	3.56E-06	3.56E-06	0.09
200	1.20E-11	1.20E-11	0.18
500	4.62E-28	N/A	N/A
Maximum:			+0.18

B.7.233.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.90E-03	7.90E-03	0
2	1.95E-02	1.95E-02	0
5	2.07E-02	2.07E-02	-0.01

B.7.234. Thallium – Injection of ²⁰²Tl

Maximum difference for **Urine**: +0.09%.

Maximum difference for **Feces**: +0.09%.

Maximum difference for **Whole Body**: +0.19%.

B.7.234.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.91E-02	2.91E-02	-0.01
2	2.81E-02	2.81E-02	-0.01
5	1.92E-02	1.92E-02	0
10	1.02E-02	1.02E-02	0.01
20	2.91E-03	2.90E-03	0.01
50	6.63E-05	6.63E-05	0.04
100	1.22E-07	1.22E-07	0.09
200	4.11E-13	N/A	N/A
500	1.58E-29	N/A	N/A
Maximum:			+0.09

B.7.234.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.05E-03	5.05E-03	-0.01
2	1.69E-02	1.69E-02	0
5	2.06E-02	2.06E-02	0
10	1.14E-02	1.14E-02	0
20	3.23E-03	3.23E-03	0.01
50	7.37E-05	7.37E-05	0.04
100	1.35E-07	1.35E-07	0.09
200	4.57E-13	N/A	N/A
500	1.76E-29	N/A	N/A
Maximum:			+0.09

B.7.234.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.11E-01	9.11E-01	0
2	8.16E-01	8.16E-01	0
5	5.65E-01	5.65E-01	0
10	3.01E-01	3.01E-01	0.01

20	8.54E-02	8.54E-02	0.02
50	1.95E-03	1.95E-03	0.04
100	3.58E-06	3.58E-06	0.09
200	1.21E-11	1.21E-11	0.19
500	4.65E-28	N/A	N/A
Maximum:			+0.19

B.7.235. Thallium – Inhalation of ²⁰⁴Tl (type “F”)

Maximum difference for **Urine**: +0.09%.

Maximum difference for **Feces**: +0.09%.

Maximum difference for **Whole Body**: +0.1%

B.7.235.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.44E-02	1.44E-02	-0.01
2	1.51E-02	1.51E-02	-0.02
5	1.22E-02	1.22E-02	-0.01
10	8.62E-03	8.62E-03	-0.01
20	4.29E-03	4.29E-03	0
50	5.28E-04	5.28E-04	0.01
100	1.61E-05	1.61E-05	0.04
200	1.49E-08	1.49E-08	0.09
500	1.20E-17	N/A	N/A
1,000	8.26E-33	N/A	N/A
Maximum:			+0.09

20	4.76E-03	4.76E-03	0
50	5.87E-04	5.86E-04	0.01
100	1.79E-05	1.79E-05	0.04
200	1.66E-08	1.66E-08	0.09
500	1.33E-17	N/A	N/A
1,000	9.18E-33	N/A	N/A
Maximum:			+0.09

B.7.235.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.88E-01	5.88E-01	0
2	4.84E-01	4.84E-01	0
5	3.61E-01	3.61E-01	0
10	2.54E-01	2.54E-01	0
20	1.26E-01	1.26E-01	0
50	1.55E-02	1.55E-02	0.02
100	4.73E-04	4.73E-04	0.04
200	4.39E-07	4.39E-07	0.1
500	3.52E-16	N/A	N/A
1,000	2.43E-31	N/A	N/A
Maximum:			+0.1

B.7.235.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.14E-03	3.14E-03	-0.01
2	9.63E-03	9.63E-03	-0.01
5	1.32E-02	1.32E-02	-0.01
10	9.57E-03	9.57E-03	-0.01

B.7.236. Thallium – Ingestion of ²⁰⁴Tl (f₁ = 0.99)

Maximum difference for **Urine**: +0.09%.

Maximum difference for **Feces**: +0.09%.

Maximum difference for **Whole Body**: +0.1%

B.7.236.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.91E-02	2.91E-02	-0.01
2	3.12E-02	3.12E-02	-0.01
5	2.53E-02	2.53E-02	-0.01
10	1.78E-02	1.78E-02	0
20	8.87E-03	8.87E-03	0
50	1.09E-03	1.09E-03	0.02
100	3.33E-05	3.33E-05	0.04

200	3.09E-08	3.09E-08	0.09
500	2.48E-17	N/A	N/A
1,000	1.71E-32	N/A	N/A
Maximum:			+0.09

B.7.236.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.36E-03	8.36E-03	0
2	2.18E-02	2.18E-02	-0.01
5	2.74E-02	2.74E-02	0

10	1.98E-02	1.98E-02	-0.01
20	9.86E-03	9.86E-03	0
50	1.21E-03	1.21E-03	0.02
100	3.70E-05	3.70E-05	0.04
200	3.44E-08	3.43E-08	0.09
500	2.75E-17	N/A	N/A
1,000	1.90E-32	N/A	N/A
Maximum:			+0.09

B.7.236.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
-------------	------	----------	-------------------

1	9.62E-01	9.62E-01	0
2	9.09E-01	9.09E-01	0
5	7.43E-01	7.43E-01	0
10	5.25E-01	5.24E-01	0
20	2.61E-01	2.61E-01	0.01
50	3.21E-02	3.21E-02	0.02
100	9.79E-04	9.79E-04	0.05
200	9.09E-07	9.08E-07	0.1
500	7.28E-16	N/A	N/A
1,000	5.03E-31	N/A	N/A
Maximum:			+0.1

B.7.237. Thallium – Injection of ²⁰⁴Tl

Maximum difference for **Urine**: +0.1%

Maximum difference for **Feces**: +0.09%.

Maximum difference for **Whole Body**: +0.1%

B.7.237.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.08E-02	3.08E-02	-0.01
2	3.14E-02	3.14E-02	-0.01
5	2.55E-02	2.55E-02	-0.01
10	1.80E-02	1.80E-02	0
20	8.93E-03	8.93E-03	0
50	1.10E-03	1.10E-03	0.02
100	3.35E-05	3.35E-05	0.04
200	3.11E-08	3.11E-08	0.1
500	2.49E-17	N/A	N/A
1,000	1.72E-32	N/A	N/A
Maximum:			+0.1

B.7.237.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.35E-03	5.35E-03	-0.01
2	1.89E-02	1.89E-02	-0.01
5	2.73E-02	2.73E-02	-0.01
10	2.00E-02	2.00E-02	0

20	9.93E-03	9.93E-03	0
50	1.22E-03	1.22E-03	0.01
100	3.72E-05	3.72E-05	0.04
200	3.46E-08	3.46E-08	0.09
500	2.77E-17	N/A	N/A
1,000	1.91E-32	N/A	N/A
Maximum:			+0.09

B.7.237.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.63E-01	9.63E-01	0
2	9.13E-01	9.13E-01	0
5	7.48E-01	7.48E-01	0
10	5.28E-01	5.28E-01	0
20	2.63E-01	2.63E-01	0.01
50	3.24E-02	3.24E-02	0.02
100	9.86E-04	9.86E-04	0.05
200	9.16E-07	9.15E-07	0.1
500	7.33E-16	N/A	N/A
1,000	5.07E-31	N/A	N/A
Maximum:			+0.1

B.7.238. Thorium – Inhalation of ²²⁸Th (type “M”)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.28%

Maximum difference for **Whole Body**: -0.06%.

Maximum difference for **Lungs**: -0.02%

B.7.238.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.067E-03	1.066E-03	0.00

2	2.279E-04	2.279E-04	0.01
5	9.633E-05	9.632E-05	0.01
10	5.726E-05	5.726E-05	0.00
20	3.735E-05	3.735E-05	0.00
50	1.934E-05	1.934E-05	0.00
100	1.029E-05	1.029E-05	0.00

200	5.210E-06	5.210E-06	0.00
500	1.482E-06	1.482E-06	-0.02
1,000	5.640E-07	5.639E-07	0.03
2,000	1.668E-07	1.669E-07	-0.01
5,000	5.824E-09	5.823E-09	0.02
10,000	2.988E-11	2.989E-11	-0.06
20,000	1.129E-15	N/A	N/A
Maximum:			-0.06

B.7.238.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.082E-01	1.082E-01	-0.01
2	1.544E-01	1.544E-01	-0.01
5	1.323E-02	1.323E-02	0.00
10	5.673E-04	5.674E-04	-0.01
20	3.576E-04	3.576E-04	-0.02
50	1.563E-04	1.563E-04	-0.01
100	4.722E-05	4.722E-05	-0.01
200	1.032E-05	1.032E-05	-0.02
500	1.447E-06	1.447E-06	0.01
1,000	2.225E-07	2.224E-07	0.07
2,000	3.933E-08	3.941E-08	-0.20
5,000	1.181E-09	1.178E-09	0.20
10,000	5.891E-12	5.908E-12	-0.28
20,000	2.215E-16	N/A	N/A
Maximum:			-0.28

B.7.238.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.958E-01	4.957E-01	0.00

2	2.620E-01	2.621E-01	-0.02
5	9.190E-02	9.189E-02	0.01
10	7.885E-02	7.882E-02	0.03
20	7.344E-02	7.347E-02	-0.04
50	6.347E-02	6.349E-02	-0.04
100	5.548E-02	5.547E-02	0.02
200	4.748E-02	4.747E-02	0.02
500	3.353E-02	3.354E-02	-0.03
1,000	1.986E-02	1.987E-02	-0.04
2,000	7.125E-03	7.125E-03	-0.01
5,000	3.374E-04	3.375E-04	-0.02
10,000	2.153E-06	2.154E-06	-0.06
20,000	9.014E-11	N/A	N/A
Maximum:			-0.06

B.7.238.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.757E-02	5.758E-02	-0.01
2	5.583E-02	5.583E-02	-0.01
5	5.310E-02	5.311E-02	-0.01
10	4.917E-02	4.917E-02	-0.01
20	4.256E-02	4.256E-02	-0.01
50	2.943E-02	2.943E-02	-0.01
100	1.832E-02	1.832E-02	-0.02
200	8.656E-03	8.657E-03	-0.01
500	1.108E-03	1.108E-03	-0.02
1,000	3.769E-05	3.769E-05	-0.02
2,000	4.993E-08	4.994E-08	-0.02
5,000	3.265E-16	N/A	N/A
10,000	2.057E-29	N/A	N/A
Maximum:			-0.02

B.7.239. Thorium – Inhalation of ²²⁸Th (type “S”)

Maximum difference for **Urine**: -0.03%.

Maximum difference for **Feces**: -0.06%.

Maximum difference for **Whole Body**: -0.06%.

Maximum difference for **Lungs**: -0.04%.

B.7.239.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.344E-05	1.344E-05	0.00
2	3.306E-06	3.306E-06	0.01
5	1.401E-06	1.401E-06	0.01
10	9.147E-07	9.146E-07	0.00
20	6.755E-07	6.755E-07	0.00
50	4.543E-07	4.543E-07	0.00
100	3.307E-07	3.307E-07	0.00
200	2.561E-07	2.561E-07	0.00
500	1.602E-07	1.602E-07	-0.01
1,000	7.812E-08	7.812E-08	0.00
2,000	2.126E-08	2.126E-08	0.00
5,000	7.253E-10	7.253E-10	-0.01
10,000	3.783E-12	3.784E-12	-0.03
20,000	1.354E-16	N/A	N/A
Maximum:			-0.03

B.7.239.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.140E-01	1.140E-01	-0.01
2	1.628E-01	1.628E-01	-0.01
5	1.399E-02	1.399E-02	0.00
10	6.416E-04	6.417E-04	-0.01
20	4.307E-04	4.307E-04	-0.01
50	2.170E-04	2.170E-04	-0.01
100	8.222E-05	8.223E-05	-0.01
200	2.712E-05	2.713E-05	-0.02
500	1.156E-05	1.156E-05	-0.01
1,000	4.119E-06	4.119E-06	-0.01
2,000	5.382E-07	5.383E-07	-0.02
5,000	2.297E-09	2.297E-09	-0.02
10,000	3.653E-12	3.655E-12	-0.06
20,000	4.217E-17	N/A	N/A
Maximum:			-0.06

B.7.239.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.910E-01	4.910E-01	0.00
2	2.492E-01	2.492E-01	-0.01
5	7.231E-02	7.232E-02	-0.01
10	5.892E-02	5.893E-02	-0.01
20	5.348E-02	5.348E-02	-0.01
50	4.284E-02	4.285E-02	-0.02
100	3.420E-02	3.420E-02	-0.01
200	2.667E-02	2.668E-02	-0.01
500	1.547E-02	1.547E-02	-0.02
1,000	6.652E-03	6.653E-03	-0.02
2,000	1.497E-03	1.497E-03	-0.02
5,000	4.614E-05	4.615E-05	-0.02
10,000	2.645E-07	2.647E-07	-0.06
20,000	1.050E-11	N/A	N/A
Maximum:			-0.06

B.7.239.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.422E-02	6.422E-02	-0.01
2	6.257E-02	6.258E-02	-0.01
5	6.040E-02	6.041E-02	-0.01
10	5.731E-02	5.732E-02	-0.01
20	5.210E-02	5.211E-02	-0.01
50	4.173E-02	4.173E-02	-0.01
100	3.319E-02	3.320E-02	-0.01
200	2.560E-02	2.560E-02	-0.02
500	1.425E-02	1.425E-02	-0.02
1,000	5.617E-03	5.618E-03	-0.02
2,000	9.995E-04	9.997E-04	-0.02
5,000	1.583E-05	1.583E-05	-0.02
10,000	4.356E-08	4.357E-08	-0.04
Maximum:			-0.04

B.7.240. Thorium – Ingestion of ²²⁸Th (f₁ = 0.0005)

Maximum difference for **Urine**: +0.05%.

Maximum difference for **Feces**: +0.20%.

Maximum difference for **Whole Body**: +0.11%.

B.7.240.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.677E-05	1.676E-05	0.00
2	5.179E-06	5.178E-06	0.01
5	1.492E-06	1.491E-06	0.02
10	7.344E-07	7.342E-07	0.01
20	3.648E-07	3.648E-07	0.01
50	9.319E-08	9.317E-08	0.02
100	1.750E-08	1.749E-08	0.00
200	1.025E-08	1.024E-08	0.03
500	7.962E-09	7.963E-09	-0.01
1,000	4.363E-09	4.361E-09	0.05
2,000	1.334E-09	1.334E-09	-0.01
5,000	4.691E-11	4.689E-11	0.03
10,000	2.417E-13	N/A	N/A
20,000	9.151E-18	N/A	N/A
Maximum:			0.05

B.7.240.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.820E-01	2.820E-01	0.00
2	3.881E-01	3.881E-01	0.00
5	3.124E-02	3.124E-02	0.00
10	2.174E-04	2.174E-04	0.00
20	2.280E-08	2.280E-08	0.02

50	1.090E-08	1.089E-08	0.02
100	9.665E-09	9.668E-09	-0.04
200	7.635E-09	7.638E-09	-0.05
500	3.895E-09	3.891E-09	0.10
1,000	1.444E-09	1.442E-09	0.08
2,000	3.078E-10	3.084E-10	-0.20
5,000	9.500E-12	9.481E-12	0.20
10,000	4.765E-14	N/A	N/A
20,000	1.795E-18	N/A	N/A
Maximum:			0.20

B.7.240.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.170E-01	7.170E-01	0.00
2	3.282E-01	3.282E-01	0.00
5	1.911E-02	1.911E-02	0.00
10	5.876E-04	5.870E-04	0.11
20	4.505E-04	4.508E-04	-0.07
50	4.314E-04	4.316E-04	-0.06
100	4.086E-04	4.082E-04	0.07
200	3.679E-04	3.678E-04	0.04
500	2.692E-04	2.692E-04	-0.02
1,000	1.607E-04	1.607E-04	-0.02
2,000	5.770E-05	5.769E-05	0.01
5,000	2.734E-06	2.735E-06	-0.01
10,000	1.745E-08	1.746E-08	-0.05
Maximum:			0.11

B.7.241. Thorium – Ingestion of ²²⁸Th (f₁ = 0.0002)

Maximum difference for **Urine**: +0.05%.

Maximum difference for **Feces**: -0.22%.

Maximum difference for **Whole Body**: +0.08%.

B.7.241.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.706E-06	6.706E-06	0.01
2	2.072E-06	2.072E-06	0.01
5	5.966E-07	5.965E-07	0.02
10	2.937E-07	2.937E-07	0.01
20	1.459E-07	1.459E-07	0.01
50	3.728E-08	3.727E-08	0.02
100	6.998E-09	6.998E-09	0.00
200	4.099E-09	4.098E-09	0.03
500	3.185E-09	3.185E-09	-0.01
1,000	1.745E-09	1.744E-09	0.05
2,000	5.336E-10	5.337E-10	-0.01
5,000	1.876E-11	1.876E-11	0.03
10,000	9.668E-14	N/A	N/A
20,000	3.660E-18	N/A	N/A
Maximum:			0.05

B.7.241.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.820E-01	2.820E-01	0.00
2	3.882E-01	3.882E-01	0.00
5	3.125E-02	3.125E-02	0.00
10	2.174E-04	2.174E-04	0.00
20	1.499E-08	1.499E-08	0.00

50	4.358E-09	4.359E-09	-0.02
100	3.866E-09	3.868E-09	-0.06
200	3.054E-09	3.056E-09	-0.07
500	1.558E-09	1.557E-09	0.08
1,000	5.774E-10	5.771E-10	0.05
2,000	1.231E-10	1.234E-10	-0.22
5,000	3.800E-12	3.793E-12	0.18
10,000	1.906E-14	N/A	N/A
20,000	7.180E-19	N/A	N/A
Maximum:			-0.22

B.7.241.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.170E-01	7.170E-01	0.00
2	3.280E-01	3.280E-01	0.00
5	1.884E-02	1.884E-02	0.00
10	3.110E-04	3.108E-04	0.08
20	1.802E-04	1.803E-04	-0.07
50	1.726E-04	1.726E-04	-0.06
100	1.634E-04	1.633E-04	0.07
200	1.472E-04	1.471E-04	0.03
500	1.077E-04	1.077E-04	-0.03
1,000	6.426E-05	6.427E-05	-0.02
2,000	2.308E-05	2.308E-05	0.01
5,000	1.094E-06	1.094E-06	-0.01
10,000	6.981E-09	N/A	N/A
Maximum:			0.08

B.7.242. Thorium – Injection of ²²⁸Th

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: -0.27%.

Maximum difference for **Whole Body**: -0.18%.

B.7.242.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.753E-02	3.752E-02	0.00
2	7.544E-03	7.543E-03	0.02
5	2.871E-03	2.871E-03	0.02
10	1.437E-03	1.437E-03	0.01
20	7.219E-04	7.219E-04	0.01
50	1.848E-04	1.847E-04	0.02
100	3.485E-05	3.485E-05	0.00
200	2.050E-05	2.049E-05	0.03
500	1.592E-05	1.593E-05	-0.02
1,000	8.725E-06	8.721E-06	0.05
2,000	2.668E-06	2.668E-06	-0.01
5,000	9.381E-08	9.378E-08	0.03
10,000	4.834E-10	4.837E-10	-0.06

20,000	1.830E-14	N/A	N/A
Maximum:			-0.06

B.7.242.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.154E-04	8.153E-04	0.00
2	1.481E-03	1.481E-03	0.01
5	3.663E-04	3.663E-04	0.01
10	7.792E-05	7.790E-05	0.02
20	2.588E-05	2.587E-05	0.03
50	2.179E-05	2.178E-05	0.01
100	1.932E-05	1.933E-05	-0.04
200	1.527E-05	1.527E-05	-0.05
500	7.788E-06	7.780E-06	0.10
1,000	2.887E-06	2.884E-06	0.08
2,000	6.155E-07	6.167E-07	-0.20

5,000	1.900E-08	1.896E-08	0.20
10,000	9.530E-11	9.556E-11	-0.27
20,000	3.590E-15	N/A	N/A
Maximum:			-0.27

B.7.242.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.613E-01	9.607E-01	0.07
2	9.490E-01	9.507E-01	-0.18
5	9.359E-01	9.352E-01	0.08

10	9.218E-01	9.205E-01	0.13
20	9.008E-01	9.015E-01	-0.08
50	8.627E-01	8.632E-01	-0.05
100	8.171E-01	8.165E-01	0.07
200	7.358E-01	7.355E-01	0.03
500	5.384E-01	5.385E-01	-0.03
1,000	3.213E-01	3.214E-01	-0.02
2,000	1.154E-01	1.154E-01	0.00
5,000	5.469E-03	5.469E-03	-0.01
10,000	3.490E-05	3.492E-05	-0.05
Maximum:			-0.18

B.7.243. Thorium – Inhalation of ²³²Th (type “M”)

Maximum difference for **Urine**: **+0.05%**.

