



Plutonium in Autopsy Tissue

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ABSTRACT

Since 1959, selected tissues from deceased humans have been examined for the presence of plutonium. The original purpose was to correlate plutonium body burden calculated from urine assay and actual burden determined by analysis of autopsy materials. The tissues have provided data on plutonium deposition in man resulting from general distribution of plutonium in the environment through global fallout and that resulting from plutonium fabrication or research and development operations.

Lung, liver, kidney, lymph, and skeletal tissue are the principal materials examined. The analytical data, the significance of the findings, and the considerable uncertainties in the radiochemical analysis and calculations are discussed. The data will be completely evaluated in other Los Alamos Scientific Laboratory reports.

The results are contained in the appendixes to this report. Median concentrations in the organs and tissues of a general population (not occupationally exposed) were (each number represents dis/min Pu per kg): liver, 1.4; lung, 0.8; lymph nodes, 3.0; bone, 0.6; and kidney, 0.6. Plutonium concentration is generally higher in the tissues of those who have been occupationally exposed to plutonium; the concentration obviously depends upon the nature of the exposure and its severity and duration.

I. INTRODUCTION

Since 1959, the Los Alamos Scientific Laboratory Industrial Hygiene Group has collected necropsy material for analysis. The analysis consists of plutonium measurement by variations of the methods routinely used in the bioassay program to determine plutonium in the urine of employees potentially exposed to plutonium.

The original intent of our tissue-analysis effort was to seek confirmation or denial of the validity of estimates of plutonium body burdens by urinalysis. In at least one notable case,¹ confirmation of estimates of body burden made during life was obtained by analysis of tissues from the deceased. The ubiquity of plutonium in the environment has since led us to examine autopsy material from

the general population, to learn whether plutonium exists in detectable amounts in the tissues of individuals from that population.

Harley² has estimated that the testing of nuclear weapons distributed ~300 kCi of ²³⁹Pu over the surface of the earth before the beginning of the moratorium. Tests by France and China have added about 5%. More recently, ²³⁹Pu became detectable in the environment because of the burnup of a SNAP generator. It is therefore expected that plutonium can be detected in the tissue of nonoccupationally exposed humans. Tissue data are limited because of the various tissue-analysis problems that will be discussed.

Magno³ reported an average of 0.14 to 1.1 pCi of ²³⁹Pu/kg wet weight in the lungs, with the bone

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concentrations ranging from 0.04 to 0.12 pCi/kg. Tarasov et al.⁴ tried to correlate the measured air concentration in each year with the lung concentration of humans over the age of 50 who did not suffer from any pulmonary pathology. Their data suggest that pulmonary deposition is consistent with air concentration. They gave:

0.15 ± 0.1 pCi of ^{239}Pu /kg in the lung for 1965, and

0.11 ± 0.2 pCi of ^{239}Pu /kg in the lung for 1966.

The concentrations in the tracheobronchial lymph nodes for the same period were 6.85 ± 8.5 and 9.6 ± 7.6 pCi/kg, respectively. Takizawa⁵ analyzed two to five cases per year from the Niigata District in Japan from 1960 to 1967; his analyses showed that the lung contained 0.012 to 0.038 pCi/kg. Takizawa stated that he found 2.36 pCi ^{239}Pu /kg in the genital organs of a 70-yr-old woman and 6.3 pCi/kg in her bone. Krey et al.⁶ reported the following results for a group of cases.

PLUTONIUM CONCENTRATION

	(dis/min)/kg
Lung	1.74 ± 0.17
Lymph Node	11 ± 4
Kidney	0.99 ± 0.22
Gonad	7.9 ± 1.9

They concluded that the lung and lymph-node deposition confirmed values that might be calculated from airborne contamination.

Because of the variable values reported above, the AEC provided a number of samples from metropolitan New York City so that we might confirm or deny the plutonium concentrations previously reported.

II. TISSUE SAMPLES

A. Sample Selection

The local pathologist provides samples from as many autopsies as possible. No attempt is made to exclude any case. Therefore, we receive a number of samples from outside the geographical area as a result of traumatic accidents occurring within the jurisdiction of the pathologist. Most of the samples, however, are from residents of Los Alamos, New Mexico. This is a single-industry town, with a population of approximately 14,000, containing a research laboratory. The industry includes a plutonium-research development laboratory. Studies of the plutonium in the environs of this laboratory have been documented.⁷⁻⁹

A special series of samples were collected in New York City through the cooperation of Dr. John Harley of the New York Operations Office of the AEC. These samples were from males and were received by the medical examiner's office. Generally only small weights of each organ were made available, but the gonads were included. The limited mass available for these analyses permitted detection of ~ 0.03 dis/min of plutonium in the aliquot, or a lower limit of 1.5 (dis/min)/kg if a 20-g sample was used.

