

Experiment Number: C07062-02

Test Type: TOX

Route: Whole-Body Inhalation

Species/Strain: Mouse/B6C3F1/N

PA47: Summary of Lung Burden

Test Compound: 1020 Long Multiwalled Carbon Nanotube

CAS Number: L-MWNT-1020

Date Report Requested: 04/10/2017

Time Report Requested: 12:45:11

Lab: NTP

C Number: C07062-02

Cage Range: All

Date Range: All

Reasons For Removal: All

Removal Date Range: All

Treatment Groups: All

Study Gender: Both

Experiment Number: C07062-02

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Lab: NTP

Male: Male Post Dose 0

Terminal Sacrifice		Treatment Groups (mg/m ³)				
		0.1	0.3	1	3	10
SD 30 - 30	Lung Sample Weight (g)	0.1551 ± 0.0040 (10)	0.1492 ± 0.0019 (10)	0.1605 ± 0.0031 (10)	0.1812 ± 0.0041 (10)	0.2239 ± 0.0030 (10)
SD 30 - 30	Sample Ni Concentration (ug/g)	0.053 ± 0.003 (10)	0.180 ± 0.036 (10)	0.546 ± 0.014 (10)	1.324 ± 0.033 (10)	2.582 ± 0.075 (10)
SD 30 - 30	Total Ni Lung Burden (ug/lung)	0.008 ± 0.000 (10)	0.027 ± 0.005 (10)	0.087 ± 0.002 (10)	0.239 ± 0.005 (10)	0.578 ± 0.016 (10)
SD 30 - 30	Total Test Article Lung Burden (ug/lung)	1.573 ± 0.083 (10)	5.107 ± 0.962 (10)	16.813 ± 0.422 (10)	45.973 ± 0.923 (10)	111.092 ± 3.184 (10)
SD 30 - 30	Normalized Total Test Article Lung Burden (ug/lung per mg/m ³)	15.731 ± 0.832 (10)	17.023 ± 3.207 (10)	16.813 ± 0.422 (10)	15.324 ± 0.308 (10)	11.109 ± 0.318 (10)

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Terminal Sacrifice	Treatment Groups (mg/m ³)				
	0	0.1	0.3	1	3
SD 44 - 44 Lung Sample Weight (g)	0.1637 ± 0.0061 (5) **	0.1605 ± 0.0054 (5)	0.1653 ± 0.0079 (5)	0.1701 ± 0.0014 (5)	0.1904 ± 0.0030 (5) *
SD 44 - 44 Sample Ni Concentration (ug/g)	0.008 ± 0.000 (5) **	0.035 ± 0.006 (5) **	0.092 ± 0.010 (5) **	0.403 ± 0.025 (5) **	1.115 ± 0.042 (5) **
SD 44 - 44 Total Ni Lung Burden (ug/lung)	0.001 ± 0.000 (5) **	0.006 ± 0.001 (5) **	0.015 ± 0.001 (5) **	0.069 ± 0.004 (5) **	0.212 ± 0.008 (5) **
SD 44 - 44 Total Test Article Lung Burden (ug/lung)	0.252 ± 0.009 (5) **	1.107 ± 0.215 (5) **	2.884 ± 0.263 (5) **	13.198 ± 0.837 (5) **	40.783 ± 1.513 (5) **
SD 44 - 44 Normalized Total Test Article Lung Burden (ug/lung per mg/m ³)	NR	11.068 ± 2.146 (5)	9.614 ± 0.878 (5)	13.198 ± 0.837 (5)	13.594 ± 0.504 (5)

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Terminal Sacrifice	Treatment Groups (mg/m ³)
	10
SD 44 - 44 Lung Sample Weight (g)	0.2737 ± 0.0122 (5) **
SD 44 - 44 Sample Ni Concentration (ug/g)	2.045 ± 0.199 (5) **
SD 44 - 44 Total Ni Lung Burden (ug/lung)	0.551 ± 0.034 (5) **
SD 44 - 44 Total Test Article Lung Burden (ug/lung)	105.933 ± 6.528 (5) **
SD 44 - 44 Normalized Total Test Article Lung Burden (ug/lung per mg/m ³)	10.593 ± 0.653 (5)