Maximum difference for **Feces**: **-0.26%**.

Maximum difference for **Whole Body**: **-0.04%**.

Maximum difference for **Lungs**: **-0.01%**.

B.7.243.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.068E-03	1.068E-03	0.00
2	2.283E-04	2.283E-04	0.01
5	9.681E-05	9.680E-05	0.01
10	5.783E-05	5.783E-05	0.00
20	3.810E-05	3.810E-05	0.00
50	2.033E-05	2.032E-05	0.00
100	1.136E-05	1.136E-05	0.00
200	6.354E-06	6.354E-06	0.00
500	2.434E-06	2.435E-06	-0.01
1,000	1.522E-06	1.521E-06	0.03
2,000	1.215E-06	1.215E-06	-0.01
5,000	8.330E-07	8.328E-07	0.03
10,000	6.113E-07	6.115E-07	-0.04
20,000	4.726E-07	4.724E-07	0.05
Maximum:			0.05

B.7.243.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.962E-01	4.962E-01	0.00
2	2.625E-01	2.626E-01	-0.02
5	9.236E-02	9.235E-02	0.01
10	7.964E-02	7.961E-02	0.03
20	7.492E-02	7.494E-02	-0.04
50	6.670E-02	6.672E-02	-0.04
100	6.127E-02	6.126E-02	0.02
200	5.791E-02	5.790E-02	0.02
500	5.508E-02	5.509E-02	-0.03
1,000	5.359E-02	5.361E-02	-0.03
2,000	5.187E-02	5.187E-02	0.00
5,000	4.826E-02	4.827E-02	-0.01
10,000	4.404E-02	4.406E-02	-0.04
20,000	3.773E-02	3.772E-02	0.03
Maximum:			-0.04

B.7.243.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.083E-01	1.083E-01	-0.01
2	1.547E-01	1.547E-01	0.00
5	1.329E-02	1.329E-02	0.00
10	5.730E-04	5.731E-04	-0.01
20	3.648E-04	3.648E-04	-0.02
50	1.642E-04	1.643E-04	-0.02
100	5.214E-05	5.215E-05	-0.01
200	1.259E-05	1.259E-05	-0.02
500	2.377E-06	2.377E-06	0.01
1,000	6.004E-07	6.000E-07	0.07
2,000	2.864E-07	2.869E-07	-0.20
5,000	1.689E-07	1.685E-07	0.21
10,000	1.205E-07	1.208E-07	-0.26
20,000	9.270E-08	9.248E-08	0.25
Maximum:			-0.26

B.7.243.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.763E-02	5.763E-02	-0.01
2	5.594E-02	5.594E-02	-0.01
5	5.336E-02	5.337E-02	-0.01
10	4.966E-02	4.966E-02	-0.01
20	4.341E-02	4.342E-02	-0.01
50	3.092E-02	3.093E-02	-0.01
100	2.023E-02	2.024E-02	-0.01
200	1.056E-02	1.056E-02	-0.01
500	1.820E-03	1.820E-03	-0.01
1,000	1.017E-04	1.017E-04	-0.01
2,000	3.636E-07	3.636E-07	-0.01
5,000	4.670E-14	N/A	N/A
10,000	4.209E-25	N/A	N/A
Maximum:			-0.01

B.7.244. Thorium – Inhalation of ²³²Th (type “S”)

Maximum difference for **Urine**: -0.01%.

Maximum difference for **Feces**: +0.08%.

Maximum difference for **Whole Body**: -0.03%.

Maximum difference for **Lungs**: -0.02%.

B.7.244.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.345E-05	1.345E-05	0.00
2	3.313E-06	3.312E-06	0.01
5	1.408E-06	1.408E-06	0.01
10	9.238E-07	9.238E-07	0.00
20	6.891E-07	6.891E-07	0.00
50	4.775E-07	4.774E-07	0.00
100	3.652E-07	3.652E-07	0.00
200	3.124E-07	3.124E-07	0.00
500	2.631E-07	2.632E-07	-0.01
1,000	2.108E-07	2.108E-07	0.00
2,000	1.548E-07	1.547E-07	0.00
5,000	1.037E-07	1.037E-07	0.00
10,000	7.739E-08	7.740E-08	-0.01
20,000	5.666E-08	5.665E-08	0.01
Maximum:			-0.01

B.7.244.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.141E-01	1.141E-01	-0.01
2	1.631E-01	1.631E-01	0.00
5	1.406E-02	1.406E-02	0.00
10	6.480E-04	6.481E-04	-0.01
20	4.393E-04	4.394E-04	-0.02
50	2.280E-04	2.281E-04	-0.02
100	9.080E-05	9.081E-05	-0.01
200	3.308E-05	3.308E-05	-0.01
500	1.898E-05	1.899E-05	-0.01
1,000	1.111E-05	1.111E-05	-0.02
2,000	3.919E-06	3.919E-06	-0.01
5,000	3.286E-07	3.286E-07	-0.01
10,000	7.473E-08	7.476E-08	-0.04
20,000	1.765E-08	1.764E-08	0.08
Maximum:			0.08

B.7.244.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.915E-01	4.915E-01	0.00
2	2.497E-01	2.497E-01	0.00
5	7.267E-02	7.268E-02	-0.01
10	5.951E-02	5.952E-02	-0.01
20	5.455E-02	5.456E-02	-0.01
50	4.502E-02	4.503E-02	-0.01
100	3.777E-02	3.777E-02	-0.01
200	3.253E-02	3.253E-02	-0.01
500	2.541E-02	2.541E-02	-0.01
1,000	1.795E-02	1.795E-02	-0.02
2,000	1.090E-02	1.090E-02	-0.01
5,000	6.600E-03	6.600E-03	-0.01
10,000	5.412E-03	5.414E-03	-0.03
20,000	4.394E-03	4.393E-03	0.01
Maximum:			-0.03

B.7.244.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.428E-02	6.429E-02	-0.01
2	6.270E-02	6.271E-02	-0.01
5	6.070E-02	6.071E-02	-0.01
10	5.789E-02	5.789E-02	-0.01
20	5.314E-02	5.315E-02	-0.01
50	4.385E-02	4.386E-02	-0.01
100	3.666E-02	3.666E-02	-0.01
200	3.122E-02	3.123E-02	-0.01
500	2.341E-02	2.341E-02	-0.02
1,000	1.516E-02	1.516E-02	-0.02
2,000	7.277E-03	7.278E-03	-0.01
5,000	2.264E-03	2.264E-03	-0.02
10,000	8.911E-04	8.913E-04	-0.02
Maximum:			-0.02

B.7.245. Thorium – Ingestion of ²³²Th (f₁ = 0.0005)

Maximum difference for **Urine**: +0.06%.

Maximum difference for **Feces**: +0.26%.

Maximum difference for **Whole Body**: +0.11%.

B.7.245.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.678E-05	1.678E-05	0.00
2	5.189E-06	5.189E-06	0.02

5	1.499E-06	1.499E-06	0.02
10	7.417E-07	7.416E-07	0.01
20	3.721E-07	3.721E-07	0.01
50	9.793E-08	9.791E-08	0.02
100	1.932E-08	1.932E-08	0.00
200	1.250E-08	1.249E-08	0.03
500	1.308E-08	1.308E-08	-0.02

1,000	1.177E-08	1.177E-08	0.05
2,000	9.713E-09	9.714E-09	-0.01
5,000	6.710E-09	6.707E-09	0.04
10,000	4.945E-09	4.947E-09	-0.03
20,000	3.831E-09	3.828E-09	0.06
Maximum:			0.06

B.7.245.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.823E-01	2.823E-01	0.00
2	3.889E-01	3.889E-01	0.00
5	3.140E-02	3.140E-02	0.00
10	2.196E-04	2.195E-04	0.00
20	2.326E-08	2.326E-08	0.02
50	1.145E-08	1.145E-08	0.01
100	1.067E-08	1.068E-08	-0.03
200	9.311E-09	9.316E-09	-0.05
500	6.398E-09	6.391E-09	0.10
1,000	3.895E-09	3.892E-09	0.08
2,000	2.241E-09	2.245E-09	-0.20
5,000	1.359E-09	1.356E-09	0.21

10,000	9.749E-10	9.773E-10	-0.25
20,000	7.514E-10	7.494E-10	0.26
Maximum:			0.26

B.7.245.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.177E-01	7.177E-01	0.00
2	3.288E-01	3.288E-01	0.00
5	1.921E-02	1.920E-02	0.00
10	5.935E-04	5.928E-04	0.11
20	4.595E-04	4.599E-04	-0.07
50	4.533E-04	4.536E-04	-0.06
100	4.512E-04	4.508E-04	0.08
200	4.487E-04	4.485E-04	0.03
500	4.422E-04	4.423E-04	-0.03
1,000	4.335E-04	4.336E-04	-0.02
2,000	4.201E-04	4.200E-04	0.01
5,000	3.911E-04	3.911E-04	0.00
10,000	3.571E-04	3.572E-04	-0.03
Maximum:			0.11

B.7.246. Thorium – Ingestion of ²³²Th (f₁ = 0.0002)

Maximum difference for **Urine**: +0.06%.

Maximum difference for **Feces**: -0.27%.

Maximum difference for **Whole Body**: +0.08%.

B.7.246.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.713E-06	6.712E-06	0.01
2	2.076E-06	2.076E-06	0.01
5	5.996E-07	5.995E-07	0.02
10	2.967E-07	2.966E-07	0.01
20	1.488E-07	1.488E-07	0.00
50	3.917E-08	3.916E-08	0.02
100	7.728E-09	7.728E-09	0.00
200	5.000E-09	4.998E-09	0.04
500	5.232E-09	5.232E-09	-0.01
1,000	4.709E-09	4.707E-09	0.05
2,000	3.885E-09	3.885E-09	0.00
5,000	2.684E-09	2.683E-09	0.04
10,000	1.978E-09	1.979E-09	-0.03
20,000	1.532E-09	1.531E-09	0.06
Maximum:			0.06

B.7.246.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.823E-01	2.823E-01	0.00
2	3.890E-01	3.890E-01	0.00
5	3.141E-02	3.141E-02	0.00
10	2.196E-04	2.196E-04	0.00
20	1.529E-08	1.529E-08	0.00

50	4.580E-09	4.581E-09	-0.01
100	4.269E-09	4.272E-09	-0.06
200	3.725E-09	3.727E-09	-0.07
500	2.559E-09	2.557E-09	0.08
1,000	1.558E-09	1.557E-09	0.05
2,000	8.963E-10	8.982E-10	-0.21
5,000	5.435E-10	5.425E-10	0.19
10,000	3.900E-10	3.910E-10	-0.27
20,000	3.005E-10	2.998E-10	0.23
Maximum:			-0.27

B.7.246.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.177E-01	7.177E-01	0.00
2	3.287E-01	3.287E-01	0.00
5	1.893E-02	1.893E-02	0.00
10	3.141E-04	3.139E-04	0.08
20	1.838E-04	1.840E-04	-0.07
50	1.813E-04	1.814E-04	-0.06
100	1.805E-04	1.803E-04	0.08
200	1.795E-04	1.794E-04	0.04
500	1.769E-04	1.769E-04	-0.02
1,000	1.734E-04	1.734E-04	-0.02
2,000	1.680E-04	1.680E-04	0.01
5,000	1.564E-04	1.564E-04	0.00
10,000	1.428E-04	1.429E-04	-0.03
Maximum:			0.08

B.7.247. Thorium – Injection of ²³²Th

Maximum difference for **Urine**: +0.06%.

Maximum difference for **Feces**: +0.25%.

Maximum difference for **Whole Body**: -0.18%.

B.7.247.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.756E-02	3.756E-02	0.01
2	7.559E-03	7.558E-03	0.02
5	2.886E-03	2.885E-03	0.02
10	1.451E-03	1.451E-03	0.01
20	7.364E-04	7.363E-04	0.01
50	1.942E-04	1.941E-04	0.02
100	3.848E-05	3.848E-05	0.00
200	2.500E-05	2.499E-05	0.03
500	2.616E-05	2.616E-05	-0.01
1,000	2.354E-05	2.353E-05	0.05
2,000	1.943E-05	1.943E-05	0.00
5,000	1.342E-05	1.341E-05	0.04
10,000	9.890E-06	9.893E-06	-0.03
20,000	7.661E-06	7.656E-06	0.06
Maximum:			0.06

B.7.247.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.162E-04	8.161E-04	0.00
2	1.484E-03	1.484E-03	0.01
5	3.682E-04	3.681E-04	0.01
10	7.869E-05	7.868E-05	0.02
20	2.640E-05	2.639E-05	0.03

50	2.289E-05	2.289E-05	0.01
100	2.134E-05	2.135E-05	-0.04
200	1.862E-05	1.863E-05	-0.05
500	1.279E-05	1.278E-05	0.10
1,000	7.789E-06	7.783E-06	0.08
2,000	4.481E-06	4.490E-06	-0.19
5,000	2.718E-06	2.712E-06	0.21
10,000	1.950E-06	1.955E-06	-0.25
20,000	1.503E-06	1.499E-06	0.25
Maximum:			0.25

B.7.247.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.623E-01	9.616E-01	0.07
2	9.508E-01	9.526E-01	-0.18
5	9.406E-01	9.399E-01	0.08
10	9.309E-01	9.297E-01	0.13
20	9.189E-01	9.196E-01	-0.08
50	9.066E-01	9.071E-01	-0.05
100	9.024E-01	9.017E-01	0.07
200	8.973E-01	8.970E-01	0.04
500	8.843E-01	8.845E-01	-0.02
1,000	8.670E-01	8.671E-01	-0.02
2,000	8.402E-01	8.401E-01	0.01
5,000	7.822E-01	7.822E-01	0.00
10,000	7.141E-01	7.143E-01	-0.03
Maximum:			-0.18

B.7.248. Thorium – Inhalation of ²³⁴Th (type “M”)

Maximum difference for **Urine**: -0.08%.

Maximum difference for **Feces**: -0.05%.

Maximum difference for **Whole Body**: -0.09%.

Maximum difference for **Lungs**: -0.08%.

B.7.248.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.04E-03	1.04E-03	-0.01
2	2.16E-04	2.16E-04	0.01
5	8.38E-05	8.38E-05	0.01
10	4.34E-05	4.34E-05	0
20	2.14E-05	2.14E-05	0
50	4.83E-06	4.83E-06	-0.01
100	6.40E-07	6.41E-07	-0.02
200	2.02E-08	2.02E-08	-0.02
500	1.38E-12	1.39E-12	-0.08
1,000	4.92E-19	N/A	N/A
2,000	1.27E-31	N/A	N/A
Maximum:			-0.08

B.7.248.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.05E-01	1.05E-01	-0.01
2	1.46E-01	1.46E-01	-0.01
5	1.15E-02	1.15E-02	0
10	4.30E-04	4.30E-04	-0.01
20	2.05E-04	2.05E-04	-0.02
50	3.90E-05	3.90E-05	-0.02
100	2.94E-06	2.94E-06	-0.03
200	4.00E-08	4.00E-08	-0.04
500	1.35E-12	1.35E-12	-0.05
1,000	1.94E-19	N/A	N/A
2,000	2.99E-32	N/A	N/A
Maximum:			-0.05

B.7.248.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.82E-01	4.82E-01	0
2	2.48E-01	2.48E-01	-0.02
5	8.00E-02	8.00E-02	0.01
10	5.97E-02	5.97E-02	0.03
20	4.22E-02	4.22E-02	-0.04
50	1.58E-02	1.58E-02	-0.05
100	3.45E-03	3.45E-03	0.01
200	1.84E-04	1.84E-04	0
500	3.13E-08	3.13E-08	-0.09
1,000	1.73E-14	N/A	N/A
2,000	5.41E-27	N/A	N/A
Maximum:			-0.09

B.7.248.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.60E-02	5.60E-02	-0.01
2	5.28E-02	5.28E-02	-0.01
5	4.62E-02	4.62E-02	-0.01
10	3.73E-02	3.73E-02	-0.01
20	2.44E-02	2.44E-02	-0.02
50	7.34E-03	7.34E-03	-0.02
100	1.14E-03	1.14E-03	-0.03
200	3.35E-05	3.35E-05	-0.04
500	1.03E-09	1.04E-09	-0.08
1,000	3.28E-17	N/A	N/A
2,000	3.79E-32	N/A	N/A
Maximum:			-0.08

B.7.249. Thorium – Inhalation of ²³⁴Th (type “S”)

Maximum difference for **Urine**: -0.03%.

Maximum difference for **Feces**: -0.08%.

Maximum difference for **Whole Body**: -0.08%.

Maximum difference for **Lungs**: -0.08%.

B.7.249.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.31E-05	1.31E-05	0
2	3.13E-06	3.13E-06	0.01
5	1.22E-06	1.22E-06	0
10	6.93E-07	6.93E-07	0
20	3.88E-07	3.88E-07	0
50	1.13E-07	1.13E-07	-0.01
100	2.06E-08	2.06E-08	-0.02
200	9.92E-10	9.92E-10	-0.03
500	1.50E-13	N/A	N/A
1,000	6.81E-20	N/A	N/A
2,000	1.61E-32	N/A	N/A
Maximum:			-0.03

B.7.249.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.78E-01	4.78E-01	0
2	2.36E-01	2.36E-01	-0.01
5	6.29E-02	6.29E-02	-0.01
10	4.46E-02	4.46E-02	-0.01
20	3.07E-02	3.07E-02	-0.02
50	1.07E-02	1.07E-02	-0.02
100	2.13E-03	2.13E-03	-0.03
200	1.03E-04	1.03E-04	-0.04
500	1.44E-08	1.45E-08	-0.08
1,000	5.80E-15	N/A	N/A
2,000	1.14E-27	N/A	N/A
Maximum:			-0.08

B.7.249.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.11E-01	1.11E-01	-0.01
2	1.54E-01	1.54E-01	0
5	1.22E-02	1.22E-02	0
10	4.86E-04	4.86E-04	-0.01
20	2.47E-04	2.47E-04	-0.02
50	5.41E-05	5.42E-05	-0.02
100	5.12E-06	5.12E-06	-0.03
200	1.05E-07	1.05E-07	-0.04
500	1.08E-11	1.08E-11	-0.08
1,000	3.59E-18	N/A	N/A
2,000	4.09E-31	N/A	N/A
Maximum:			-0.08

B.7.249.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.25E-02	6.25E-02	-0.01
2	5.92E-02	5.92E-02	-0.01
5	5.26E-02	5.26E-02	-0.01
10	4.34E-02	4.34E-02	-0.01
20	2.99E-02	2.99E-02	-0.02
50	1.04E-02	1.04E-02	-0.02
100	2.07E-03	2.07E-03	-0.03
200	9.92E-05	9.92E-05	-0.04
500	1.33E-08	1.33E-08	-0.08
1,000	4.90E-15	N/A	N/A
2,000	7.59E-28	N/A	N/A
Maximum:			-0.08

B.7.250. Thorium – Ingestion of ^{234}Th ($f_1 = 0.0005$)

Maximum difference for **Urine**: +0.02%.

Maximum difference for **Feces**: -0.07%.

Maximum difference for **Whole Body**: +0.11%.

B.7.250.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.63E-05	1.63E-05	0
2	4.90E-06	4.90E-06	0.01
5	1.30E-06	1.30E-06	0.02
10	5.56E-07	5.56E-07	0.01
20	2.09E-07	2.09E-07	0
50	2.33E-08	2.32E-08	0.02
100	1.09E-09	1.09E-09	-0.02
200	3.97E-11	3.97E-11	0.01
500	7.43E-15	N/A	N/A
1,000	3.80E-21	N/A	N/A
2,000	1.01E-33	N/A	N/A
Maximum:			+0.02

B.7.250.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.74E-01	2.74E-01	0
2	3.67E-01	3.67E-01	0
5	2.72E-02	2.72E-02	0
10	1.65E-04	1.65E-04	0

20	1.31E-08	1.31E-08	0.02
50	2.72E-09	2.72E-09	0.01
100	6.02E-10	6.02E-10	-0.05
200	2.96E-11	2.96E-11	-0.07
500	3.64E-15	N/A	N/A
1,000	1.26E-21	N/A	N/A
2,000	2.34E-34	N/A	N/A
Maximum:			-0.07

B.7.250.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.97E-01	6.97E-01	0
2	3.11E-01	3.11E-01	0
5	1.66E-02	1.66E-02	0
10	4.45E-04	4.45E-04	0.11
20	2.59E-04	2.59E-04	-0.08
50	1.08E-04	1.08E-04	-0.06
100	2.54E-05	2.54E-05	0.06
200	1.43E-06	1.43E-06	0.01
500	2.51E-10	2.52E-10	-0.09
1,000	1.40E-16	N/A	N/A
2,000	4.38E-29	N/A	N/A
Maximum:			+0.11

B.7.251. Thorium – Injection of ^{234}Th

Maximum difference for **Urine**: -0.08%.