Since June 1970, this program has been expanded to include a number of other areas, using a similar selection of cases.

B. Sample Storage

The pathologist selects the tissues and packages each separately in a plastic bag. These tissues are held in a freezer until released by the pathologist for chemical processing. A small section of the lung, liver, kidney, and lymph node is preserved for analysis for other metals.

C. Autopsy Samples

Lung. Both lungs are normally received and treated without special preparation. Small amounts of tissue other than lung normally accompany the sample. No attempt is made to separate the lower bronchial lymph nodes or other lymphatic tissue from the lung tissue itself. The weight recorded is the weight actually received at the time of preparation and represents both lungs. The amount of plutonium in the lung includes that in the pulmonary lymph tissue.

Liver. The whole organ is normally received and prepared for chemical analysis.

Kidney. At least one kidney has been used in each case. Every attempt is made to obtain both kidneys for analysis.

Gonads. The gonads were included in samples received from New York City and Denver, Colorado.

Lymph Nodes The lymphatic tissue of the tracheobronchial region is received for analysis. Usually it includes only the lymph nodes of that region and is only a small part of the total lymph-node mass. In a few cases, adnexal tissue is included.

Bone. Unless otherwise designated, all bone samples are wedges from the 4th and 5th lumbar vertebrae. The bone weights include only a small amount of adnexal tissue. If other types of bones are available, they are analyzed separately.

III. ANALYTICAL PROCEDURE

A. Method

1. Each tissue is placed in an appropriate vessel for dry ashing. The liver and lung are placed in porcelain evaporating dishes, and the other tissues are placed in Pyrex beakers of appropriate size. Since June of 1971, all tissues have been air dried at 100 to 150°C to remove excess water.

2. The samples are placed on shelves in a muffle furnace to prevent direct heating of the vessel. The temperature-programmed muffle furnace is operated from 200 to 500°C, reaching maximum temperature in 24 h. The samples are held an additional 24 h at 500°C partly to whiten them.

3. After the samples cool in the furnace, the liver and lung residues are transferred to 800-cm³ beakers. The vessels are thoroughly washed with 2N nitric acid, and the washing, combined with the residue, is evaporated to dryness.

4. Each residue is heated repeatedly with nitric and hydrofluoric acid until it remains white. From 1968 to 1971, we used hydrogen peroxide in conjunction with nitric acid to speed the ashing process, but because of concentrated hydrogen peroxide's high metal content, we no longer use it. Excess HF is removed by repeated evaporation with nitric acid.

5. Each residue is finally dissolved in 2N nitric acid and transferred to a volumetric flask. Except for the lung and bone samples, the procedure brings about complete dissolution of the residue. The following volumetric flasks are normally used for each sample.

Liver	1000-cm ³	Lymph Nodes	50-cm ³
Lung	1000-cm ³	Bone	250-cm ³
Kidney	100-cm ³	Gonads	50-cm ³

6. Each sample is mixed well and stored pending analysis of groups of samples.

7. At the time of analysis, aliquots are taken from each sample as indicated in Table I. Each aliquot is "spiked" with ²³⁶Pu at a level of 2 dis/min and evaporated to dryness, treated with concentrated nitric acid several times, and allowed to evaporate almost to dryness. The salts of the lung and liver are dissolved in 200 cm³ of 8N nitric acid, sodium nitrite is added, and the mixture is allowed to stand overnight before anion-exchange separation.

TABLE I

FRACTIONS ANALYZED

Tissue	Through 1969		Since 1970 & Repeats	
	Aliquot (cm ³)	% of Total	Aliquot (cm ³)	% of Total
Lung	50	5	500	50
Liver	50	5	500	50
Kidney	10	10	50	50
Lymph Node	10	20	10	20
Bone	10	4	50	20

Normally, all the salts except the lung and bone are in solution. These latter two suspensions are shaken before aliquoting as listed above. Most of the tissue salts are in solution after evaporation and redissolution in 8N HNO₃. All the salts are treated with hydrofluoric acid, and the excess HF is removed by repeated nitric acid evaporation and treatment with boric acid.