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Lab: NTP

Male: Male Post Dose 42

Terminal Sacrifice		Treatment Groups (mg/m ³)				
		0	0.1	0.3	1	3
SD 72 - 72	Lung Sample Weight (g)	0.1485 ± 0.0024 (5) **	0.1431 ± 0.0025 (5)	0.1498 ± 0.0044 (5)	0.1547 ± 0.0031 (5)	0.1824 ± 0.0038 (5) **
SD 72 - 72	Sample Ni Concentration (ug/g)	0.008 ± 0.000 (5) **	0.053 ± 0.013 (5) **	0.066 ± 0.007 (5) **	0.267 ± 0.025 (5) **	1.001 ± 0.046 (5) **
SD 72 - 72	Total Ni Lung Burden (ug/lung)	0.001 ± 0.000 (5) **	0.008 ± 0.002 (5) **	0.010 ± 0.001 (5) **	0.041 ± 0.004 (5) **	0.183 ± 0.010 (5) **
SD 72 - 72	Total Test Article Lung Burden (ug/lung)	0.229 ± 0.004 (5) **	1.446 ± 0.334 (5) **	1.887 ± 0.167 (5) **	7.984 ± 0.841 (5) **	35.150 ± 1.867 (5) **
SD 72 - 72	Normalized Total Test Article Lung Burden (ug/lung per mg/m ³)	NR	14.455 ± 3.340 (5)	6.290 ± 0.555 (5)	7.984 ± 0.841 (5)	11.717 ± 0.622 (5)

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Terminal Sacrifice	Treatment Groups (mg/m ³)
	10
SD 72 - 72 Lung Sample Weight (g)	0.2372 ± 0.0070 (5) **
SD 72 - 72 Sample Ni Concentration (ug/g)	2.356 ± 0.082 (5) **
SD 72 - 72 Total Ni Lung Burden (ug/lung)	0.558 ± 0.015 (5) **
SD 72 - 72 Total Test Article Lung Burden (ug/lung)	107.154 ± 2.846 (5) **
SD 72 - 72 Normalized Total Test Article Lung Burden (ug/lung per mg/m ³)	10.715 ± 0.285 (5)

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Male: Male Post Dose 126

Terminal Sacrifice	Treatment Groups (mg/m ³)			
	0.3	1	3	10
SD 156 - 156 Lung Sample Weight (g)	0.1749 ± 0.0040 (5)	0.1721 ± 0.0037 (5)	0.1973 ± 0.0023 (5)	0.2306 ± 0.0025 (5)
SD 156 - 156 Sample Ni Concentration (ug/g)	0.008 ± 0.000 (5)	0.220 ± 0.017 (5)	0.907 ± 0.034 (5)	1.900 ± 0.043 (5)
SD 156 - 156 Total Ni Lung Burden (ug/lung)	0.001 ± 0.000 (5)	0.038 ± 0.003 (5)	0.179 ± 0.009 (5)	0.438 ± 0.014 (5)
SD 156 - 156 Total Test Article Lung Burden (ug/lung)	0.269 ± 0.006 (5)	7.290 ± 0.615 (5)	34.454 ± 1.630 (5)	84.306 ± 2.607 (5)
SD 156 - 156 Normalized Total Test Article Lung Burden (ug/lung per mg/m ³)	0.897 ± 0.020 (5)	7.290 ± 0.615 (5)	11.485 ± 0.543 (5)	8.431 ± 0.261 (5)

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Lab: NTP

Female: Female Post Dose 0

Terminal Sacrifice		Treatment Groups (mg/m ³)				
		0.1	0.3	1	3	10
SD 31 - 31	Lung Sample Weight (g)	0.1543 ± 0.0017 (10)	0.1558 ± 0.0030 (10)	0.1609 ± 0.0022 (10)	0.1815 ± 0.0028 (10)	0.2152 ± 0.0035 (10)
SD 31 - 31	Sample Ni Concentration (ug/g)	0.056 ± 0.005 (10)	0.121 ± 0.004 (10)	0.494 ± 0.016 (10)	1.169 ± 0.030 (10)	2.609 ± 0.056 (10)
SD 31 - 31	Total Ni Lung Burden (ug/lung)	0.009 ± 0.001 (10)	0.019 ± 0.000 (10)	0.079 ± 0.002 (10)	0.212 ± 0.007 (10)	0.561 ± 0.013 (10)
SD 31 - 31	Total Test Article Lung Burden (ug/lung)	1.669 ± 0.148 (10)	3.614 ± 0.073 (10)	15.252 ± 0.374 (10)	40.799 ± 1.316 (10)	107.883 ± 2.535 (10)
SD 31 - 31	Normalized Total Test Article Lung Burden (ug/lung per mg/m ³)	16.692 ± 1.479 (10)	12.048 ± 0.244 (10)	15.252 ± 0.374 (10)	13.600 ± 0.439 (10)	10.788 ± 0.253 (10)