Maximum difference for **Feces**: -0.07%.

Maximum difference for **Whole Body**: -0.18%.

B.7.251.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.65E-02	3.65E-02	0.01
2	7.14E-03	7.14E-03	0.02
5	2.50E-03	2.50E-03	0.02
10	1.09E-03	1.09E-03	0.01
20	4.14E-04	4.14E-04	0
50	4.61E-05	4.61E-05	0.02
100	2.17E-06	2.17E-06	-0.01
200	7.94E-08	7.94E-08	0.01
500	1.49E-11	1.49E-11	-0.08
1,000	7.60E-18	N/A	N/A
2,000	2.03E-30	N/A	N/A
Maximum:			-0.08

B.7.251.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

1	7.93E-04	7.93E-04	0
2	1.40E-03	1.40E-03	0.01
5	3.19E-04	3.19E-04	0.01
10	5.90E-05	5.90E-05	0.02
20	1.49E-05	1.49E-05	0.03
50	5.44E-06	5.43E-06	0.01
100	1.20E-06	1.20E-06	-0.05
200	5.91E-08	5.92E-08	-0.07
500	7.27E-12	7.27E-12	0.04
1,000	2.52E-18	N/A	N/A
2,000	4.67E-31	N/A	N/A
Maximum:			-0.07

B.7.251.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.35E-01	9.34E-01	0.07
2	8.98E-01	8.99E-01	-0.18
5	8.15E-01	8.14E-01	0.08
10	6.98E-01	6.97E-01	0.13
20	5.17E-01	5.17E-01	-0.08

50	2.15E-01	2.15E-01	-0.06
100	5.09E-02	5.08E-02	0.06
200	2.85E-03	2.85E-03	0.01
500	5.03E-07	5.03E-07	-0.09

1,000	2.80E-13	N/A	N/A
2,000	8.76E-26	N/A	N/A
Maximum:			-0.18

B.7.252. Thulium – Inhalation of ¹⁷⁰Tm (type “M”)

Maximum difference for **Urine**: +0.03%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.01%.

Maximum difference for **Lungs**: -0.01%.

B.7.252.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.73E-03	2.73E-03	-0.01
2	2.61E-04	2.61E-04	0.03
5	3.01E-05	3.01E-05	-0.01
10	2.74E-05	2.74E-05	-0.01
20	2.31E-05	2.31E-05	-0.01
50	1.49E-05	1.49E-05	-0.01
100	8.30E-06	8.30E-06	-0.01
200	3.26E-06	3.26E-06	-0.01
500	3.57E-07	3.57E-07	-0.01
1,000	1.86E-08	1.86E-08	0
2,000	6.87E-11	6.87E-11	0
5,000	3.60E-18	N/A	N/A
10,000	2.64E-30	N/A	N/A
Maximum:			+0.03

B.7.252.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.08E-01	1.08E-01	0
2	1.54E-01	1.54E-01	0
5	1.31E-02	1.31E-02	0
10	5.68E-04	5.68E-04	-0.01
20	3.49E-04	3.49E-04	-0.02
50	1.39E-04	1.39E-04	-0.02
100	3.79E-05	3.79E-05	-0.01
200	7.12E-06	7.12E-06	-0.01
500	4.58E-07	4.58E-07	-0.01
1,000	1.89E-08	1.89E-08	-0.01
2,000	6.87E-11	6.87E-11	0
5,000	3.60E-18	N/A	N/A
10,000	2.64E-30	N/A	N/A
Maximum:			-0.02

B.7.252.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.91E-01	4.91E-01	0
2	2.56E-01	2.56E-01	0
5	8.57E-02	8.57E-02	-0.01
10	7.13E-02	7.13E-02	-0.01
20	6.33E-02	6.33E-02	-0.01
50	4.72E-02	4.72E-02	-0.01
100	3.24E-02	3.24E-02	-0.01
200	1.73E-02	1.73E-02	-0.01
500	3.07E-03	3.07E-03	-0.01
1,000	1.85E-04	1.85E-04	0
2,000	6.93E-07	6.93E-07	0
5,000	3.64E-14	N/A	N/A
10,000	2.67E-26	N/A	N/A
Maximum:			-0.01

B.7.252.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.73E-02	5.73E-02	-0.01
2	5.53E-02	5.53E-02	-0.01
5	5.19E-02	5.20E-02	-0.01
10	4.71E-02	4.71E-02	-0.01
20	3.90E-02	3.90E-02	-0.01
50	2.36E-02	2.36E-02	-0.01
100	1.18E-02	1.18E-02	-0.01
200	3.59E-03	3.59E-03	-0.01
500	1.23E-04	1.23E-04	-0.01
1,000	4.64E-07	4.64E-07	-0.01
2,000	7.57E-12	7.57E-12	0
5,000	9.23E-26	N/A	N/A
Maximum:			-0.01

B.7.253. Thulium – Ingestion of ¹⁷⁰Tm (f₁ = 0.0005)

Maximum difference for **Urine**: +0.02%.

Maximum difference for **Feces**: +0.01%.

Maximum difference for **Whole Body**: +0.01%.

B.7.253.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.36E-05	4.36E-05	0
2	8.06E-06	8.06E-06	0.02
5	4.00E-08	4.00E-08	0.01
10	3.70E-08	3.70E-08	0
20	3.50E-08	3.50E-08	0
50	2.96E-08	2.96E-08	0
100	2.24E-08	2.24E-08	0
200	1.28E-08	1.28E-08	0
500	2.39E-09	2.39E-09	0.01
1,000	1.46E-10	1.46E-10	0.01
2,000	5.48E-13	N/A	N/A
5,000	2.87E-20	N/A	N/A
10,000	2.11E-32	N/A	N/A
Maximum:			+0.02

B.7.253.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.81E-01	2.81E-01	0
2	3.85E-01	3.85E-01	0
5	3.06E-02	3.06E-02	0
10	2.08E-04	2.08E-04	0
20	4.40E-08	4.40E-08	0

50	2.96E-08	2.96E-08	0
100	2.24E-08	2.24E-08	0
200	1.28E-08	1.28E-08	0
500	2.39E-09	2.39E-09	0.01
1,000	1.47E-10	1.47E-10	0.01
2,000	5.48E-13	N/A	N/A
5,000	2.87E-20	N/A	N/A
10,000	2.11E-32	N/A	N/A
Maximum:			+0.01

B.7.253.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.14E-01	7.14E-01	0
2	3.25E-01	3.25E-01	0
5	1.86E-02	1.86E-02	0
10	4.95E-04	4.95E-04	0
20	3.53E-04	3.53E-04	0
50	2.99E-04	2.99E-04	0
100	2.26E-04	2.26E-04	0
200	1.29E-04	1.29E-04	0
500	2.42E-05	2.42E-05	0
1,000	1.48E-06	1.48E-06	0
2,000	5.53E-09	5.53E-09	0.01
5,000	2.90E-16	N/A	N/A
10,000	2.13E-28	N/A	N/A
Maximum:			+0.01

B.7.254. Thulium – Injection of ¹⁷⁰TmMaximum difference for **Urine**: +0.04%.Maximum difference for **Feces**: +0.01%.Maximum difference for **Whole Body**: +0.01%.**B.7.254.1. Urinary Excretion Rate**

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.60E-02	9.60E-02	0
2	7.99E-03	7.99E-03	0.04
5	7.80E-05	7.80E-05	0
10	7.40E-05	7.40E-05	0
20	7.00E-05	7.00E-05	0
50	5.92E-05	5.92E-05	0
100	4.48E-05	4.48E-05	0
200	2.56E-05	2.56E-05	0
500	4.79E-06	4.79E-06	0
1,000	2.93E-07	2.93E-07	0.01
2,000	1.10E-09	1.10E-09	0.01
5,000	5.75E-17	N/A	N/A
10,000	4.22E-29	N/A	N/A
Maximum:			+0.04

B.7.254.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.39E-02	2.39E-02	-0.01
2	4.03E-02	4.03E-02	0
5	4.01E-03	4.01E-03	0.01
10	1.01E-04	1.01E-04	0.01
20	7.00E-05	7.00E-05	0

50	5.92E-05	5.92E-05	0
100	4.48E-05	4.48E-05	0
200	2.56E-05	2.56E-05	0
500	4.79E-06	4.79E-06	0
1,000	2.93E-07	2.93E-07	0.01
2,000	1.10E-09	1.10E-09	0.01
5,000	5.75E-17	N/A	N/A
10,000	4.22E-29	N/A	N/A
Maximum:			+0.01

B.7.254.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.75E-01	8.75E-01	0
2	8.22E-01	8.22E-01	0
5	7.71E-01	7.71E-01	0
10	7.47E-01	7.47E-01	0
20	7.07E-01	7.07E-01	0
50	5.98E-01	5.98E-01	0
100	4.52E-01	4.52E-01	0
200	2.58E-01	2.58E-01	0
500	4.83E-02	4.83E-02	0
1,000	2.96E-03	2.96E-03	0
2,000	1.11E-05	1.11E-05	0.01
5,000	5.80E-13	N/A	N/A
10,000	4.26E-25	N/A	N/A
Maximum:			+0.01

B.7.255. Tin – Injection of ¹¹³Sn

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.04%.

Maximum difference for **Whole Body**: -0.04%.

B.7.255.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.340E-01	2.340E-01	0.00
2	2.727E-02	2.726E-02	0.02
5	5.634E-03	5.635E-03	-0.01
10	2.961E-03	2.961E-03	-0.01
20	1.231E-03	1.231E-03	-0.01
50	4.413E-04	4.412E-04	0.01
100	1.686E-04	1.686E-04	0.03
200	5.687E-05	5.687E-05	0.01
500	5.390E-06	5.390E-06	-0.01
1,000	1.116E-07	1.116E-07	-0.01
2,000	4.783E-11	4.784E-11	-0.04
5,000	3.765E-21	N/A	N/A
10,000	5.446E-38	N/A	N/A
Maximum:			-0.04

B.7.255.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.767E-02	5.767E-02	-0.01
2	9.986E-02	9.986E-02	0.00
5	1.590E-02	1.590E-02	0.00
10	3.609E-03	3.610E-03	-0.01
20	1.353E-03	1.353E-03	-0.02

50	4.533E-04	4.532E-04	0.01
100	1.710E-04	1.709E-04	0.03
200	5.708E-05	5.708E-05	0.01
500	5.404E-06	5.404E-06	-0.01
1,000	1.119E-07	1.119E-07	-0.02
2,000	4.795E-11	4.797E-11	-0.04
5,000	3.775E-21	N/A	N/A
10,000	5.459E-38	N/A	N/A
Maximum:			-0.04

B.7.255.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.023E-01	7.023E-01	0.00
2	5.710E-01	5.710E-01	0.00
5	4.331E-01	4.331E-01	0.00
10	3.729E-01	3.729E-01	0.00
20	3.135E-01	3.135E-01	0.00
50	2.231E-01	2.231E-01	0.00
100	1.420E-01	1.420E-01	0.00
200	6.386E-02	6.386E-02	0.00
500	6.224E-03	6.224E-03	-0.01
1,000	1.288E-04	1.289E-04	-0.02
2,000	5.522E-08	5.524E-08	-0.04
5,000	4.348E-18	N/A	N/A
10,000	6.288E-35	N/A	N/A
Maximum:			-0.04

B.7.256. Uranium – Inhalation of ²³²U (type “F”)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: -0.64%.

Maximum difference for **Kidney**: -0.93%.

B.7.256.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.84E-01	1.84E-01	-0.01
2	6.38E-03	6.38E-03	-0.03
5	4.21E-03	4.21E-03	0.01
10	2.69E-03	2.69E-03	-0.05
20	1.25E-03	1.25E-03	0.02
50	3.00E-04	3.00E-04	-0.06
100	9.99E-05	9.99E-05	0
200	2.43E-05	2.43E-05	-0.01
500	3.25E-06	3.25E-06	-0.04
1,000	2.25E-06	2.25E-06	-0.01
2,000	1.48E-06	1.48E-06	0
5,000	5.15E-07	5.16E-07	-0.03
10,000	1.79E-07	1.79E-07	0

20,000	5.68E-08	5.68E-08	-0.03
Maximum:			-0.06

B.7.256.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.56E-02	5.56E-02	0
2	7.69E-02	7.69E-02	0
5	6.22E-03	6.22E-03	0
10	5.37E-05	5.37E-05	-0.03
20	5.03E-06	5.03E-06	-0.01
50	1.77E-06	1.77E-06	0.22
100	6.54E-07	6.56E-07	-0.16
200	1.61E-07	1.61E-07	0.11
500	2.16E-08	2.16E-08	-0.11
1,000	1.49E-08	1.49E-08	0.03
2,000	9.83E-09	9.82E-09	0.01

5,000	3.42E-09	3.42E-09	-0.03
10,000	1.19E-09	1.19E-09	0.03
20,000	3.77E-10	3.77E-10	-0.02
Maximum:			+0.22

B.7.256.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.67E-01	3.66E-01	0.12
2	2.05E-01	2.04E-01	0.19
5	8.52E-02	8.55E-02	-0.27
10	6.33E-02	6.33E-02	-0.08
20	4.55E-02	4.53E-02	0.42
50	2.73E-02	2.75E-02	-0.56
100	1.90E-02	1.89E-02	0.61
200	1.36E-02	1.37E-02	-0.64
500	1.12E-02	1.11E-02	0.31
1,000	9.70E-03	9.69E-03	0.18
2,000	7.61E-03	7.62E-03	-0.13
5,000	4.47E-03	4.47E-03	0.02
10,000	2.52E-03	2.52E-03	0.03

Maximum:	-0.64
----------	-------

B.7.256.4. Kidney Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.20E-02	3.18E-02	0.69
2	2.95E-02	2.94E-02	0.37
5	2.28E-02	2.29E-02	-0.49
10	1.49E-02	1.50E-02	-0.93
20	6.56E-03	6.58E-03	-0.22
50	9.96E-04	9.94E-04	0.19
100	3.60E-04	3.60E-04	0.2
200	2.08E-04	2.09E-04	-0.35
500	1.54E-04	1.53E-04	0.24
1,000	1.25E-04	1.25E-04	-0.01
2,000	8.43E-05	8.44E-05	-0.1
5,000	2.60E-05	2.60E-05	-0.1
10,000	3.95E-06	3.94E-06	0.16
20,000	2.73E-07	2.74E-07	-0.12
Maximum:			-0.93

B.7.257. Uranium – Inhalation of ²³²U (type “M”)

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.03%.

Maximum difference for **Whole Body**: +0.19%.

Maximum difference for **Kidney**: -0.86%.

Maximum difference for **Lung**: -0.02%.

B.7.257.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.32E-02	2.32E-02	-0.02
2	1.12E-03	1.13E-03	-0.03
5	7.35E-04	7.35E-04	0
10	5.44E-04	5.44E-04	-0.04
20	3.53E-04	3.53E-04	0
50	1.88E-04	1.88E-04	-0.03
100	1.14E-04	1.14E-04	-0.02
200	5.73E-05	5.73E-05	-0.02
500	1.02E-05	1.02E-05	-0.03
1,000	1.09E-06	1.09E-06	-0.01
2,000	3.75E-07	3.75E-07	-0.01
5,000	1.29E-07	1.29E-07	-0.03
10,000	4.41E-08	4.41E-08	0
20,000	1.40E-08	1.40E-08	-0.03
Maximum:			-0.04

B.7.257.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.07E-01	1.07E-01	-0.01
2	1.52E-01	1.52E-01	0
5	1.30E-02	1.30E-02	0
10	5.61E-04	5.61E-04	-0.01
20	3.57E-04	3.58E-04	-0.01
50	1.60E-04	1.60E-04	-0.01

100	5.03E-05	5.03E-05	-0.01
200	1.14E-05	1.14E-05	-0.01
500	1.51E-06	1.51E-06	-0.01
1,000	7.89E-08	7.89E-08	-0.01
2,000	2.67E-09	2.67E-09	0.01
5,000	8.56E-10	8.56E-10	-0.03
10,000	2.93E-10	2.93E-10	0.02
20,000	9.28E-11	9.28E-11	-0.03
Maximum:			-0.03

B.7.257.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.76E-01	4.76E-01	0.01
2	2.44E-01	2.44E-01	0.02
5	7.47E-02	7.48E-02	-0.05
10	5.95E-02	5.95E-02	-0.02
20	5.12E-02	5.11E-02	0.04
50	3.65E-02	3.65E-02	-0.07
100	2.46E-02	2.46E-02	0.05
200	1.41E-02	1.41E-02	-0.1
500	4.65E-03	4.65E-03	0.09
1,000	2.52E-03	2.52E-03	0.19
2,000	1.89E-03	1.89E-03	-0.12
5,000	1.10E-03	1.10E-03	+0.01
10,000	6.21E-04	6.21E-04	0.03
Maximum:			+0.19

B.7.257.4. Kidney Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.08E-03	4.05E-03	0.66
2	3.81E-03	3.79E-03	0.39
5	3.03E-03	3.04E-03	-0.46
10	2.11E-03	2.13E-03	-0.86
20	1.12E-03	1.13E-03	-0.28
50	3.91E-04	3.92E-04	-0.06

B.7.257.5. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.76E-02	5.76E-02	-0.01
2	5.59E-02	5.59E-02	-0.01
5	5.34E-02	5.34E-02	-0.01
10	4.96E-02	4.97E-02	-0.01
20	4.34E-02	4.34E-02	-0.01

100	2.30E-04	2.30E-04	-0.14
200	1.33E-04	1.33E-04	-0.2
500	5.33E-05	5.33E-05	0.08
1,000	3.24E-05	3.24E-05	0
2,000	2.12E-05	2.13E-05	-0.1
5,000	6.53E-06	6.54E-06	-0.1
10,000	9.91E-07	9.90E-07	0.16
20,000	6.76E-08	6.77E-08	-0.13
Maximum:			-0.86
50	3.09E-02	3.09E-02	-0.01
100	2.02E-02	2.02E-02	-0.01
200	1.05E-02	1.05E-02	-0.02
500	1.80E-03	1.80E-03	-0.01
1,000	9.90E-05	9.91E-05	-0.01
2,000	3.45E-07	3.45E-07	-0.01
5,000	4.09E-14	N/A	N/A
10,000	3.23E-25	N/A	N/A
Maximum:			-0.02

B.7.258. Uranium – Inhalation of ²³²U (type “S”)

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.02%.

Maximum difference for **Kidney**: -0.87%.

Maximum difference for **Lung**: -0.01%.