8. Each aliquot is subjected to anion exchange on a Bio-Rad AG 1 x 2 anion-exchange resin, using a modification of the procedure of Campbell and Moss.¹⁰ The 6-mm by 10-cm columns are eluted with dilute hydrochloric acid, and the eluate is evaporated to dryness and prepared for electrodeposition using an acid oxalate electrolyte. The plutonium is electroplated on 1/2-in.-diam stainless steel plates and counted by alpha spectrometry, using a 300-mm² silicon-surface barrier detector. The column effluents that do not contain plutonium are saved for possible future use. Each sample is counted for 1000 min with a counter efficiency of 30% and a counter background of 0.004 ± 0.003 counts/min. The ²³⁹Pu reagent blank is 0.007 ± 0.004 counts/min, including the ²³⁶Pu internal standard.

Until 1967, we analyzed all samples by Schwendiman and Healy's¹¹ method, using nuclear-track alpha counting, preceded by electrodeposition as stated above. We have reanalyzed many samples from that time which contained analytically significant amounts, using ²³⁶Pu tracer added when the aliquot is taken. Schwendiman and Healy's method cannot be used in the presence of added ²³⁶Pu tracer. We have also reanalyzed a number of samples of analytical significance using larger aliquots to demonstrate that the plutonium recovery was essentially complete.

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B. Replicate Analyses

Our former procedure was to select 50-cm³ aliquots of a 1000-cm³ solution of lung or liver tissue for analysis. This is 1/20th of the total weight, or ~50 g of the lung or ~60 g of liver, a quantity satisfactory for a surveillance of occupational-exposure cases. We reanalyzed 15 lung and liver tissue solutions containing measurable amounts of plutonium, using a 500-cm³ aliquot.

Measurements from analysis of large (500-cm³) and small (50-cm³) aliquots indicate that use of the large aliquot reduces the standard deviation of the individual analysis significantly, but also show no statistically significant difference in results obtained from analyzing large or small aliquots of the same solution. Replicate analyses of various tissue-ash solutions analyzed at the same time by the same method indicate good agreement among aliquots. Table II indicates the typical degree of replication.

C. Effect of Salts on Plutonium Recovery

Because our chosen procedure involves an isolation technique (ion exchange) without a preconcentration step, we investigated the effects of normally occurring salts in tissue-sample solutions. We used a solution of bone and lung from a case known to have a detectable plutonium burden for analysis. Each aliquot was evaporated to dryness and made to the same volume for ion-exchange separation. The mass of salt in each solution was determined by weighing an evaporated aliquot. The results are shown in Table III.

Because these results suggest that analysis of unnecessarily large aliquots can lead to low recoveries, we use no

TABLE II
TYPICAL REPLICATION OF VALUES
(dis/min per aliquot)

Solution	1	2	3	Mean
A	0.38	0.62	0.36	0.45
B	0.01	0.00	0.02	0.01
C	0.33	0.39	0.53	0.42
D	1.1	1.4	1.2	1.2
E	0.07	0.03	0.11	0.07
F	5.9	7.8	5.3	6.3
G	25	25		26.5
H	38	35	40	38
I	3.5	3.7		3.6
J	0.11	0.10		

TABLE III

EFFECT OF SALTS ON PLUTONIUM RECOVERY

Tissue Solution Analyzed (cm ³)	Bone		Lung	
	Measured Activity (dis/min/cm ³)	Mass of Solids (g)	Measured Activity (dis/min/cm ³)	Mass of Solids (g)
1	0.39	0.058	5.31	0.014
2	0.39	0.117	4.16	0.027
3	0.34	0.175	4.25	0.041
5	0.37	0.292	3.75	0.068
10	0.32	0.584	3.32	0.137
15	0.25	0.876	3.42	0.206
25	0.23	1.46	3.78	0.342
50	0.15	2.92	3.34	0.685

more than 50 cm³ in aliquoting highly concentrated solutions. Each aliquot is evaporated to dryness, treated with nitric acid, and made to 500 cm³ with 8N nitric acid for ion-exchange isolation to reduce the salt concentration. By increasing the total volume of the tissue-salt solution and increasing the column size to 6 mm by 10 cm, we have minimized the effects of high ionic strength noted above.

D. Recovery of Plutonium During Analysis

The use of ²³⁶Pu to evaluate the radiochemical separation does not represent an attempt to determine total yield of the overall procedure; accordingly, the tracer is added at the time of aliquotting, not at the time of ashing. The library of tissue solutions is still available for analysis for other nuclides. Examples of tracer recovery are given in Table IV.