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Terminal Sacrifice		Treatment Groups (mg/m ³)				
		0.1	0.3	1	3	10
SD 45 - 45	Lung Sample Weight (g)	0.1539 ± 0.0034 (5)	0.1583 ± 0.0037 (5)	0.1654 ± 0.0023 (5)	0.1847 ± 0.0061 (5)	0.2524 ± 0.0084 (5)
SD 45 - 45	Sample Ni Concentration (ug/g)	0.065 ± 0.029 (5)	0.085 ± 0.011 (5)	0.443 ± 0.039 (5)	1.109 ± 0.040 (5)	2.275 ± 0.059 (5)
SD 45 - 45	Total Ni Lung Burden (ug/lung)	0.010 ± 0.005 (5)	0.014 ± 0.002 (5)	0.073 ± 0.007 (5)	0.204 ± 0.007 (5)	0.573 ± 0.013 (5)
SD 45 - 45	Total Test Article Lung Burden (ug/lung)	1.916 ± 0.869 (5)	2.590 ± 0.305 (5)	14.104 ± 1.311 (5)	39.311 ± 1.386 (5)	110.135 ± 2.585 (5)
SD 45 - 45	Normalized Total Test Article Lung Burden (ug/lung per mg/m ³)	19.165 ± 8.687 (5)	8.635 ± 1.015 (5)	14.104 ± 1.311 (5)	13.104 ± 0.462 (5)	11.013 ± 0.259 (5)

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Female: Female Post Dose 42

Terminal Sacrifice		Treatment Groups (mg/m ³)				
		0.1	0.3	1	3	10
SD 73 - 73	Lung Sample Weight (g)	0.1623 ± 0.0047 (5)	0.1683 ± 0.0037 (5)	0.1666 ± 0.0027 (5)	0.1939 ± 0.0037 (5)	0.2322 ± 0.0055 (5)
SD 73 - 73	Sample Ni Concentration (ug/g)	0.008 ± 0.000 (5)	0.062 ± 0.006 (5)	0.302 ± 0.013 (5)	1.034 ± 0.017 (5)	2.448 ± 0.039 (5)
SD 73 - 73	Total Ni Lung Burden (ug/lung)	0.001 ± 0.000 (5)	0.011 ± 0.001 (5)	0.050 ± 0.002 (5)	0.201 ± 0.006 (5)	0.568 ± 0.014 (5)
SD 73 - 73	Total Test Article Lung Burden (ug/lung)	0.250 ± 0.007 (5)	2.004 ± 0.163 (5)	9.664 ± 0.456 (5)	38.581 ± 1.067 (5)	109.269 ± 2.745 (5)
SD 73 - 73	Normalized Total Test Article Lung Burden (ug/lung per mg/m ³)	2.497 ± 0.073 (5)	6.680 ± 0.544 (5)	9.664 ± 0.456 (5)	12.860 ± 0.356 (5)	10.927 ± 0.274 (5)

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Terminal Sacrifice	Treatment Groups (mg/m ³)			
	0.3	1	3	10
SD 157 - 157 Lung Sample Weight (g)	0.1636 ± 0.0029 (5)	0.1670 ± 0.0030 (5)	0.1914 ± 0.0058 (5)	0.2387 ± 0.0042 (5)
SD 157 - 157 Sample Ni Concentration (ug/g)	0.008 ± 0.000 (5)	0.092 ± 0.007 (5)	0.907 ± 0.036 (5)	2.060 ± 0.069 (5)
SD 157 - 157 Total Ni Lung Burden (ug/lung)	0.001 ± 0.000 (5)	0.015 ± 0.001 (5)	0.173 ± 0.007 (5)	0.491 ± 0.011 (5)
SD 157 - 157 Total Test Article Lung Burden (ug/lung)	0.252 ± 0.004 (5)	2.946 ± 0.237 (5)	33.335 ± 1.335 (5)	94.386 ± 2.142 (5)
SD 157 - 157 Normalized Total Test Article Lung Burden (ug/lung per mg/m ³)	0.839 ± 0.015 (5)	2.946 ± 0.237 (5)	11.111 ± 0.445 (5)	9.439 ± 0.214 (5)

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LEGEND

Data are displayed as mean \pm SEM (N)

Statistical analysis performed by Jonckheere (trend) and Shirley or Dunn (pairwise) tests

Statistical significance for a treatment group indicates a significant pairwise test compared to the vehicle control group

Statistical significance for the control group indicates a significant trend test

* Statistically significant at $P \leq 0.05$

** Statistically significant at $P \leq 0.01$

If 80% or more of the observations within a group are below the limit of detection, then the group is not included in the analysis. When this is the control group, a 1-sample test against zero is used for the treated groups. If fewer than 80% of the observations within a group are below the limit of detection, then the Sample Ni Concentration is calculated using one half of the limit of detection for all values in that group.

SD – Study Day; GD – Gestation Day; LD – Lactation Day; PND – Postnatal Day, adults post-weaning

NR – not recorded

NR not recorded

**** END OF REPORT ****