B.7.258.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.04E-04	7.04E-04	-0.01
2	4.41E-05	4.41E-05	-0.01
5	2.20E-05	2.20E-05	0
10	1.60E-05	1.60E-05	-0.04
20	1.02E-05	1.02E-05	-0.01
50	5.68E-06	5.68E-06	-0.03
100	4.08E-06	4.08E-06	-0.02
200	3.17E-06	3.17E-06	-0.02
500	2.30E-06	2.30E-06	-0.02
1,000	1.49E-06	1.49E-06	-0.02
2,000	7.13E-07	7.14E-07	-0.02
5,000	2.17E-07	2.17E-07	-0.02
10,000	7.79E-08	7.79E-08	-0.02
20,000	1.51E-08	1.51E-08	-0.02
Maximum:			-0.04

B.7.258.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.14E-01	1.14E-01	-0.01
2	1.63E-01	1.63E-01	-0.01
5	1.40E-02	1.40E-02	0
10	6.47E-04	6.47E-04	-0.01
20	4.38E-04	4.38E-04	-0.02
50	2.27E-04	2.27E-04	-0.01
100	9.04E-05	9.04E-05	-0.01
200	3.28E-05	3.28E-05	-0.01

500	1.87E-05	1.87E-05	-0.01
1,000	1.08E-05	1.08E-05	-0.01
2,000	3.68E-06	3.68E-06	-0.01
5,000	2.71E-07	2.71E-07	-0.01
10,000	4.61E-08	4.61E-08	-0.01
20,000	3.95E-09	3.95E-09	0
Maximum:			-0.02

B.7.258.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.91E-01	4.91E-01	0
2	2.49E-01	2.49E-01	0
5	7.26E-02	7.26E-02	-0.01
10	5.94E-02	5.94E-02	-0.01
20	5.43E-02	5.43E-02	-0.01
50	4.45E-02	4.46E-02	-0.01
100	3.71E-02	3.71E-02	-0.01
200	3.14E-02	3.14E-02	-0.01
500	2.35E-02	2.35E-02	-0.01
1,000	1.51E-02	1.51E-02	-0.01
2,000	7.22E-03	7.22E-03	-0.01
5,000	2.21E-03	2.21E-03	-0.02
10,000	8.16E-04	8.16E-04	-0.01
Maximum:			-0.02

B.7.258.4. Kidney Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.26E-04	1.25E-04	0.6
2	1.19E-04	1.18E-04	0.43

5	9.40E-05	9.44E-05	-0.44
10	6.49E-05	6.54E-05	-0.87
20	3.38E-05	3.39E-05	-0.27
50	1.17E-05	1.17E-05	-0.06
100	7.81E-06	7.82E-06	-0.15
200	6.32E-06	6.34E-06	-0.22
500	5.25E-06	5.26E-06	-0.12

1,000	4.20E-06	4.21E-06	-0.11
2,000	2.90E-06	2.90E-06	-0.11
5,000	1.25E-06	1.25E-06	-0.12
10,000	4.03E-07	4.03E-07	-0.06
20,000	6.59E-08	6.60E-08	-0.1
Maximum:			-0.87

B.7.258.5. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.43E-02	6.43E-02	-0.01
2	6.27E-02	6.27E-02	-0.01
5	6.07E-02	6.07E-02	-0.01
10	5.79E-02	5.79E-02	-0.01
20	5.31E-02	5.31E-02	-0.01

50	4.38E-02	4.38E-02	-0.01
100	3.66E-02	3.66E-02	-0.01
200	3.11E-02	3.11E-02	-0.01
500	2.31E-02	2.31E-02	-0.01
1,000	1.48E-02	1.48E-02	-0.01
2,000	6.90E-03	6.90E-03	-0.01
5,000	1.98E-03	1.98E-03	-0.01
10,000	6.85E-04	6.85E-04	-0.01
20,000	1.19E-04	1.19E-04	-0.01
Maximum:			-0.01

B.7.259. Uranium – Ingestion of ²³²U (f₁ = 0.02)

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: +0.23%.

Maximum difference for **Whole Body**: -0.63%.

Maximum difference for **Kidney**: -0.92%.

B.7.259.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.26E-02	1.26E-02	-0.01
2	6.92E-04	6.92E-04	-0.02
5	3.01E-04	3.01E-04	0.02
10	1.92E-04	1.92E-04	-0.05
20	8.90E-05	8.90E-05	0.03
50	2.12E-05	2.12E-05	-0.05
100	7.03E-06	7.03E-06	0
200	1.71E-06	1.71E-06	-0.01
500	2.28E-07	2.28E-07	-0.03
1,000	1.58E-07	1.58E-07	0
2,000	1.04E-07	1.04E-07	0
5,000	3.62E-08	3.62E-08	-0.02
10,000	1.25E-08	1.25E-08	0.01
20,000	3.98E-09	3.98E-09	-0.02
Maximum:			-0.05

10,000	8.32E-11	8.32E-11	0.03
20,000	2.65E-11	2.65E-11	-0.01
Maximum:			+0.23

B.7.259.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.09E-01	7.09E-01	0
2	3.28E-01	3.28E-01	0.01
5	2.39E-02	2.39E-02	-0.06
10	4.59E-03	4.60E-03	-0.09
20	3.21E-03	3.20E-03	0.43
50	1.92E-03	1.93E-03	-0.55
100	1.33E-03	1.33E-03	0.62
200	9.56E-04	9.62E-04	-0.63
500	7.83E-04	7.80E-04	0.32
1,000	6.81E-04	6.80E-04	0.19
2,000	5.34E-04	5.34E-04	-0.13
5,000	3.14E-04	3.14E-04	0.03
10,000	1.77E-04	1.77E-04	0.04
Maximum:			-0.63

B.7.259.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.78E-01	2.78E-01	0
2	3.81E-01	3.81E-01	0
5	3.07E-02	3.07E-02	0
10	2.15E-04	2.15E-04	0
20	3.67E-07	3.67E-07	0.02
50	1.25E-07	1.25E-07	0.23
100	4.61E-08	4.61E-08	-0.15
200	1.13E-08	1.13E-08	0.11
500	1.51E-09	1.51E-09	-0.1
1,000	1.05E-09	1.05E-09	0.04
2,000	6.89E-10	6.89E-10	0.02
5,000	2.40E-10	2.40E-10	-0.02

B.7.259.4. Kidney Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.25E-03	2.24E-03	0.59
2	2.10E-03	2.10E-03	0.45
5	1.63E-03	1.63E-03	-0.45
10	1.06E-03	1.07E-03	-0.92
20	4.68E-04	4.69E-04	-0.23
50	7.05E-05	7.03E-05	0.21
100	2.53E-05	2.53E-05	0.2
200	1.46E-05	1.47E-05	-0.34
500	1.08E-05	1.08E-05	0.26
1,000	8.78E-06	8.78E-06	0

2,000	5.91E-06	5.92E-06	-0.09
5,000	1.82E-06	1.82E-06	-0.09
10,000	2.77E-07	2.77E-07	0.17

20,000	1.92E-08	1.92E-08	-0.11
Maximum:			-0.92

B.7.260. Uranium – Injection of ²³²U

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: +0.23%.

Maximum difference for **Whole Body**: -0.63%.

Maximum difference for **Kidney**: -0.92%.

B.7.260.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.45E-01	6.45E-01	-0.01
2	2.21E-02	2.21E-02	-0.03
5	1.48E-02	1.48E-02	0.02
10	9.42E-03	9.43E-03	-0.05
20	4.39E-03	4.39E-03	0.03
50	1.05E-03	1.05E-03	-0.05
100	3.50E-04	3.50E-04	0
200	8.53E-05	8.53E-05	0
500	1.14E-05	1.14E-05	-0.04
1,000	7.88E-06	7.88E-06	0
2,000	5.19E-06	5.19E-06	0
5,000	1.81E-06	1.81E-06	-0.02
10,000	6.26E-07	6.26E-07	0.01
20,000	1.99E-07	1.99E-07	-0.02
Maximum:			-0.05

B.7.260.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.69E-03	1.68E-03	0.03
2	1.87E-03	1.87E-03	0.01
5	1.98E-04	1.98E-04	0.19
10	3.72E-05	3.73E-05	-0.11
20	1.76E-05	1.76E-05	0
50	6.21E-06	6.19E-06	0.23
100	2.30E-06	2.30E-06	-0.15
200	5.65E-07	5.64E-07	0.11
500	7.56E-08	7.57E-08	-0.1
1,000	5.23E-08	5.23E-08	0.05
2,000	3.45E-08	3.45E-08	0.02
5,000	1.20E-08	1.20E-08	-0.03
10,000	4.16E-09	4.16E-09	0.03
20,000	1.32E-09	1.32E-09	-0.01
Maximum:			+0.23

B.7.260.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.55E-01	3.53E-01	0.43
2	3.31E-01	3.29E-01	0.41
5	2.78E-01	2.79E-01	-0.28
10	2.22E-01	2.22E-01	-0.08
20	1.60E-01	1.59E-01	0.42
50	9.58E-02	9.64E-02	-0.55
100	6.66E-02	6.62E-02	0.62
200	4.78E-02	4.81E-02	-0.63
500	3.91E-02	3.90E-02	0.32
1,000	3.40E-02	3.40E-02	0.19
2,000	2.67E-02	2.67E-02	-0.13
5,000	1.57E-02	1.57E-02	0.03
10,000	8.85E-03	8.85E-03	0.03
Maximum:			-0.63

B.7.260.4. Kidney Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.12E-01	1.12E-01	0.69
2	1.03E-01	1.03E-01	0.37
5	7.98E-02	8.02E-02	-0.49
10	5.22E-02	5.27E-02	-0.92
20	2.30E-02	2.31E-02	-0.21
50	3.49E-03	3.49E-03	0.19
100	1.26E-03	1.26E-03	0.21
200	7.31E-04	7.33E-04	-0.34
500	5.39E-04	5.38E-04	0.25
1,000	4.39E-04	4.39E-04	0
2,000	2.96E-04	2.96E-04	-0.09
5,000	9.10E-05	9.11E-05	-0.09
10,000	1.39E-05	1.38E-05	0.17
20,000	9.58E-07	9.59E-07	-0.11
Maximum:			-0.92

B.7.261. Uranium – Inhalation of ²³⁴U (type “F”)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: -0.64%.

B.7.261.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.838E-01	1.838E-01	-0.02
2	6.379E-03	6.381E-03	-0.03
5	4.213E-03	4.213E-03	0.01
10	2.689E-03	2.690E-03	-0.05
20	1.253E-03	1.252E-03	0.02
50	3.002E-04	3.003E-04	-0.06
100	1.002E-04	1.002E-04	-0.01
200	2.446E-05	2.446E-05	-0.01
500	3.292E-06	3.293E-06	-0.04
1,000	2.306E-06	2.306E-06	-0.01
2,000	1.560E-06	1.560E-06	0.00
5,000	5.881E-07	5.882E-07	-0.03
10,000	2.324E-07	2.323E-07	0.00
20,000	9.621E-08	9.624E-08	-0.04
Maximum:			-0.06

B.7.261.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.564E-02	5.564E-02	0.00
2	7.689E-02	7.689E-02	0.00
5	6.221E-03	6.221E-03	0.00
10	5.372E-05	5.373E-05	-0.03
20	5.035E-06	5.035E-06	-0.01
50	1.772E-06	1.768E-06	0.22

100	6.561E-07	6.572E-07	-0.16
200	1.618E-07	1.617E-07	0.11
500	2.183E-08	2.185E-08	-0.11
1,000	1.532E-08	1.531E-08	0.04
2,000	1.036E-08	1.036E-08	0.01
5,000	3.905E-09	3.906E-09	-0.03
10,000	1.543E-09	1.543E-09	0.02
20,000	6.389E-10	6.391E-10	-0.03
Maximum:			0.22

B.7.261.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.666E-01	3.662E-01	0.12
2	2.046E-01	2.042E-01	0.19
5	8.524E-02	8.547E-02	-0.27
10	6.326E-02	6.332E-02	-0.08
20	4.555E-02	4.536E-02	0.42
50	2.736E-02	2.751E-02	-0.56
100	1.903E-02	1.891E-02	0.61
200	1.369E-02	1.378E-02	-0.64
500	1.130E-02	1.127E-02	0.31
1,000	9.962E-03	9.945E-03	0.18
2,000	8.018E-03	8.028E-03	-0.14
5,000	5.101E-03	5.100E-03	0.02
10,000	3.285E-03	3.285E-03	0.02
20,000			
Maximum:			-0.64

B.7.262. Uranium – Inhalation of ²³⁴U (type “M”)Maximum difference for **Urine**: -0.04%.Maximum difference for **Feces**: -0.04%.Maximum difference for **Whole Body**: +0.19%.Maximum difference for **Lungs**: -0.02%.**B.7.262.1. Urinary Excretion Rate**

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.323E-02	2.323E-02	-0.01
2	1.124E-03	1.125E-03	-0.02
5	7.350E-04	7.350E-04	0.00
10	5.438E-04	5.440E-04	-0.04
20	3.527E-04	3.527E-04	0.00
50	1.883E-04	1.884E-04	-0.03
100	1.146E-04	1.146E-04	-0.02
200	5.762E-05	5.763E-05	-0.02
500	1.028E-05	1.028E-05	-0.02
1,000	1.116E-06	1.116E-06	-0.02
2,000	3.951E-07	3.952E-07	-0.01
5,000	1.470E-07	1.471E-07	-0.03
10,000	5.741E-08	5.741E-08	0.00
20,000	2.368E-08	2.369E-08	-0.04
Maximum:			-0.04

B.7.262.2. Fecal Excretion Rate

TIME	IMBA	PLEIADES	Difference
------	------	----------	------------

(d)	(d ⁻¹)	(d ⁻¹)	(%)
1	1.068E-01	1.068E-01	0.00
2	1.516E-01	1.516E-01	-0.01
5	1.298E-02	1.298E-02	0.00
10	5.608E-04	5.608E-04	-0.01
20	3.576E-04	3.577E-04	-0.01
50	1.606E-04	1.606E-04	-0.01
100	5.041E-05	5.042E-05	-0.01
200	1.146E-05	1.146E-05	-0.02
500	1.528E-06	1.528E-06	-0.01
1,000	8.102E-08	8.103E-08	-0.01
2,000	2.817E-09	2.816E-09	0.01
5,000	9.762E-10	9.765E-10	-0.04
10,000	3.813E-10	3.813E-10	0.02
20,000	1.572E-10	1.573E-10	-0.03
Maximum:			-0.04

B.7.262.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.756E-01	4.756E-01	0.01
2	2.443E-01	2.442E-01	0.02
5	7.473E-02	7.477E-02	-0.05

10	5.953E-02	5.955E-02	-0.03
20	5.118E-02	5.116E-02	0.04
50	3.650E-02	3.653E-02	-0.07
100	2.469E-02	2.468E-02	0.05
200	1.414E-02	1.416E-02	-0.10
500	4.711E-03	4.707E-03	0.09
1,000	2.591E-03	2.586E-03	0.19
2,000	1.993E-03	1.996E-03	-0.12
5,000	1.260E-03	1.259E-03	0.00
10,000	8.085E-04	8.083E-04	0.02
20,000	4.390E-04	4.390E-04	0.00
Maximum:			0.19

B.7.262.4. Lung Retention

TIME	IMBA	PLEIADES	Difference
------	------	----------	------------

(d)			(%)
1	5.763E-02	5.763E-02	-0.01
2	5.594E-02	5.594E-02	-0.01
5	5.336E-02	5.337E-02	-0.01
10	4.966E-02	4.966E-02	-0.01
20	4.341E-02	4.342E-02	-0.01
50	3.092E-02	3.093E-02	-0.02
100	2.023E-02	2.024E-02	-0.01
200	1.056E-02	1.056E-02	-0.01
500	1.820E-03	1.820E-03	-0.01
1,000	1.017E-04	1.017E-04	-0.01
2,000	3.636E-07	3.636E-07	-0.01
5,000	4.670E-14	N/A	N/A
10,000	4.209E-25	N/A	N/A
Maximum:			-0.02

B.7.263. Uranium – Inhalation of ²³⁴U (type “S”)

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.03%.

Maximum difference for **Lungs**: -0.02%.

B.7.263.1. Urinary Excretion Rate

TIME	IMBA	PLEIADES	Difference
(d)	(d ⁻¹)	(d ⁻¹)	(%)
1	7.043E-04	7.044E-04	-0.01
2	4.409E-05	4.410E-05	-0.01
5	2.196E-05	2.196E-05	0.00
10	1.602E-05	1.603E-05	-0.04
20	1.023E-05	1.023E-05	0.00
50	5.687E-06	5.689E-06	-0.03
100	4.090E-06	4.091E-06	-0.02
200	3.184E-06	3.185E-06	-0.02
500	2.329E-06	2.330E-06	-0.02
1,000	1.524E-06	1.525E-06	-0.02
2,000	7.520E-07	7.522E-07	-0.02
5,000	2.470E-07	2.471E-07	-0.02
10,000	1.014E-07	1.014E-07	-0.02
20,000	2.561E-08	2.562E-08	-0.03
Maximum:			-0.04

B.7.263.2. Fecal Excretion Rate

TIME	IMBA	PLEIADES	Difference
(d)	(d ⁻¹)	(d ⁻¹)	(%)
1	1.139E-01	1.139E-01	-0.01
2	1.628E-01	1.628E-01	-0.01
5	1.403E-02	1.403E-02	0.00
10	6.468E-04	6.469E-04	-0.01
20	4.385E-04	4.386E-04	-0.02
50	2.276E-04	2.277E-04	-0.01
100	9.062E-05	9.064E-05	-0.01
200	3.300E-05	3.301E-05	-0.01
500	1.892E-05	1.892E-05	-0.01
1,000	1.106E-05	1.106E-05	-0.01
2,000	3.883E-06	3.884E-06	-0.01
5,000	3.087E-07	3.087E-07	-0.01
10,000	6.000E-08	6.001E-08	-0.01
20,000	6.684E-09	6.685E-09	-0.01
Maximum:			-0.02

B.7.263.3. Whole Body Retention

TIME	IMBA	PLEIADES	Difference
(d)			(%)
1	4.910E-01	4.910E-01	0.00
2	2.494E-01	2.494E-01	0.00
5	7.260E-02	7.261E-02	-0.01
10	5.938E-02	5.939E-02	-0.01
20	5.431E-02	5.432E-02	-0.01
50	4.460E-02	4.461E-02	-0.02
100	3.715E-02	3.715E-02	-0.01
200	3.160E-02	3.160E-02	-0.01
500	2.377E-02	2.377E-02	-0.01
1,000	1.552E-02	1.552E-02	-0.01
2,000	7.610E-03	7.611E-03	-0.01
5,000	2.518E-03	2.518E-03	-0.02
10,000	1.062E-03	1.062E-03	-0.01
20,000	2.854E-04	2.855E-04	-0.03
Maximum:			-0.03

B.7.263.4. Lung Retention

TIME	IMBA	PLEIADES	Difference
(d)			(%)
1	6.428E-02	6.429E-02	-0.01
2	6.270E-02	6.271E-02	-0.01
5	6.070E-02	6.071E-02	-0.01
10	5.789E-02	5.789E-02	-0.01
20	5.314E-02	5.315E-02	-0.01
50	4.385E-02	4.386E-02	-0.01
100	3.666E-02	3.666E-02	-0.01
200	3.122E-02	3.123E-02	-0.01
500	2.341E-02	2.341E-02	-0.02
1,000	1.516E-02	1.516E-02	-0.01
2,000	7.277E-03	7.278E-03	-0.01
5,000	2.264E-03	2.264E-03	-0.01
10,000	8.911E-04	8.912E-04	-0.02
Maximum:			-0.02

B.7.264. Uranium – Ingestion of ^{234}U ($f_1 = 0.02$)

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: -0.63%.

B.7.264.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.257E-02	1.257E-02	-0.01
2	6.918E-04	6.919E-04	-0.02
5	3.012E-04	3.012E-04	0.02
10	1.918E-04	1.919E-04	-0.04
20	8.907E-05	8.904E-05	0.03
50	2.119E-05	2.120E-05	-0.05
100	7.052E-06	7.051E-06	0.00
200	1.720E-06	1.720E-06	0.00
500	2.310E-07	2.311E-07	-0.03
1,000	1.618E-07	1.618E-07	0.00
2,000	1.094E-07	1.094E-07	0.00
5,000	4.126E-08	4.127E-08	-0.02
10,000	1.630E-08	1.630E-08	0.00
20,000	6.749E-09	6.751E-09	-0.03
Maximum:			-0.05

B.7.264.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.782E-01	2.782E-01	0.00
2	3.810E-01	3.810E-01	0.00
5	3.068E-02	3.067E-02	0.00
10	2.152E-04	2.152E-04	0.00
20	3.669E-07	3.668E-07	0.02

50	1.249E-07	1.246E-07	0.22
100	4.619E-08	4.626E-08	-0.15
200	1.138E-08	1.137E-08	0.11
500	1.532E-09	1.534E-09	-0.10
1,000	1.075E-09	1.074E-09	0.04
2,000	7.266E-10	7.265E-10	0.02
5,000	2.740E-10	2.740E-10	-0.03
10,000	1.083E-10	1.082E-10	0.03
20,000	4.482E-11	4.483E-11	-0.02
Maximum:			0.22

B.7.264.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.093E-01	7.093E-01	0.00
2	3.276E-01	3.276E-01	0.01
5	2.392E-02	2.393E-02	-0.06
10	4.595E-03	4.600E-03	-0.10
20	3.212E-03	3.199E-03	0.43
50	1.924E-03	1.934E-03	-0.55
100	1.336E-03	1.328E-03	0.62
200	9.609E-04	9.670E-04	-0.63
500	7.930E-04	7.905E-04	0.32
1,000	6.989E-04	6.976E-04	0.18
2,000	5.625E-04	5.632E-04	-0.13
5,000	3.578E-04	3.578E-04	0.02
10,000	2.305E-04	2.304E-04	0.03
Maximum:			-0.63

B.7.265. Uranium – Ingestion of ^{234}U ($f_1 = 0.002$)

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: -0.63%.

B.7.265.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.256E-03	1.256E-03	-0.01
2	7.037E-05	7.038E-05	-0.02
5	3.013E-05	3.013E-05	0.02
10	1.919E-05	1.919E-05	-0.04
20	8.908E-06	8.906E-06	0.03
50	2.119E-06	2.120E-06	-0.05
100	7.052E-07	7.052E-07	0.01
200	1.720E-07	1.720E-07	-0.01
500	2.310E-08	2.311E-08	-0.03
1,000	1.618E-08	1.618E-08	0.00
2,000	1.094E-08	1.094E-08	0.00
5,000	4.126E-09	4.127E-09	-0.02
10,000	1.630E-09	1.630E-09	0.00

20,000	6.749E-10	6.751E-10	-0.03
Maximum:			-0.05

B.7.265.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.820E-01	2.819E-01	0.00
2	3.883E-01	3.883E-01	0.00
5	3.134E-02	3.134E-02	0.00
10	2.192E-04	2.192E-04	0.00
20	4.567E-08	4.567E-08	0.01
50	1.249E-08	1.246E-08	0.22
100	4.619E-09	4.626E-09	-0.15
200	1.138E-09	1.137E-09	0.11
500	1.532E-10	1.534E-10	-0.10
1,000	1.075E-10	1.074E-10	0.04
2,000	7.266E-11	7.265E-11	0.02

5,000	2.740E-11	2.740E-11	-0.03
10,000	1.083E-11	1.082E-11	0.03
20,000	4.482E-12	4.483E-12	-0.02
Maximum:			0.22

B.7.265.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.168E-01	7.168E-01	0.00
2	3.285E-01	3.284E-01	0.00
5	1.926E-02	1.926E-02	-0.01

10	5.747E-04	5.751E-04	-0.08
20	3.213E-04	3.199E-04	0.43
50	1.924E-04	1.934E-04	-0.55
100	1.336E-04	1.328E-04	0.62
200	9.609E-05	9.670E-05	-0.63
500	7.930E-05	7.905E-05	0.32
1,000	6.989E-05	6.976E-05	0.18
2,000	5.625E-05	5.632E-05	-0.13
5,000	3.578E-05	3.578E-05	0.02
10,000	2.305E-05	2.304E-05	0.03
Maximum:			-0.63

B.7.266. Uranium – Injection of ²³⁴U

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: +0.23%.

Maximum difference for **Whole Body**: -0.63%.

B.7.266.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.450E-01	6.450E-01	-0.01
2	2.210E-02	2.211E-02	-0.03
5	1.477E-02	1.476E-02	0.02
10	9.423E-03	9.427E-03	-0.05
20	4.391E-03	4.389E-03	0.03
50	1.053E-03	1.053E-03	-0.05
100	3.513E-04	3.513E-04	0.00
200	8.578E-05	8.578E-05	0.00
500	1.155E-05	1.155E-05	-0.03
1,000	8.088E-06	8.088E-06	0.00
2,000	5.470E-06	5.470E-06	0.00
5,000	2.063E-06	2.063E-06	-0.02
10,000	8.150E-07	8.149E-07	0.01
20,000	3.375E-07	3.376E-07	-0.03
Maximum:			-0.05

50	6.215E-06	6.201E-06	0.23
100	2.301E-06	2.305E-06	-0.15
200	5.676E-07	5.669E-07	0.11
500	7.658E-08	7.665E-08	-0.10
1,000	5.373E-08	5.371E-08	0.04
2,000	3.633E-08	3.632E-08	0.02
5,000	1.370E-08	1.370E-08	-0.03
10,000	5.413E-09	5.412E-09	0.03
20,000	2.241E-09	2.242E-09	-0.03
Maximum:			0.23

B.7.266.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.549E-01	3.533E-01	0.43
2	3.307E-01	3.293E-01	0.41
5	2.780E-01	2.787E-01	-0.29
10	2.217E-01	2.219E-01	-0.08
20	1.597E-01	1.590E-01	0.43
50	9.597E-02	9.650E-02	-0.55
100	6.675E-02	6.634E-02	0.62
200	4.803E-02	4.833E-02	-0.63
500	3.965E-02	3.952E-02	0.32
1,000	3.494E-02	3.488E-02	0.18
2,000	2.812E-02	2.816E-02	-0.13
5,000	1.789E-02	1.789E-02	0.03
10,000	1.152E-02	1.152E-02	0.03
Maximum:			-0.63

B.7.266.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.685E-03	1.684E-03	0.03
2	1.872E-03	1.872E-03	0.01
5	1.981E-04	1.978E-04	0.19
10	3.724E-05	3.728E-05	-0.11
20	1.765E-05	1.764E-05	0.00

B.7.267. Uranium – Inhalation of ²³⁵U (type “F”)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: -0.64%.

B.7.267.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

1	1.838E-01	1.838E-01	-0.02
2	6.379E-03	6.381E-03	-0.03
5	4.213E-03	4.213E-03	0.01
10	2.689E-03	2.690E-03	-0.05
20	1.253E-03	1.252E-03	0.02

50	3.002E-04	3.003E-04	-0.06
100	1.002E-04	1.002E-04	-0.01
200	2.446E-05	2.446E-05	-0.01
500	3.292E-06	3.293E-06	-0.04
1,000	2.306E-06	2.306E-06	-0.01
2,000	1.560E-06	1.560E-06	0.00
5,000	5.881E-07	5.883E-07	-0.03
10,000	2.324E-07	2.324E-07	0.00
20,000	9.622E-08	9.625E-08	-0.04
Maximum:			-0.06

B.7.267.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.564E-02	5.564E-02	0.00
2	7.689E-02	7.689E-02	0.00
5	6.221E-03	6.221E-03	0.00
10	5.372E-05	5.373E-05	-0.03
20	5.035E-06	5.035E-06	-0.01
50	1.772E-06	1.768E-06	0.22
100	6.561E-07	6.572E-07	-0.16
200	1.618E-07	1.617E-07	0.11
500	2.183E-08	2.185E-08	-0.11
1,000	1.532E-08	1.531E-08	0.04

2,000	1.036E-08	1.036E-08	0.01
5,000	3.905E-09	3.906E-09	-0.03
10,000	1.543E-09	1.543E-09	0.02
20,000	6.390E-10	6.392E-10	-0.03
Maximum:			0.22

B.7.267.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.666E-01	3.662E-01	0.12
2	2.046E-01	2.042E-01	0.19
5	8.524E-02	8.547E-02	-0.27
10	6.326E-02	6.332E-02	-0.08
20	4.555E-02	4.536E-02	0.42
50	2.736E-02	2.751E-02	-0.56
100	1.903E-02	1.891E-02	0.61
200	1.369E-02	1.378E-02	-0.64
500	1.130E-02	1.127E-02	0.31
1,000	9.962E-03	9.945E-03	0.18
2,000	8.018E-03	8.029E-03	-0.14
5,000	5.101E-03	5.100E-03	0.02
10,000	3.286E-03	3.285E-03	0.02
Maximum:			-0.64

B.7.268. Uranium – Inhalation of ²³⁵U (type “M”)

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.04%.

Maximum difference for **Whole Body**: +0.19%.

Maximum difference for **Lungs**: -0.01%.

B.7.268.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.323E-02	2.323E-02	-0.01
2	1.124E-03	1.125E-03	-0.02
5	7.350E-04	7.350E-04	0.00
10	5.438E-04	5.440E-04	-0.04
20	3.527E-04	3.527E-04	0.00
50	1.883E-04	1.884E-04	-0.03
100	1.146E-04	1.146E-04	-0.02
200	5.762E-05	5.763E-05	-0.02
500	1.028E-05	1.028E-05	-0.02
1,000	1.116E-06	1.116E-06	-0.02
2,000	3.952E-07	3.952E-07	-0.01
5,000	1.470E-07	1.471E-07	-0.03
10,000	5.742E-08	5.742E-08	0.00
20,000	2.368E-08	2.369E-08	-0.04
Maximum:			-0.04

B.7.268.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.068E-01	1.068E-01	0.00
2	1.516E-01	1.516E-01	-0.01
5	1.298E-02	1.298E-02	0.00
10	5.608E-04	5.608E-04	-0.01
20	3.576E-04	3.577E-04	-0.01
50	1.606E-04	1.606E-04	-0.01

100	5.041E-05	5.042E-05	-0.01
200	1.146E-05	1.146E-05	-0.02
500	1.528E-06	1.528E-06	-0.01
1,000	8.102E-08	8.103E-08	-0.01
2,000	2.817E-09	2.817E-09	0.01
5,000	9.762E-10	9.766E-10	-0.04
10,000	3.814E-10	3.813E-10	0.02
20,000	1.573E-10	1.573E-10	-0.03
Maximum:			-0.04

B.7.268.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.756E-01	4.756E-01	0.01
2	2.443E-01	2.442E-01	0.02
5	7.473E-02	7.477E-02	-0.05
10	5.953E-02	5.955E-02	-0.03
20	5.118E-02	5.116E-02	0.04
50	3.650E-02	3.653E-02	-0.07
100	2.469E-02	2.468E-02	0.05
200	1.414E-02	1.416E-02	-0.10
500	4.711E-03	4.707E-03	0.09
1,000	2.591E-03	2.586E-03	0.19
2,000	1.993E-03	1.996E-03	-0.12
5,000	1.260E-03	1.260E-03	0.01
10,000	8.085E-04	8.083E-04	0.02
20,000	4.391E-04	4.391E-04	0.00
Maximum:			0.19

B.7.268.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.763E-02	5.763E-02	-0.01
2	5.594E-02	5.594E-02	-0.01
5	5.336E-02	5.337E-02	-0.01
10	4.966E-02	4.966E-02	-0.01
20	4.341E-02	4.342E-02	-0.01
50	3.092E-02	3.093E-02	-0.01

100	2.023E-02	2.024E-02	-0.01
200	1.056E-02	1.056E-02	-0.01
500	1.820E-03	1.820E-03	-0.01
1,000	1.017E-04	1.017E-04	-0.01
2,000	3.636E-07	3.636E-07	-0.01
5,000	4.670E-14	N/A	N/A
10,000	4.209E-25	N/A	N/A
Maximum:			-0.01

B.7.269. Uranium – Inhalation of ²³⁵U (type “S”)

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.02%.

Maximum difference for **Lungs**: -0.02%.

B.7.269.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.043E-04	7.044E-04	-0.01
2	4.409E-05	4.410E-05	-0.01
5	2.196E-05	2.196E-05	0.00
10	1.602E-05	1.603E-05	-0.04
20	1.023E-05	1.023E-05	0.00
50	5.687E-06	5.689E-06	-0.03
100	4.090E-06	4.091E-06	-0.02
200	3.184E-06	3.185E-06	-0.02
500	2.329E-06	2.330E-06	-0.02
1,000	1.524E-06	1.525E-06	-0.02
2,000	7.520E-07	7.522E-07	-0.02
5,000	2.471E-07	2.471E-07	-0.02
10,000	1.014E-07	1.014E-07	-0.03
20,000	2.561E-08	2.562E-08	-0.03
Maximum:			-0.04

B.7.269.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.910E-01	4.910E-01	0.00
2	2.494E-01	2.494E-01	0.00
5	7.260E-02	7.261E-02	-0.01
10	5.938E-02	5.939E-02	-0.01
20	5.431E-02	5.432E-02	-0.01
50	4.460E-02	4.461E-02	-0.02
100	3.715E-02	3.715E-02	-0.01
200	3.160E-02	3.160E-02	-0.01
500	2.377E-02	2.377E-02	-0.01
1,000	1.552E-02	1.552E-02	-0.01
2,000	7.610E-03	7.611E-03	-0.01
5,000	2.518E-03	2.518E-03	-0.02
10,000	1.062E-03	1.062E-03	-0.01
20,000	2.855E-04	2.855E-04	-0.02
Maximum:			-0.02

B.7.269.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.139E-01	1.139E-01	-0.01
2	1.628E-01	1.628E-01	-0.01
5	1.403E-02	1.403E-02	0.00
10	6.468E-04	6.469E-04	-0.01
20	4.385E-04	4.386E-04	-0.02
50	2.276E-04	2.277E-04	-0.01
100	9.062E-05	9.064E-05	-0.01
200	3.300E-05	3.301E-05	-0.01
500	1.892E-05	1.892E-05	-0.01
1,000	1.106E-05	1.106E-05	-0.01
2,000	3.884E-06	3.884E-06	-0.01
5,000	3.087E-07	3.088E-07	-0.01
10,000	6.000E-08	6.001E-08	-0.01
20,000	6.685E-09	6.686E-09	-0.01
Maximum:			-0.02

B.7.269.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.428E-02	6.429E-02	-0.01
2	6.270E-02	6.271E-02	-0.01
5	6.070E-02	6.071E-02	-0.01
10	5.789E-02	5.789E-02	-0.01
20	5.314E-02	5.315E-02	-0.01
50	4.385E-02	4.386E-02	-0.01
100	3.666E-02	3.666E-02	-0.01
200	3.122E-02	3.123E-02	-0.01
500	2.341E-02	2.341E-02	-0.02
1,000	1.516E-02	1.516E-02	-0.02
2,000	7.277E-03	7.278E-03	-0.01
5,000	2.264E-03	2.264E-03	-0.02
10,000	8.911E-04	8.913E-04	-0.02
Maximum:			-0.02

B.7.270. Uranium – Ingestion of ^{235}U ($f_1 = 0.02$)

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: -0.63%.

B.7.270.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.257E-02	1.257E-02	-0.01
2	6.918E-04	6.919E-04	-0.02
5	3.012E-04	3.012E-04	0.02
10	1.918E-04	1.919E-04	-0.04
20	8.907E-05	8.904E-05	0.03
50	2.119E-05	2.120E-05	-0.05
100	7.052E-06	7.051E-06	0.00
200	1.720E-06	1.720E-06	0.00
500	2.310E-07	2.311E-07	-0.03
1,000	1.618E-07	1.618E-07	0.00
2,000	1.094E-07	1.094E-07	0.00
5,000	4.126E-08	4.127E-08	-0.02
10,000	1.630E-08	1.630E-08	0.01
20,000	6.750E-09	6.752E-09	-0.03
Maximum:			-0.05

B.7.270.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.782E-01	2.782E-01	0.00
2	3.810E-01	3.810E-01	0.00
5	3.068E-02	3.067E-02	0.00
10	2.152E-04	2.152E-04	0.00
20	3.669E-07	3.668E-07	0.02

50	1.249E-07	1.246E-07	0.22
100	4.619E-08	4.626E-08	-0.15
200	1.138E-08	1.137E-08	0.11
500	1.532E-09	1.534E-09	-0.10
1,000	1.075E-09	1.074E-09	0.04
2,000	7.267E-10	7.265E-10	0.02
5,000	2.740E-10	2.740E-10	-0.03
10,000	1.083E-10	1.082E-10	0.03
20,000	4.483E-11	4.484E-11	-0.02
Maximum:			0.22

B.7.270.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.093E-01	7.093E-01	0.00
2	3.276E-01	3.276E-01	0.01
5	2.392E-02	2.393E-02	-0.06
10	4.595E-03	4.600E-03	-0.10
20	3.212E-03	3.199E-03	0.43
50	1.924E-03	1.934E-03	-0.55
100	1.336E-03	1.328E-03	0.62
200	9.609E-04	9.670E-04	-0.63
500	7.930E-04	7.905E-04	0.32
1,000	6.989E-04	6.976E-04	0.19
2,000	5.625E-04	5.632E-04	-0.13
5,000	3.579E-04	3.578E-04	0.03
10,000	2.305E-04	2.304E-04	0.03
Maximum:			-0.63

B.7.271. Uranium – Ingestion of ^{235}U ($f_1 = 0.002$)

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: -0.63%.

B.7.271.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.256E-03	1.256E-03	-0.01
2	7.037E-05	7.038E-05	-0.02
5	3.013E-05	3.013E-05	0.02
10	1.919E-05	1.919E-05	-0.04
20	8.908E-06	8.906E-06	0.03
50	2.119E-06	2.120E-06	-0.05
100	7.052E-07	7.052E-07	0.00
200	1.720E-07	1.720E-07	0.00
500	2.310E-08	2.311E-08	-0.03
1,000	1.618E-08	1.618E-08	0.00
2,000	1.094E-08	1.094E-08	0.00
5,000	4.126E-09	4.127E-09	-0.02
10,000	1.630E-09	1.630E-09	0.01

20,000	6.750E-10	6.752E-10	-0.03
Maximum:			-0.05

B.7.271.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.820E-01	2.819E-01	0.00
2	3.883E-01	3.883E-01	0.00
5	3.134E-02	3.134E-02	0.00
10	2.192E-04	2.192E-04	0.00
20	4.567E-08	4.567E-08	0.01
50	1.249E-08	1.246E-08	0.22
100	4.619E-09	4.626E-09	-0.15
200	1.138E-09	1.137E-09	0.11
500	1.532E-10	1.534E-10	-0.10
1,000	1.075E-10	1.074E-10	0.04
2,000	7.267E-11	7.265E-11	0.02

5,000	2.740E-11	2.740E-11	-0.03
10,000	1.083E-11	1.082E-11	0.03
20,000	4.483E-12	4.484E-12	-0.02
Maximum:			0.22

B.7.271.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.168E-01	7.168E-01	0.00
2	3.285E-01	3.284E-01	0.00
5	1.926E-02	1.926E-02	-0.01

10	5.747E-04	5.751E-04	-0.08
20	3.213E-04	3.199E-04	0.43
50	1.924E-04	1.934E-04	-0.55
100	1.336E-04	1.328E-04	0.62
200	9.609E-05	9.670E-05	-0.63
500	7.930E-05	7.905E-05	0.32
1,000	6.989E-05	6.976E-05	0.19
2,000	5.625E-05	5.632E-05	-0.13
5,000	3.579E-05	3.578E-05	0.02
10,000	2.305E-05	2.304E-05	0.03
Maximum:			-0.63

B.7.272. Uranium – Injection of ²³⁵U

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: +0.23%.

Maximum difference for **Whole Body**: -0.63%.

B.7.272.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.450E-01	6.450E-01	-0.01
2	2.210E-02	2.211E-02	-0.03
5	1.477E-02	1.476E-02	0.02
10	9.423E-03	9.427E-03	-0.05
20	4.391E-03	4.389E-03	0.03
50	1.053E-03	1.053E-03	-0.05
100	3.513E-04	3.513E-04	0.00
200	8.578E-05	8.578E-05	0.00
500	1.155E-05	1.155E-05	-0.03
1,000	8.088E-06	8.088E-06	0.00
2,000	5.470E-06	5.470E-06	0.00
5,000	2.063E-06	2.063E-06	-0.02
10,000	8.151E-07	8.150E-07	0.01
20,000	3.375E-07	3.376E-07	-0.03
Maximum:			-0.05

B.7.272.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.685E-03	1.684E-03	0.03
2	1.872E-03	1.872E-03	0.01
5	1.981E-04	1.978E-04	0.19
10	3.724E-05	3.728E-05	-0.11
20	1.765E-05	1.764E-05	0.00

50	6.215E-06	6.201E-06	0.23
100	2.301E-06	2.305E-06	-0.15
200	5.676E-07	5.669E-07	0.11
500	7.658E-08	7.665E-08	-0.10
1,000	5.373E-08	5.371E-08	0.04
2,000	3.633E-08	3.632E-08	0.02
5,000	1.370E-08	1.370E-08	-0.02
10,000	5.414E-09	5.412E-09	0.03
20,000	2.241E-09	2.242E-09	-0.02
Maximum:			0.23

B.7.272.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.549E-01	3.533E-01	0.43
2	3.307E-01	3.293E-01	0.41
5	2.780E-01	2.787E-01	-0.29
10	2.217E-01	2.219E-01	-0.08
20	1.597E-01	1.590E-01	0.43
50	9.597E-02	9.650E-02	-0.55
100	6.675E-02	6.634E-02	0.62
200	4.803E-02	4.833E-02	-0.63
500	3.965E-02	3.952E-02	0.32
1,000	3.495E-02	3.488E-02	0.19
2,000	2.812E-02	2.816E-02	-0.13
5,000	1.789E-02	1.789E-02	0.02
10,000	1.153E-02	1.152E-02	0.03
Maximum:			-0.63

B.7.273. Uranium – Inhalation of ²³⁸U (type “F”)

Maximum difference for **Urine**: -0.06%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: -0.64%.

B.7.273.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
-------------	----------------------------	--------------------------------	-------------------

1	1.838E-01	1.838E-01	-0.02
2	6.379E-03	6.381E-03	-0.03
5	4.213E-03	4.213E-03	0.01
10	2.689E-03	2.690E-03	-0.05
20	1.253E-03	1.252E-03	0.02

50	3.002E-04	3.003E-04	-0.06
100	1.002E-04	1.002E-04	-0.01
200	2.446E-05	2.446E-05	-0.01
500	3.292E-06	3.293E-06	-0.04
1,000	2.306E-06	2.306E-06	-0.01
2,000	1.560E-06	1.560E-06	0.00
5,000	5.881E-07	5.883E-07	-0.03
10,000	2.324E-07	2.324E-07	0.00
20,000	9.622E-08	9.625E-08	-0.04
Maximum:			-0.06

B.7.273.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.564E-02	5.564E-02	0.00
2	7.689E-02	7.689E-02	0.00
5	6.221E-03	6.221E-03	0.00
10	5.372E-05	5.373E-05	-0.03
20	5.035E-06	5.035E-06	-0.01
50	1.772E-06	1.768E-06	0.22
100	6.561E-07	6.572E-07	-0.16
200	1.618E-07	1.617E-07	0.11
500	2.183E-08	2.185E-08	-0.11

1,000	1.532E-08	1.531E-08	0.04
2,000	1.036E-08	1.036E-08	0.01
5,000	3.905E-09	3.906E-09	-0.03
10,000	1.543E-09	1.543E-09	0.02
20,000	6.390E-10	6.392E-10	-0.03
Maximum:			0.22

B.7.273.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.666E-01	3.662E-01	0.12
2	2.046E-01	2.042E-01	0.19
5	8.524E-02	8.547E-02	-0.27
10	6.326E-02	6.332E-02	-0.08
20	4.555E-02	4.536E-02	0.42
50	2.736E-02	2.751E-02	-0.56
100	1.903E-02	1.891E-02	0.61
200	1.369E-02	1.378E-02	-0.64
500	1.130E-02	1.127E-02	0.31
1,000	9.962E-03	9.945E-03	0.18
2,000	8.018E-03	8.029E-03	-0.14
5,000	5.101E-03	5.100E-03	0.02
10,000	3.286E-03	3.285E-03	0.02
Maximum:			-0.64

B.7.274. Uranium – Inhalation of ²³⁸U (type “M”)

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.04%.

Maximum difference for **Whole Body**: +0.19%.

Maximum difference for **Lungs**: -0.01%.

B.7.274.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.323E-02	2.323E-02	-0.01
2	1.124E-03	1.125E-03	-0.02
5	7.350E-04	7.350E-04	0.00
10	5.438E-04	5.440E-04	-0.04
20	3.527E-04	3.527E-04	0.00
50	1.883E-04	1.884E-04	-0.03
100	1.146E-04	1.146E-04	-0.02
200	5.762E-05	5.763E-05	-0.02
500	1.028E-05	1.028E-05	-0.02
1,000	1.116E-06	1.116E-06	-0.02
2,000	3.952E-07	3.952E-07	-0.01
5,000	1.470E-07	1.471E-07	-0.03
10,000	5.742E-08	5.742E-08	0.00
20,000	2.368E-08	2.369E-08	-0.04
Maximum:			-0.04

B.7.274.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.068E-01	1.068E-01	0.00
2	1.516E-01	1.516E-01	-0.01
5	1.298E-02	1.298E-02	0.00

10	5.608E-04	5.608E-04	-0.01
20	3.576E-04	3.577E-04	-0.01
50	1.606E-04	1.606E-04	-0.01
100	5.041E-05	5.042E-05	-0.01
200	1.146E-05	1.146E-05	-0.02
500	1.528E-06	1.528E-06	-0.01
1,000	8.102E-08	8.103E-08	-0.01
2,000	2.817E-09	2.817E-09	0.01
5,000	9.762E-10	9.766E-10	-0.04
10,000	3.814E-10	3.813E-10	0.02
20,000	1.573E-10	1.573E-10	-0.03
Maximum:			-0.04

B.7.274.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.756E-01	4.756E-01	0.01
2	2.443E-01	2.442E-01	0.02
5	7.473E-02	7.477E-02	-0.05
10	5.953E-02	5.955E-02	-0.03
20	5.118E-02	5.116E-02	0.04
50	3.650E-02	3.653E-02	-0.07
100	2.469E-02	2.468E-02	0.05
200	1.414E-02	1.416E-02	-0.10
500	4.711E-03	4.707E-03	0.09
1,000	2.591E-03	2.586E-03	0.19
2,000	1.993E-03	1.996E-03	-0.12

5,000	1.260E-03	1.260E-03	0.01
10,000	8.085E-04	8.083E-04	0.02
20,000	4.391E-04	4.391E-04	0.00
Maximum:			0.19

B.7.274.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.763E-02	5.763E-02	-0.01
2	5.594E-02	5.594E-02	-0.01
5	5.336E-02	5.337E-02	-0.01

10	4.966E-02	4.966E-02	-0.01
20	4.341E-02	4.342E-02	-0.01
50	3.092E-02	3.093E-02	-0.01
100	2.023E-02	2.024E-02	-0.01
200	1.056E-02	1.056E-02	-0.01
500	1.820E-03	1.820E-03	-0.01
1,000	1.017E-04	1.017E-04	-0.01
2,000	3.636E-07	3.636E-07	-0.01
5,000	4.670E-14	N/A	N/A
10,000	4.209E-25	N/A	N/A
Maximum:			-0.01

B.7.275. Uranium – Inhalation of ²³⁸U (type “S”)

Maximum difference for **Urine**: -0.04%.

Maximum difference for **Feces**: -0.02%.

Maximum difference for **Whole Body**: -0.02%.

Maximum difference for **Lungs**: -0.02%.

B.7.275.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.043E-04	7.044E-04	-0.01
2	4.409E-05	4.410E-05	-0.01
5	2.196E-05	2.196E-05	0.00
10	1.602E-05	1.603E-05	-0.04
20	1.023E-05	1.023E-05	0.00
50	5.687E-06	5.689E-06	-0.03
100	4.090E-06	4.091E-06	-0.02
200	3.184E-06	3.185E-06	-0.02
500	2.329E-06	2.330E-06	-0.02
1,000	1.524E-06	1.525E-06	-0.02
2,000	7.520E-07	7.522E-07	-0.02
5,000	2.471E-07	2.471E-07	-0.02
10,000	1.014E-07	1.014E-07	-0.03
20,000	2.561E-08	2.562E-08	-0.03
Maximum:			-0.04

B.7.275.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.910E-01	4.910E-01	0.00
2	2.494E-01	2.494E-01	0.00
5	7.260E-02	7.261E-02	-0.01
10	5.938E-02	5.939E-02	-0.01
20	5.431E-02	5.432E-02	-0.01
50	4.460E-02	4.461E-02	-0.02
100	3.715E-02	3.715E-02	-0.01
200	3.160E-02	3.160E-02	-0.01
500	2.377E-02	2.377E-02	-0.01
1,000	1.552E-02	1.552E-02	-0.01
2,000	7.610E-03	7.611E-03	-0.01
5,000	2.518E-03	2.518E-03	-0.02
10,000	1.062E-03	1.062E-03	-0.01
20,000	2.855E-04	2.855E-04	-0.02
Maximum:			-0.02

B.7.275.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.139E-01	1.139E-01	-0.01
2	1.628E-01	1.628E-01	-0.01
5	1.403E-02	1.403E-02	0.00
10	6.468E-04	6.469E-04	-0.01
20	4.385E-04	4.386E-04	-0.02
50	2.276E-04	2.277E-04	-0.01
100	9.062E-05	9.064E-05	-0.01
200	3.300E-05	3.301E-05	-0.01
500	1.892E-05	1.892E-05	-0.01
1,000	1.106E-05	1.106E-05	-0.01
2,000	3.884E-06	3.884E-06	-0.01
5,000	3.087E-07	3.088E-07	-0.01
10,000	6.000E-08	6.001E-08	-0.01
20,000	6.685E-09	6.686E-09	-0.01
Maximum:			-0.02

B.7.275.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.428E-02	6.429E-02	-0.01
2	6.270E-02	6.271E-02	-0.01
5	6.070E-02	6.071E-02	-0.01
10	5.789E-02	5.789E-02	-0.01
20	5.314E-02	5.315E-02	-0.01
50	4.385E-02	4.386E-02	-0.01
100	3.666E-02	3.666E-02	-0.01
200	3.122E-02	3.123E-02	-0.01
500	2.341E-02	2.341E-02	-0.02
1,000	1.516E-02	1.516E-02	-0.02
2,000	7.277E-03	7.278E-03	-0.01
5,000	2.264E-03	2.264E-03	-0.02
10,000	8.911E-04	8.913E-04	-0.02
Maximum:			-0.02

B.7.276. Uranium – Ingestion of ^{238}U ($f_1 = 0.02$)

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: -0.63%.

B.7.276.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.257E-02	1.257E-02	-0.01
2	6.918E-04	6.919E-04	-0.02
5	3.012E-04	3.012E-04	0.02
10	1.918E-04	1.919E-04	-0.04
20	8.907E-05	8.904E-05	0.03
50	2.119E-05	2.120E-05	-0.05
100	7.052E-06	7.051E-06	0.00
200	1.720E-06	1.720E-06	0.00
500	2.310E-07	2.311E-07	-0.03
1,000	1.618E-07	1.618E-07	0.00
2,000	1.094E-07	1.094E-07	0.00
5,000	4.126E-08	4.127E-08	-0.02
10,000	1.630E-08	1.630E-08	0.01
20,000	6.750E-09	6.752E-09	-0.03
Maximum:			-0.05

B.7.276.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.782E-01	2.782E-01	0.00
2	3.810E-01	3.810E-01	0.00
5	3.068E-02	3.067E-02	0.00
10	2.152E-04	2.152E-04	0.00
20	3.669E-07	3.668E-07	0.02

50	1.249E-07	1.246E-07	0.22
100	4.619E-08	4.626E-08	-0.15
200	1.138E-08	1.137E-08	0.11
500	1.532E-09	1.534E-09	-0.10
1,000	1.075E-09	1.074E-09	0.04
2,000	7.267E-10	7.265E-10	0.02
5,000	2.740E-10	2.740E-10	-0.03
10,000	1.083E-10	1.082E-10	0.03
20,000	4.483E-11	4.484E-11	-0.02
Maximum:			0.22

B.7.276.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.093E-01	7.093E-01	0.00
2	3.276E-01	3.276E-01	0.01
5	2.392E-02	2.393E-02	-0.06
10	4.595E-03	4.600E-03	-0.10
20	3.212E-03	3.199E-03	0.43
50	1.924E-03	1.934E-03	-0.55
100	1.336E-03	1.328E-03	0.62
200	9.609E-04	9.670E-04	-0.63
500	7.930E-04	7.905E-04	0.32
1,000	6.989E-04	6.976E-04	0.19
2,000	5.625E-04	5.632E-04	-0.13
5,000	3.579E-04	3.578E-04	0.03
10,000	2.305E-04	2.304E-04	0.03
Maximum:			-0.63

B.7.277. Uranium – Ingestion of ^{238}U ($f_1 = 0.002$)

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: +0.22%.

Maximum difference for **Whole Body**: -0.63%.

B.7.277.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.256E-03	1.256E-03	-0.01
2	7.037E-05	7.038E-05	-0.02
5	3.013E-05	3.013E-05	0.02
10	1.919E-05	1.919E-05	-0.04
20	8.908E-06	8.906E-06	0.03
50	2.119E-06	2.120E-06	-0.05
100	7.052E-07	7.052E-07	0.00
200	1.720E-07	1.720E-07	0.00
500	2.310E-08	2.311E-08	-0.03
1,000	1.618E-08	1.618E-08	0.00
2,000	1.094E-08	1.094E-08	0.00
5,000	4.126E-09	4.127E-09	-0.02
10,000	1.630E-09	1.630E-09	0.01
20,000	6.750E-10	6.752E-10	-0.03

Maximum:	-0.05
----------	-------

B.7.277.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.820E-01	2.819E-01	0.00
2	3.883E-01	3.883E-01	0.00
5	3.134E-02	3.134E-02	0.00
10	2.192E-04	2.192E-04	0.00
20	4.567E-08	4.567E-08	0.01
50	1.249E-08	1.246E-08	0.22
100	4.619E-09	4.626E-09	-0.15
200	1.138E-09	1.137E-09	0.11
500	1.532E-10	1.534E-10	-0.10
1,000	1.075E-10	1.074E-10	0.04
2,000	7.267E-11	7.265E-11	0.02
5,000	2.740E-11	2.740E-11	-0.03
10,000	1.083E-11	1.082E-11	0.03

20,000	4.483E-12	4.484E-12	-0.02
Maximum:			0.22

B.7.277.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.168E-01	7.168E-01	0.00
2	3.285E-01	3.284E-01	0.00
5	1.926E-02	1.926E-02	-0.01
10	5.747E-04	5.751E-04	-0.08

20	3.213E-04	3.199E-04	0.43
50	1.924E-04	1.934E-04	-0.55
100	1.336E-04	1.328E-04	0.62
200	9.609E-05	9.670E-05	-0.63
500	7.930E-05	7.905E-05	0.32
1,000	6.989E-05	6.976E-05	0.19
2,000	5.625E-05	5.632E-05	-0.13
5,000	3.579E-05	3.578E-05	0.02
10,000	2.305E-05	2.304E-05	0.03
Maximum:			-0.63

B.7.278. Uranium – Injection of ²³⁸U

Maximum difference for **Urine**: -0.05%.

Maximum difference for **Feces**: +0.23%.

Maximum difference for **Whole Body**: -0.63%.

B.7.278.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.450E-01	6.450E-01	-0.01
2	2.210E-02	2.211E-02	-0.03
5	1.477E-02	1.476E-02	0.02
10	9.423E-03	9.427E-03	-0.05
20	4.391E-03	4.389E-03	0.03
50	1.053E-03	1.053E-03	-0.05
100	3.513E-04	3.513E-04	0.00
200	8.578E-05	8.578E-05	0.00
500	1.155E-05	1.155E-05	-0.03
1,000	8.088E-06	8.088E-06	0.00
2,000	5.470E-06	5.470E-06	0.00
5,000	2.063E-06	2.063E-06	-0.02
10,000	8.151E-07	8.150E-07	0.01
20,000	3.375E-07	3.376E-07	-0.03
Maximum:			-0.05

50	6.215E-06	6.201E-06	0.23
100	2.301E-06	2.305E-06	-0.15
200	5.676E-07	5.669E-07	0.11
500	7.658E-08	7.665E-08	-0.10
1,000	5.373E-08	5.371E-08	0.04
2,000	3.633E-08	3.632E-08	0.02
5,000	1.370E-08	1.370E-08	-0.02
10,000	5.414E-09	5.412E-09	0.03
20,000	2.241E-09	2.242E-09	-0.02
Maximum:			0.23

B.7.278.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	3.549E-01	3.533E-01	0.43
2	3.307E-01	3.293E-01	0.41
5	2.780E-01	2.787E-01	-0.29
10	2.217E-01	2.219E-01	-0.08
20	1.597E-01	1.590E-01	0.43
50	9.597E-02	9.650E-02	-0.55
100	6.675E-02	6.634E-02	0.62
200	4.803E-02	4.833E-02	-0.63
500	3.965E-02	3.952E-02	0.32
1,000	3.495E-02	3.488E-02	0.19
2,000	2.812E-02	2.816E-02	-0.13
5,000	1.789E-02	1.789E-02	0.02
10,000	1.153E-02	1.152E-02	0.03
Maximum:			-0.63

B.7.278.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.685E-03	1.684E-03	0.03
2	1.872E-03	1.872E-03	0.01
5	1.981E-04	1.978E-04	0.19
10	3.724E-05	3.728E-05	-0.11
20	1.765E-05	1.764E-05	0.00

B.7.279. Uranium – Inhalation of ²³⁹U (type “F”)

Maximum difference for **Urine**: 0.0%.

Maximum difference for **Feces**: 0.0%.

Maximum difference for **Whole Body**: 0.0%.

Maximum difference for **Kidney**: 0.0%.

B.7.279.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	7.12E-20	N/A	N/A
2	9.58E-40	N/A	N/A
Maximum:			0.0

1	7.12E-20	N/A	N/A
2	9.58E-40	N/A	N/A
Maximum:			0.0

B.7.279.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.16E-20	N/A	N/A
2	1.16E-38	N/A	N/A
Maximum:			0.0

B.7.279.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.42E-19	N/A	N/A

2	3.07E-38	N/A	N/A
Maximum:			0.0

B.7.279.4. Kidney Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.24E-20	N/A	N/A
2	4.43E-39	N/A	N/A
Maximum:			0.0

B.7.280. Uranium – Inhalation of ²³⁹U (type “M”)

Maximum difference for **Urine**: 0.0%.

Maximum difference for **Feces**: 0.0%.

Maximum difference for **Whole Body**: 0.0%.

Maximum difference for **Kidney**: 0.0%.

Maximum difference for **Lung**: 0.0%.

B.7.280.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.00E-21	N/A	N/A
2	1.69E-40	N/A	N/A
Maximum:			0.0

B.7.280.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.84E-19	N/A	N/A
2	3.67E-38	N/A	N/A
Maximum:			0.0

B.7.280.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.14E-20	N/A	N/A
2	2.28E-38	N/A	N/A
Maximum:			0.0

B.7.280.4. Kidney Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.58E-21	N/A	N/A
2	5.72E-40	N/A	N/A
Maximum:			0.0

B.7.280.5. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.23E-20	N/A	N/A

2	8.40E-39	N/A	N/A
Maximum:			0.0

B.7.281. Uranium – Inhalation of ²³⁹U (type “S”)

Maximum difference for **Urine**: 0.0%.

Maximum difference for **Feces**: 0.0%.

Maximum difference for **Whole Body**: 0.0%.

Maximum difference for **Kidney**: 0.0%.

Maximum difference for **Lung**: 0.0%.

B.7.281.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.73E-22	N/A	N/A
2	6.62E-42	N/A	N/A
Maximum:			0.0

B.7.281.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.42E-20	N/A	N/A
2	2.45E-38	N/A	N/A
Maximum:			0.0

B.7.281.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.90E-19	N/A	N/A
2	3.75E-38	N/A	N/A
Maximum:			0.0

B.7.281.5. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.49E-20	N/A	N/A

B.7.281.4. Kidney Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.88E-23	N/A	N/A
2	1.78E-41	N/A	N/A
Maximum:			0.0
2	9.42E-39	N/A	N/A
Maximum:			0.0

B.7.282. Uranium – Ingestion of ²³⁹U (f₁ = 0.02)

Maximum difference for **Urine**: 0.0%.

Maximum difference for **Feces**: 0.0%.

Maximum difference for **Whole Body**: 0.0%.

Maximum difference for **Kidney**: 0.0%.

B.7.282.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.87E-21	N/A	N/A
2	1.04E-40	N/A	N/A
Maximum:			0.0

B.7.282.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.08E-19	N/A	N/A
2	5.72E-38	N/A	N/A
Maximum:			0.0

B.7.282.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	2.75E-19	N/A	N/A
2	4.92E-38	N/A	N/A
Maximum:			0.0

B.7.282.4. Kidney Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.74E-22	N/A	N/A
2	3.16E-40	N/A	N/A
Maximum:			0.0

B.7.283. Uranium – Injection of ²³⁹U

Maximum difference for **Urine**: 0.0%.

Maximum difference for **Feces**: 0.0%.

Maximum difference for **Whole Body**: 0.0%.

Maximum difference for **Kidney**: 0.0%.

B.7.283.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.50E-19	N/A	N/A
2	3.32E-39	N/A	N/A
Maximum:			0.0

B.7.283.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.53E-22	N/A	N/A
2	2.81E-40	N/A	N/A
Maximum:			0.0

B.7.283.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	1.38E-19	N/A	N/A
2	4.97E-38	N/A	N/A
Maximum:			0.0

B.7.283.4. Kidney Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.35E-20	N/A	N/A
2	1.55E-38	N/A	N/A
Maximum:			0.0

B.7.284. Ytterbium – Inhalation of ¹⁶⁹Yb (type “M”)

Maximum difference for **Urine**: -0.22%.

Maximum difference for **Feces**: -0.21%.

Maximum difference for **Whole Body**: -0.42%.

Maximum difference for **Lungs**: -0.22%.

B.7.284.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.70E-03	5.70E-03	-0.01
2	5.50E-04	5.50E-04	0.02
5	6.97E-05	6.97E-05	-0.01
10	5.61E-05	5.61E-05	-0.02
20	3.76E-05	3.76E-05	-0.02
50	1.33E-05	1.33E-05	-0.03
100	3.02E-06	3.02E-06	-0.05
200	2.00E-07	2.00E-07	-0.09
500	1.01E-10	1.01E-10	-0.22
1,000	1.12E-15	N/A	N/A
2,000	3.47E-25	N/A	N/A
Maximum:			-0.22

B.7.284.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.07E-01	1.07E-01	0
2	1.51E-01	1.51E-01	-0.01
5	1.22E-02	1.22E-02	-0.01
10	5.18E-04	5.18E-04	-0.02
20	2.74E-04	2.74E-04	-0.02
50	6.86E-05	6.86E-05	-0.03
100	8.86E-06	8.86E-06	-0.05
200	3.50E-07	3.50E-07	-0.09
500	1.31E-10	1.31E-10	-0.21
1,000	1.15E-15	N/A	N/A
2,000	3.47E-25	N/A	N/A
Maximum:			-0.21

B.7.284.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.80E-01	4.80E-01	0
2	2.43E-01	2.43E-01	-0.01
5	7.27E-02	7.27E-02	-0.01
10	5.46E-02	5.46E-02	-0.02
20	4.04E-02	4.04E-02	-0.02
50	1.77E-02	1.77E-02	-0.03
100	5.08E-03	5.08E-03	-0.05
200	4.99E-04	4.99E-04	-0.09
500	6.22E-07	6.23E-07	-0.22
1,000	1.09E-11	1.09E-11	-0.42
2,000	3.51E-21	N/A	N/A
Maximum:			-0.42

B.7.284.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.64E-02	5.64E-02	-0.01
2	5.36E-02	5.36E-02	-0.01
5	4.79E-02	4.79E-02	-0.02
10	4.00E-02	4.00E-02	-0.02
20	2.82E-02	2.82E-02	-0.02
50	1.05E-02	1.05E-02	-0.04
100	2.32E-03	2.32E-03	-0.06
200	1.39E-04	1.39E-04	-0.09
500	3.61E-08	3.62E-08	-0.22
1,000	4.01E-14	N/A	N/A
2,000	5.65E-26	N/A	N/A
Maximum:			-0.22

B.7.285. Ytterbium – Inhalation of ¹⁶⁹Yb (type “S”)

Maximum difference for **Urine**: -0.21%.

Maximum difference for **Feces**: -0.22%.

Maximum difference for **Whole Body**: -0.42%.

Maximum difference for **Lungs**: -0.42%.

B.7.285.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.45E-05	9.45E-05	-0.01
2	1.37E-05	1.37E-05	0.02
5	1.56E-06	1.56E-06	-0.01
10	1.29E-06	1.29E-06	-0.01
20	9.15E-07	9.15E-07	-0.02
50	3.76E-07	3.76E-07	-0.03
100	1.06E-07	1.06E-07	-0.06
200	1.06E-08	1.06E-08	-0.09

500	1.30E-11	1.31E-11	-0.21
1,000	1.98E-16	N/A	N/A
2,000	5.32E-26	N/A	N/A
Maximum:			-0.21

B.7.285.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.12E-01	1.12E-01	0
2	1.56E-01	1.56E-01	-0.01
5	1.26E-02	1.26E-02	0

10	5.23E-04	5.23E-04	-0.02
20	2.86E-04	2.86E-04	-0.02
50	7.76E-05	7.76E-05	-0.03
100	1.05E-05	1.05E-05	-0.05
200	4.45E-07	4.46E-07	-0.09
500	3.89E-10	3.90E-10	-0.22
1,000	4.56E-15	N/A	N/A
2,000	6.57E-25	N/A	N/A
Maximum:			-0.22

B.7.285.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.81E-01	4.81E-01	0
2	2.39E-01	2.39E-01	0
5	6.51E-02	6.52E-02	-0.01
10	4.79E-02	4.79E-02	-0.02
20	3.53E-02	3.53E-02	-0.02
50	1.52E-02	1.52E-02	-0.04
100	4.30E-03	4.31E-03	-0.05
200	4.23E-04	4.24E-04	-0.1

500	4.90E-07	4.91E-07	-0.22
1,000	6.63E-12	6.66E-12	-0.42
2,000	1.42E-21	N/A	N/A
Maximum:			-0.42

B.7.285.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.29E-02	6.29E-02	-0.01
2	6.00E-02	6.01E-02	-0.01
5	5.45E-02	5.45E-02	-0.02
10	4.66E-02	4.66E-02	-0.02
20	3.45E-02	3.45E-02	-0.02
50	1.49E-02	1.49E-02	-0.03
100	4.21E-03	4.21E-03	-0.05
200	4.11E-04	4.11E-04	-0.09
500	4.65E-07	4.66E-07	-0.22
1,000	5.98E-12	6.00E-12	-0.42
2,000	1.13E-21	N/A	N/A
Maximum:			-0.42

B.7.286. Ytterbium – Ingestion of ¹⁶⁹Yb (f₁ = 0.0005)

Maximum difference for **Urine**: -0.08%.

Maximum difference for **Feces**: -0.08%.

Maximum difference for **Whole Body**: -0.2%.

B.7.286.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	9.10E-05	9.10E-05	0
2	1.68E-05	1.68E-05	0.02
5	2.66E-07	2.66E-07	0
10	1.73E-07	1.73E-07	0
20	7.80E-08	7.80E-08	-0.01
50	1.29E-08	1.29E-08	-0.01
100	3.02E-09	3.02E-09	-0.04
200	3.35E-10	3.35E-10	-0.08
500	4.77E-13	N/A	N/A
1,000	8.57E-18	N/A	N/A
2,000	2.77E-27	N/A	N/A
Maximum:			-0.08

B.7.286.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.76E-01	2.76E-01	0
2	3.72E-01	3.72E-01	0
5	2.82E-02	2.82E-02	0
10	1.77E-04	1.77E-04	0

20	9.13E-08	9.13E-08	-0.01
50	1.33E-08	1.33E-08	-0.01
100	3.03E-09	3.03E-09	-0.04
200	3.35E-10	3.35E-10	-0.08
500	4.77E-13	N/A	N/A
1,000	8.57E-18	N/A	N/A
2,000	2.77E-27	N/A	N/A
Maximum:			-0.08

B.7.286.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.02E-01	7.02E-01	0
2	3.15E-01	3.15E-01	0
5	1.71E-02	1.71E-02	0
10	3.22E-04	3.23E-04	0
20	1.75E-04	1.75E-04	-0.01
50	8.99E-05	8.99E-05	-0.02
100	3.01E-05	3.01E-05	-0.04
200	3.38E-06	3.39E-06	-0.08
500	4.81E-09	4.82E-09	-0.2
1,000	8.65E-14	N/A	N/A
2,000	2.80E-23	N/A	N/A
Maximum:			-0.2

B.7.287. Ytterbium – Injection of ¹⁶⁹Yb

Maximum difference for **Urine**: -0.2%.

Maximum difference for **Feces**: -0.2%.

Maximum difference for **Whole Body**: -0.41%.

B.7.287.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.01E-01	2.01E-01	-0.01
2	1.69E-02	1.69E-02	0.03
5	5.21E-04	5.21E-04	-0.01
10	3.41E-04	3.41E-04	-0.01
20	1.54E-04	1.54E-04	0
50	2.56E-05	2.56E-05	-0.01
100	6.04E-06	6.04E-06	-0.04
200	6.70E-07	6.71E-07	-0.08
500	9.53E-10	9.55E-10	-0.2
1,000	1.71E-14	N/A	N/A
2,000	5.54E-24	N/A	N/A
Maximum:			-0.2

B.7.287.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	4.99E-02	4.99E-02	-0.01
2	8.30E-02	8.30E-02	0
5	8.24E-03	8.24E-03	0
10	4.23E-04	4.23E-04	-0.01

20	1.68E-04	1.68E-04	-0.01
50	2.65E-05	2.65E-05	-0.01
100	6.05E-06	6.06E-06	-0.04
200	6.70E-07	6.71E-07	-0.08
500	9.53E-10	9.55E-10	-0.2
1,000	1.71E-14	N/A	N/A
2,000	5.54E-24	N/A	N/A
Maximum:			-0.2

B.7.287.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.28E-01	7.28E-01	0
2	6.13E-01	6.13E-01	0
5	4.98E-01	4.98E-01	0
10	4.39E-01	4.39E-01	0
20	3.49E-01	3.49E-01	-0.01
50	1.80E-01	1.80E-01	-0.02
100	6.02E-02	6.02E-02	-0.04
200	6.77E-03	6.77E-03	-0.08
500	9.62E-06	9.64E-06	-0.2
1,000	1.73E-10	1.74E-10	-0.41
2,000	5.60E-20	N/A	N/A
Maximum:			-0.41

B.7.288. Yttrium – Inhalation of ⁸⁸Y (type “M”)Maximum difference for **Urine**: -0.25%.Maximum difference for **Feces**: -0.24%.Maximum difference for **Whole Body**: -0.6%.Maximum difference for **Lungs**: -0.24%.**B.7.288.1. Urinary Excretion Rate**

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.23E-03	3.23E-03	-0.01
2	3.05E-04	3.05E-04	0.02
5	3.29E-05	3.29E-05	-0.02
10	2.96E-05	2.96E-05	-0.02
20	2.42E-05	2.42E-05	-0.02
50	1.42E-05	1.42E-05	-0.03
100	6.68E-06	6.69E-06	-0.04
200	1.82E-06	1.82E-06	-0.06
500	4.47E-08	4.47E-08	-0.13
1,000	9.70E-11	9.72E-11	-0.25
2,000	5.25E-16	N/A	N/A
5,000	2.35E-31	N/A	N/A
Maximum:			-0.25

B.7.288.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.08E-01	1.08E-01	-0.01
2	1.54E-01	1.54E-01	0
5	1.30E-02	1.30E-02	0
10	5.65E-04	5.65E-04	-0.02
20	3.43E-04	3.43E-04	-0.02
50	1.32E-04	1.32E-04	-0.02

100	3.32E-05	3.32E-05	-0.04
200	4.91E-06	4.92E-06	-0.06
500	1.03E-07	1.03E-07	-0.13
1,000	2.11E-10	2.11E-10	-0.24
2,000	9.71E-16	N/A	N/A
5,000	2.85E-31	N/A	N/A
Maximum:			-0.24

B.7.288.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.90E-01	4.90E-01	0
2	2.55E-01	2.55E-01	0
5	8.40E-02	8.40E-02	-0.01
10	6.93E-02	6.93E-02	-0.01
20	6.07E-02	6.07E-02	-0.02
50	4.36E-02	4.37E-02	-0.02
100	2.83E-02	2.83E-02	-0.04
200	1.36E-02	1.36E-02	-0.06
500	1.81E-03	1.81E-03	-0.16
1,000	6.91E-05	6.93E-05	-0.31
2,000	1.04E-07	1.04E-07	-0.6
5,000	3.49E-16	N/A	N/A
10,000	2.64E-30	N/A	N/A
Maximum:			-0.6

B.7.288.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.73E-02	5.73E-02	-0.01
2	5.52E-02	5.52E-02	-0.01
5	5.17E-02	5.17E-02	-0.01
10	4.65E-02	4.65E-02	-0.02
20	3.81E-02	3.81E-02	-0.02

50	2.23E-02	2.24E-02	-0.03
100	1.06E-02	1.06E-02	-0.04
200	2.88E-03	2.88E-03	-0.06
500	7.05E-05	7.06E-05	-0.13
1,000	1.53E-07	1.53E-07	-0.24
2,000	8.18E-13	N/A	N/A
5,000	3.55E-28	N/A	N/A
Maximum:			-0.24

B.7.289. Yttrium – Inhalation of ⁸⁸Y (type “S”)

Maximum difference for **Urine**: -0.25%.

Maximum difference for **Feces**: -0.48%.

Maximum difference for **Whole Body**: -0.5%.

Maximum difference for **Lungs**: -0.47%.

B.7.289.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.68E-05	3.68E-05	-0.01
2	4.32E-06	4.32E-06	0.02
5	7.52E-07	7.52E-07	-0.02
10	6.93E-07	6.93E-07	-0.02
20	5.95E-07	5.95E-07	-0.02
50	4.02E-07	4.02E-07	-0.03
100	2.42E-07	2.42E-07	-0.04
200	1.07E-07	1.07E-07	-0.06
500	1.14E-08	1.15E-08	-0.13
1,000	2.88E-10	2.89E-10	-0.25
2,000	2.10E-13	N/A	N/A
5,000	2.26E-22	N/A	N/A
10,000	6.95E-37	N/A	N/A
Maximum:			-0.25

B.7.289.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.88E-01	4.88E-01	0
2	2.46E-01	2.46E-01	0
5	7.02E-02	7.03E-02	-0.01
10	5.57E-02	5.57E-02	-0.02
20	4.78E-02	4.78E-02	-0.02
50	3.24E-02	3.24E-02	-0.03
100	1.96E-02	1.96E-02	-0.04
200	8.80E-03	8.81E-03	-0.06
500	9.72E-04	9.73E-04	-0.13
1,000	2.63E-05	2.64E-05	-0.25
2,000	2.35E-08	2.36E-08	-0.5
5,000	4.75E-17	N/A	N/A
10,000	3.11E-31	N/A	N/A
Maximum:			-0.5

B.7.289.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.13E-01	1.13E-01	-0.01
2	1.61E-01	1.61E-01	-0.01
5	1.36E-02	1.36E-02	0
10	6.08E-04	6.08E-04	-0.02
20	3.86E-04	3.86E-04	-0.02
50	1.65E-04	1.65E-04	-0.03
100	4.76E-05	4.76E-05	-0.04
200	9.11E-06	9.11E-06	-0.06
500	7.45E-07	7.46E-07	-0.13
1,000	1.69E-08	1.69E-08	-0.24
2,000	8.95E-12	9.00E-12	-0.48
5,000	2.56E-21	N/A	N/A
10,000	4.12E-36	N/A	N/A
Maximum:			-0.48

B.7.289.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.39E-02	6.39E-02	-0.01
2	6.19E-02	6.19E-02	-0.01
5	5.88E-02	5.88E-02	-0.02
10	5.42E-02	5.43E-02	-0.02
20	4.67E-02	4.67E-02	-0.02
50	3.17E-02	3.17E-02	-0.02
100	1.91E-02	1.91E-02	-0.04
200	8.51E-03	8.51E-03	-0.06
500	9.07E-04	9.08E-04	-0.13
1,000	2.27E-05	2.28E-05	-0.25
2,000	1.64E-08	1.65E-08	-0.47
5,000	1.72E-17	N/A	N/A
10,000	5.14E-32	N/A	N/A
Maximum:			-0.47

B.7.290. Yttrium – Ingestion of ⁸⁸Y (f₁ = 0.0001)

Maximum difference for **Urine**: +0.14%.

Maximum difference for **Feces**: 0.0%.

Maximum difference for **Whole Body**: -0.6%.

B.7.290.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.04E-05	1.04E-05	-0.01
2	1.91E-06	1.91E-06	0.02
5	4.73E-10	4.72E-10	0.14
10	3.23E-16	N/A	N/A
20	2.75E-28	N/A	N/A
Maximum:			+0.14

B.7.290.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.81E-01	2.81E-01	0
2	3.84E-01	3.84E-01	0
5	3.04E-02	3.04E-02	0
10	2.06E-04	2.06E-04	0
20	8.76E-09	8.76E-09	0
50	6.47E-22	N/A	N/A

100	8.97E-44	N/A	N/A
Maximum:			0.0

B.7.290.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.13E-01	7.13E-01	0
2	3.24E-01	3.24E-01	0
5	1.82E-02	1.82E-02	0
10	1.90E-04	1.90E-04	0
20	6.59E-05	6.59E-05	-0.01
50	5.42E-05	5.42E-05	-0.02
100	3.91E-05	3.92E-05	-0.03
200	2.04E-05	2.04E-05	-0.06
500	2.90E-06	2.91E-06	-0.15
1,000	1.12E-07	1.13E-07	-0.3
2,000	1.69E-10	1.70E-10	-0.6
5,000	5.68E-19	N/A	N/A
10,000	4.29E-33	N/A	N/A
Maximum:			-0.6

B.7.291. Yttrium – Injection of ⁸⁸Y

Maximum difference for **Urine**: +0.16%.

Maximum difference for **Feces**: -0.01%.

Maximum difference for **Whole Body**: -0.6%.

B.7.291.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.14E-01	1.14E-01	0
2	9.40E-03	9.40E-03	0.03
5	2.25E-06	2.25E-06	0.16
10	1.54E-12	2.07E-12	N/A
20	1.31E-24	N/A	N/A
Maximum:			+0.16

B.7.291.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.85E-02	2.85E-02	-0.01
2	4.79E-02	4.79E-02	0
5	4.66E-03	4.66E-03	0.01
10	3.21E-05	3.21E-05	0
20	1.37E-09	1.37E-09	0
50	1.01E-22	N/A	N/A

100	1.40E-44	N/A	N/A
Maximum:			-0.01

B.7.291.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.51E-01	8.51E-01	0
2	7.88E-01	7.88E-01	0
5	7.29E-01	7.29E-01	0
10	7.03E-01	7.03E-01	0
20	6.59E-01	6.59E-01	-0.01
50	5.42E-01	5.42E-01	-0.02
100	3.91E-01	3.92E-01	-0.03
200	2.04E-01	2.04E-01	-0.06
500	2.90E-02	2.91E-02	-0.15
1,000	1.12E-03	1.13E-03	-0.3
2,000	1.69E-06	1.70E-06	-0.6
5,000	5.68E-15	N/A	N/A
10,000	4.29E-29	N/A	N/A
Maximum:			-0.6

B.7.292. Yttrium – Injection of ⁹⁰Y

Maximum difference for **Urine**: +0.16%.

Maximum difference for **Feces**: +0.01%.

Maximum difference for **Whole Body**: +0.01%.

B.7.292.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	8.856E-02	8.856E-02	0.00
2	5.664E-03	5.662E-03	0.03
5	6.341E-07	6.331E-07	0.16
10	1.219E-13	N/A	N/A
20	8.244E-27	N/A	N/A
Maximum:			0.16

B.7.292.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.208E-02	2.208E-02	-0.01
2	2.883E-02	2.883E-02	0.00
5	1.314E-03	1.313E-03	0.01

10	2.549E-06	2.549E-06	0.01
20	8.613E-12	8.612E-12	0.01
50	3.178E-28	N/A	N/A
Maximum:			0.01

B.7.292.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.605E-01	6.605E-01	0.00
2	4.748E-01	4.748E-01	0.00
5	2.053E-01	2.053E-01	0.00
10	5.576E-02	5.576E-02	0.00
20	4.146E-03	4.146E-03	0.00
50	1.704E-06	1.704E-06	0.01
100	3.871E-12	N/A	N/A
200	1.998E-23	N/A	N/A
Maximum:			0.01

B.7.293. Yttrium – Inhalation of ⁹¹Y (type “M”)

Maximum difference for **Urine**: +0.15%.

Maximum difference for **Feces**: +0.33%.

Maximum difference for **Whole Body**: +0.53%.

Maximum difference for **Lungs**: +0.32%.

B.7.293.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.21E-03	3.21E-03	-0.01
2	3.02E-04	3.01E-04	0.02
5	3.21E-05	3.21E-05	-0.01
10	2.80E-05	2.81E-05	-0.01
20	2.18E-05	2.18E-05	-0.01
50	1.08E-05	1.08E-05	0
100	3.92E-06	3.92E-06	0.02
200	6.25E-07	6.24E-07	0.05
500	3.09E-09	3.08E-09	0.15
1,000	4.63E-13	N/A	N/A
2,000	1.20E-20	N/A	N/A
5,000	5.83E-43	N/A	N/A
Maximum:			+0.15

B.7.293.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.08E-01	1.08E-01	-0.01
2	1.52E-01	1.52E-01	0
5	1.27E-02	1.27E-02	0
10	5.36E-04	5.36E-04	-0.01
20	3.09E-04	3.09E-04	-0.01
50	1.01E-04	1.01E-04	0
100	1.95E-05	1.95E-05	0.02
200	1.69E-06	1.69E-06	0.05
500	7.10E-09	7.09E-09	0.15
1,000	1.01E-12	1.00E-12	0.33
2,000	2.22E-20	N/A	N/A
5,000	7.08E-43	N/A	N/A
Maximum:			+0.33

B.7.293.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.87E-01	4.87E-01	0
2	2.52E-01	2.52E-01	0
5	8.17E-02	8.17E-02	-0.01
10	6.57E-02	6.57E-02	-0.01
20	5.46E-02	5.46E-02	-0.01
50	3.34E-02	3.34E-02	0
100	1.66E-02	1.66E-02	0.02
200	4.67E-03	4.67E-03	0.05
500	1.25E-04	1.25E-04	0.13
1,000	3.30E-07	3.29E-07	0.26
2,000	2.36E-12	2.35E-12	0.53
5,000	8.66E-28	N/A	N/A
Maximum:			+0.53

B.7.293.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.70E-02	5.70E-02	-0.01
2	5.46E-02	5.46E-02	-0.01
5	5.03E-02	5.03E-02	-0.01
10	4.41E-02	4.41E-02	-0.01
20	3.43E-02	3.43E-02	-0.01
50	1.71E-02	1.71E-02	0
100	6.19E-03	6.19E-03	0.02
200	9.88E-04	9.87E-04	0.05
500	4.87E-06	4.86E-06	0.15
1,000	7.28E-10	7.26E-10	0.32
2,000	1.87E-17	N/A	N/A
5,000	8.80E-40	N/A	N/A
Maximum:			+0.32

B.7.294. Yttrium – Inhalation of ⁹¹Y (type “S”)

Maximum difference for **Urine**: +0.32%.

Maximum difference for **Feces**: +0.32%.

Maximum difference for **Whole Body**: +0.32%.

Maximum difference for **Lungs**: +0.32%.

B.7.294.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.66E-05	3.66E-05	-0.01
2	4.28E-06	4.28E-06	0.02
5	7.33E-07	7.33E-07	-0.01
10	6.57E-07	6.57E-07	-0.01
20	5.34E-07	5.34E-07	-0.01
50	3.08E-07	3.08E-07	0
100	1.42E-07	1.42E-07	0.02
200	3.68E-08	3.68E-08	0.05
500	7.91E-10	7.90E-10	0.15
1,000	1.38E-12	1.37E-12	0.32
2,000	4.78E-18	N/A	N/A
5,000	5.62E-34	N/A	N/A
Maximum:			+0.32

B.7.294.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.13E-01	1.13E-01	0
2	1.59E-01	1.59E-01	0
5	1.33E-02	1.33E-02	0
10	5.76E-04	5.76E-04	-0.01
20	3.47E-04	3.47E-04	-0.01
50	1.26E-04	1.26E-04	0
100	2.79E-05	2.79E-05	0.02
200	3.13E-06	3.13E-06	0.05
500	5.15E-08	5.14E-08	0.15
1,000	8.07E-11	8.04E-11	0.32
2,000	2.04E-16	N/A	N/A
5,000	6.36E-33	N/A	N/A
Maximum:			+0.32

B.7.294.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.86E-01	4.86E-01	0
2	2.44E-01	2.44E-01	0
5	6.84E-02	6.84E-02	-0.01
10	5.28E-02	5.28E-02	-0.01
20	4.30E-02	4.30E-02	-0.01
50	2.48E-02	2.48E-02	0
100	1.15E-02	1.15E-02	0.02
200	3.02E-03	3.02E-03	0.05
500	6.71E-05	6.70E-05	0.15
1,000	1.26E-07	1.25E-07	0.32
2,000	5.35E-13	N/A	N/A
5,000	1.18E-28	N/A	N/A
Maximum:			+0.32

B.7.294.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	6.35E-02	6.35E-02	-0.01
2	6.12E-02	6.12E-02	-0.01
5	5.72E-02	5.72E-02	-0.01
10	5.14E-02	5.14E-02	-0.01
20	4.19E-02	4.19E-02	-0.01
50	2.43E-02	2.43E-02	0
100	1.12E-02	1.12E-02	0.02
200	2.92E-03	2.92E-03	0.05
500	6.27E-05	6.26E-05	0.15
1,000	1.09E-07	1.08E-07	0.32
2,000	3.73E-13	N/A	N/A
5,000	4.27E-29	N/A	N/A
Maximum:			+0.32

B.7.295. Yttrium – Ingestion of ⁹¹Y (f₁ = 0.0001)

Maximum difference for **Urine**: +0.15%.

Maximum difference for **Feces**: +0.01%.

Maximum difference for **Whole Body**: +0.27%.

B.7.295.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.03E-05	1.03E-05	0
2	1.89E-06	1.89E-06	0.02
5	4.61E-10	4.60E-10	0.15
10	3.06E-16	N/A	N/A
20	2.47E-28	N/A	N/A
Maximum:			+0.15

B.7.295.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.79E-01	2.79E-01	0
2	3.80E-01	3.80E-01	0
5	2.96E-02	2.96E-02	0
10	1.95E-04	1.95E-04	0
20	7.87E-09	7.87E-09	0.01
Maximum:			+0.01

B.7.295.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.09E-01	7.09E-01	0
2	3.21E-01	3.21E-01	0
5	1.77E-02	1.77E-02	0
10	1.80E-04	1.80E-04	0
20	5.92E-05	5.92E-05	0.01

50	4.15E-05	4.15E-05	0.01
100	2.29E-05	2.29E-05	0.03
200	7.02E-06	7.01E-06	0.05
500	2.01E-07	2.00E-07	0.13
1,000	5.37E-10	5.35E-10	0.27
2,000	3.84E-15	N/A	N/A
5,000	1.41E-30	N/A	N/A
Maximum:			+0.27

B.7.296. Yttrium – Injection of ⁹¹Y

Maximum difference for **Urine**: +0.16%.

Maximum difference for **Feces**: +0.02%.

Maximum difference for **Whole Body**: +0.53%.

B.7.296.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.14E-01	1.14E-01	0
2	9.30E-03	9.30E-03	0.03
5	2.19E-06	2.19E-06	0.16
10	1.46E-12	1.96E-12	N/A
20	1.18E-24	N/A	N/A
Maximum:			+0.16

100	8.41E-45	N/A	N/A
Maximum:			+0.02

B.7.296.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.83E-02	2.83E-02	-0.01
2	4.74E-02	4.74E-02	0
5	4.54E-03	4.54E-03	0.01
10	3.05E-05	3.05E-05	0.01
20	1.23E-09	1.23E-09	0.02

B.7.296.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	8.46E-01	8.46E-01	0
2	7.80E-01	7.80E-01	0
5	7.10E-01	7.10E-01	0
10	6.66E-01	6.66E-01	0
20	5.92E-01	5.92E-01	0.01
50	4.15E-01	4.15E-01	0.01
100	2.29E-01	2.29E-01	0.03
200	7.02E-02	7.01E-02	0.05
500	2.01E-03	2.00E-03	0.13
1,000	5.37E-06	5.35E-06	0.27
5,000	3.84E-11	3.82E-11	0.53
Maximum:			+0.53

B.7.297. Zinc – Injection of ⁶⁵Zn

Maximum difference for **Urine**: -0.11%.

Maximum difference for **Feces**: -0.11%.

Maximum difference for **Whole Body**: -0.05%.

B.7.297.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.112E-03	1.113E-03	-0.11
2	1.802E-03	1.803E-03	-0.11
5	1.681E-03	1.683E-03	-0.10
10	1.432E-03	1.433E-03	-0.07
20	1.051E-03	1.052E-03	-0.04
50	4.722E-04	4.720E-04	0.05
100	2.064E-04	2.062E-04	0.06
200	1.060E-04	1.060E-04	0.01
500	2.663E-05	2.663E-05	-0.01
1,000	2.706E-06	2.706E-06	-0.02
2,000	2.806E-08	2.807E-08	-0.05
5,000	6.356E-14	N/A	N/A
10,000	1.576E-20	N/A	N/A

20,000	3.582E-33	N/A	N/A
Maximum:			-0.11

B.7.297.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.700E-04	5.706E-04	-0.11
2	3.254E-03	3.258E-03	-0.11
5	6.722E-03	6.728E-03	-0.09
10	5.980E-03	5.984E-03	-0.07
20	4.380E-03	4.382E-03	-0.03
50	1.947E-03	1.946E-03	0.05
100	8.357E-04	8.351E-04	0.07
200	4.251E-04	4.250E-04	0.02
500	1.068E-04	1.068E-04	0.01
1,000	1.085E-05	1.085E-05	0.00
2,000	1.125E-07	1.125E-07	-0.03

5,000	2.546E-13	N/A	N/A
10,000	6.305E-20	N/A	N/A
20,000	1.433E-32	N/A	N/A
Maximum:			-0.11

B.7.297.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.955E-01	9.955E-01	0.00
2	9.876E-01	9.876E-01	0.00
5	9.554E-01	9.554E-01	0.00

10	9.028E-01	9.027E-01	0.01
20	8.157E-01	8.156E-01	0.01
50	6.456E-01	6.455E-01	0.01
100	4.889E-01	4.889E-01	0.00
200	3.062E-01	3.062E-01	0.00
500	7.804E-02	7.805E-02	-0.01
1,000	8.077E-03	8.079E-03	-0.03
2,000	9.526E-05	9.530E-05	-0.04
5,000	2.472E-09	N/A	N/A
10,000	1.137E-15	N/A	N/A
Maximum:			-0.05

B.7.298. Zirconium – Inhalation of ⁹⁵Zr (type “F”)

Maximum difference for **Urine**: -0.37%.

Maximum difference for **Feces**: -0.37%.

Maximum difference for **Whole Body**: -0.39%.

B.7.298.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.427E-03	6.427E-03	0.01
2	9.932E-03	9.931E-03	0.01
5	7.383E-03	7.383E-03	0.00
10	4.266E-03	4.266E-03	-0.01
20	1.426E-03	1.427E-03	-0.03
50	5.730E-05	5.736E-05	-0.10
100	2.949E-06	2.950E-06	-0.04
200	9.185E-07	9.191E-07	-0.06
500	3.488E-08	3.494E-08	-0.18
1,000	1.496E-10	1.502E-10	-0.37
2,000	2.753E-15	N/A	N/A
5,000	1.715E-29	N/A	N/A
Maximum:			-0.37

B.7.298.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.548E-02	5.548E-02	0.00
2	7.708E-02	7.708E-02	0.00
5	7.589E-03	7.589E-03	0.00
10	1.032E-03	1.032E-03	0.00
20	3.320E-04	3.321E-04	-0.03

50	1.319E-05	1.321E-05	-0.10
100	5.970E-07	5.973E-07	-0.04
200	1.837E-07	1.838E-07	-0.06
500	6.976E-09	6.988E-09	-0.18
1,000	2.992E-11	3.003E-11	-0.37
2,000	5.506E-16	N/A	N/A
5,000	3.430E-30	N/A	N/A
Maximum:			-0.37

B.7.298.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.372E-01	5.372E-01	0.00
2	3.673E-01	3.674E-01	-0.01
5	2.263E-01	2.263E-01	-0.01
10	1.767E-01	1.767E-01	-0.02
20	1.300E-01	1.300E-01	-0.02
50	8.222E-02	8.225E-02	-0.03
100	4.731E-02	4.733E-02	-0.05
200	1.590E-02	1.591E-02	-0.08
500	6.038E-04	6.050E-04	-0.20
1,000	2.590E-06	2.600E-06	-0.39
2,000	4.766E-11	N/A	N/A
5,000	2.969E-25	N/A	N/A
Maximum:			-0.39

B.7.299. Zirconium – Inhalation of ⁹⁵Zr (type “M”)

Maximum difference for **Urine**: -0.37%.

Maximum difference for **Feces**: -0.38%.

Maximum difference for **Whole Body**: -0.39%.

Maximum difference for **Lungs**: -0.40%.

B.7.299.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	6.573E-04	6.572E-04	0.01
2	1.032E-03	1.032E-03	0.01

5	7.958E-04	7.957E-04	0.00
10	4.980E-04	4.981E-04	-0.01
20	2.159E-04	2.160E-04	-0.03
50	4.831E-05	4.833E-05	-0.04
100	1.617E-05	1.618E-05	-0.05
200	2.892E-06	2.895E-06	-0.09
500	2.568E-08	2.573E-08	-0.20

1,000	3.772E-11	3.786E-11	-0.37
2,000	6.123E-16	N/A	N/A
5,000	3.813E-30	N/A	N/A
Maximum:			-0.37

B.7.299.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	1.070E-01	1.070E-01	-0.01
2	1.512E-01	1.512E-01	-0.01
5	1.273E-02	1.273E-02	-0.01
10	6.230E-04	6.231E-04	-0.01
20	3.395E-04	3.395E-04	-0.02
50	1.044E-04	1.044E-04	-0.03
100	2.039E-05	2.040E-05	-0.05
200	1.875E-06	1.877E-06	-0.09
500	1.177E-08	1.179E-08	-0.20
1,000	9.031E-12	9.065E-12	-0.38
2,000	1.226E-16	N/A	N/A
5,000	7.626E-31	N/A	N/A
Maximum:			-0.38

B.7.299.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	4.914E-01	4.914E-01	0.00
2	2.569E-01	2.569E-01	-0.01
5	8.486E-02	8.487E-02	-0.01

10	6.569E-02	6.570E-02	-0.02
20	5.187E-02	5.188E-02	-0.02
50	3.029E-02	3.030E-02	-0.03
100	1.481E-02	1.482E-02	-0.05
200	4.264E-03	4.267E-03	-0.09
500	1.391E-04	1.393E-04	-0.20
1,000	5.770E-07	5.792E-07	-0.39
2,000	1.060E-11	N/A	N/A
5,000	6.601E-26	N/A	N/A
Maximum:			-0.39

B.7.299.4. Lung Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	5.701E-02	5.701E-02	-0.01
2	5.474E-02	5.475E-02	-0.01
5	5.055E-02	5.056E-02	-0.02
10	4.456E-02	4.457E-02	-0.02
20	3.495E-02	3.496E-02	-0.02
50	1.799E-02	1.800E-02	-0.03
100	6.848E-03	6.851E-03	-0.05
200	1.209E-03	1.210E-03	-0.09
500	8.082E-06	8.098E-06	-0.20
1,000	2.005E-09	2.013E-09	-0.40
2,000	1.414E-16	N/A	N/A
5,000	1.393E-37	N/A	N/A
Maximum:			-0.40

B.7.300. Zirconium – Ingestion of ⁹⁵Zr (f₁ = 0.002)

Maximum difference for **Urine**: -0.37%.

Maximum difference for **Feces**: -0.17%.

Maximum difference for **Whole Body**: -0.38%.

B.7.300.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	3.241E-05	3.241E-05	0.01
2	6.964E-05	6.963E-05	0.02
5	5.352E-05	5.351E-05	0.01
10	3.092E-05	3.092E-05	0.00
20	1.034E-05	1.034E-05	-0.03
50	4.147E-07	4.151E-07	-0.09
100	2.099E-08	2.099E-08	-0.03
200	6.526E-09	6.530E-09	-0.06
500	2.478E-10	2.482E-10	-0.17
1,000	1.063E-12	1.067E-12	-0.37
2,000	1.956E-17	N/A	N/A
5,000	1.219E-31	N/A	N/A
Maximum:			-0.37

B.7.300.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.789E-01	2.789E-01	0.00
2	3.800E-01	3.800E-01	0.00
5	2.970E-02	2.970E-02	0.00
10	2.038E-04	2.038E-04	0.00
20	2.415E-06	2.415E-06	-0.02

50	9.551E-08	9.559E-08	-0.09
100	4.249E-09	4.251E-09	-0.03
200	1.305E-09	1.306E-09	-0.06
500	4.956E-11	4.965E-11	-0.17
1,000	2.126E-13	N/A	N/A
2,000	3.912E-18	N/A	N/A
5,000	2.437E-32	N/A	N/A
Maximum:			-0.17

B.7.300.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	7.103E-01	7.103E-01	0.00
2	3.226E-01	3.226E-01	0.00
5	1.929E-02	1.929E-02	0.00
10	1.377E-03	1.377E-03	-0.01
20	9.260E-04	9.261E-04	-0.01
50	5.843E-04	5.844E-04	-0.02
100	3.362E-04	3.363E-04	-0.04
200	1.130E-04	1.131E-04	-0.07
500	4.290E-06	4.298E-06	-0.19
1,000	1.840E-08	1.847E-08	-0.38
2,000	3.386E-13	N/A	N/A
5,000	2.110E-27	N/A	N/A
Maximum:			-0.38

B.7.301. Zirconium – Injection of ⁹⁵Zr

Maximum difference for **Urine**: -0.36%.

Maximum difference for **Feces**: -0.36%.

Maximum difference for **Whole Body**: -0.38%.

B.7.301.1. Urinary Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	2.307E-02	2.307E-02	0.01
2	3.528E-02	3.528E-02	0.02
5	2.621E-02	2.621E-02	0.01
10	1.514E-02	1.514E-02	0.00
20	5.063E-03	5.064E-03	-0.03
50	2.034E-04	2.036E-04	-0.09
100	1.048E-05	1.048E-05	-0.04
200	3.263E-06	3.265E-06	-0.05
500	1.239E-07	1.241E-07	-0.17
1,000	5.315E-10	5.334E-10	-0.36
2,000	9.779E-15	N/A	N/A
5,000	6.093E-29	N/A	N/A
Maximum:			-0.36

B.7.301.2. Fecal Excretion Rate

TIME (d)	IMBA (d ⁻¹)	PLEIADES (d ⁻¹)	Difference (%)
1	5.966E-04	5.965E-04	0.01
2	3.298E-03	3.298E-03	0.02
5	5.762E-03	5.761E-03	0.01
10	3.525E-03	3.525E-03	0.00
20	1.179E-03	1.179E-03	-0.02

50	4.684E-05	4.688E-05	-0.09
100	2.121E-06	2.122E-06	-0.04
200	6.527E-07	6.530E-07	-0.05
500	2.478E-08	2.482E-08	-0.17
1,000	1.063E-10	1.067E-10	-0.36
2,000	1.956E-15	N/A	N/A
5,000	1.219E-29	N/A	N/A
Maximum:			-0.36

B.7.301.3. Whole Body Retention

TIME (d)	IMBA	PLEIADES	Difference (%)
1	9.656E-01	9.656E-01	0.00
2	9.166E-01	9.166E-01	0.00
5	7.835E-01	7.835E-01	-0.01
10	6.275E-01	6.275E-01	-0.01
20	4.618E-01	4.618E-01	-0.01
50	2.921E-01	2.922E-01	-0.02
100	1.681E-01	1.681E-01	-0.04
200	5.649E-02	5.653E-02	-0.08
500	2.145E-03	2.149E-03	-0.19
1,000	9.201E-06	9.236E-06	-0.38
2,000	1.693E-10	N/A	N/A
5,000	1.055E-24	N/A	N/A
Maximum:			-0.38

B.8. References

Birchall A, Jarvis NS, Peace MS, Riddell AE, Battersby WP. The IMBA suite: Integrated modules for bioassay analysis. *Radiat. Prot. Dosim.* 79(1-4):107-110; 1998.

International Atomic Energy Agency (IAEA). Intercomparison and biokinetic model validation of radionuclide intake assessment. *IAEA-TECDOC-1071*. Vienna: International Atomic Energy Agency; 1999.

International Commission on Radiological Protection. Limits for intakes of radionuclides by workers: Part 1. Oxford: Pergamon Press; *ICRP Publication 30*; Ann ICRP 2(3/4); 1979.

International Commission on Radiological Protection. Human respiratory tract model for radiological protection. Oxford: Elsevier Science Ltd; *ICRP Publication 66*; Ann ICRP 24(1-3); 1994a.

International Commission on Radiological Protection. Individual monitoring for internal exposure of workers. Replacement of *ICRP Publication 54*. Elsevier Science Ltd; *ICRP Publication 78*; Ann ICRP 27(3/4); 1997.

James AC, Filipy RE, Russell JJ, McInroy JF. USTUR Case 0259 whole body donation: A comprehensive test of the current ICRP models for the behavior of inhaled ²³⁸PuO₂ ceramic particles. *Health Phys.* 84(1):3-33; 2003.

Jarvis NS, Birchall A, James AC, Bailey MR, Dorrian M-D. LUDEP 2.0, Personal Computer Program for Calculating Internal Doses using the ICRP Publication 66 Respiratory Tract Model. NRPB-SR287. Chilton, UK: National Radiological Protection Board; 1996.

Marsh JW, Jarvis NS, Birchall A, James AC, Peace MS, Davis KE, Dorrian M-D, Phipps AW, Smith A and Smith FMG. Validation of IMBA and IMBA Expert™. Presented at the European IRPA Congress 'Towards Harmonisation of Radiation Protection in Europe', Florence, Italy 8-11 October 2002; Proceedings in press.