TABLE IV
RECOVERY OF ²³⁶Pu FROM TISSUE SOLUTIONS

Tissue	Bone	Liver	Lung	Gonad
No. of Samples	9	9	9	9
Mean Recovery (%)	80.1	74.1	74.1	85.7
Standard Deviation	13.4	18.9	12.3	16.7

The analytical losses after the tissue is ashed are low, and may be estimated from the percentages of recovery given above.

E. Overall Recovery

We spiked beef tissues of the same weight as human organs with ^{239}Pu and used the outlined procedure to ash and analyze the tissue for plutonium. The overall recovery was $87 \pm 8\%$.

F. Observed Losses

Because some insoluble material normally defies dissolution in 2N nitric acid, we conducted additional studies. The salts, probably silicates and phosphates, cannot be brought into complete solution at this stage. We used solutions of tissue salts from individuals known to have been occupationally exposed to plutonium in the following study. We examined paired aliquots of the solution and of the insoluble residue in the following manner.

The suspension (in 2N nitric acid) was well mixed during aliquoting to produce as homogeneous a mixture as possible. Small aliquots of the suspension were taken and centrifuged. The insoluble portion and the centrifugate were separated and spiked with ^{239}Pu as an internal tracer. Each portion was evaporated to dryness, treated repeatedly with hydrofluoric acid and nitric acid, and finally evaporated repeatedly with nitric acid to remove the excess HF. Any fluoride surviving the evaporation was complexed as the fluoroborate, after which the solutions were carried through the ion-exchange procedure and the separated plutonium was counted by alpha spectrometry. The results indicate that the loss by incomplete dissolution of the plutonium from the salts in the procedure without repeated HF treatment may be as much as 20%.

IV. RESULTS

All of the results obtained under this program are reported in the appendixes:

Appendix A - Tables of Individual Cases

Appendix B - Cumulative Frequency Distributions

Appendix C - Summary Tables

The tables of individual cases contain the most detailed, properly available information about each case examined. Included are case numbers, assigned by this laboratory and unrelated to any numbers assigned by pathologists or hospitals, occupation at time of death, age, sex, city of residence, and cause of death as described by the pathologist. The cause of death is also described by the HEW Code Number.^{1,2} Laboratory data included are: weight of organ (or tissue) as received; total volume

of ash solution; aliquot of ash solution analyzed; disintegrations per minute of plutonium in the aliquot; of plutonium in the total sample, and of plutonium per gram of sample (concentration); and disintegrations per minute per standard organ, calculated for convenience, weight of standard organs having been defined by ICRP Publication 2.^{1,3}

The cumulative frequency distributions (Appendix B) are presented for convenience in viewing the results on a population basis rather than the individual basis used in Appendix A.

The summary tables (Appendix C) are the least detailed, and briefly present the median values (50th percentile) derived from Appendix B.

V. EVALUATION OF RESULTS

The plutonium concentrations in the analyzed tissues cannot be compared directly because the portions of the organs analyzed were never identical. To put the data on a common basis, therefore, we converted the results per aliquot to disintegrations per minute per kilogram and disintegrations per minute per standard organ weight. We used these data to estimate the concentration of plutonium in human tissues per unit of weight for each of the population groups listed in Appendix A.

Because of incomplete knowledge of sample selection, incomplete tissue collection, and uncertainties in the assay, we have not tried to evaluate statistical differences among groups of data, but have chosen to leave the testing to another study involving additional data with better controls.

Histograms of the frequency distribution of the data for each type of tissue from Appendix A were found to be skewed to the right. We therefore assumed that the data are distributed log-normally, and demonstrated the validity of that assumption by plotting the cumulative frequency of the number of samples against the plutonium concentration on logarithmic normal-probability graph paper. The data thus plotted gave acceptable straight-line fits, and these graphs are presented in Appendix B.

Every data point obtained experimentally is included in Appendix B. It is obvious that excluding all those results that were below our detection limit would increase the median unrealistically; therefore, results that were, in fact, below our detection limit are assigned an artificial value of 0.03 (dis/min)/kg simply to aid in the presentation of the data.

This assignment makes the plots flatten at the lower section, consistent with limitations of measurement sensitivity. Similar deviation from the straight-line fit at the upper end is associated with a selection against an upper

limit of sample specification. From the logarithmic probability plots, we estimated the median, or 50th percentile, data points for each distribution expressed as disintegrations per minute per kilogram. The estimates are shown in Table C-I (Appendix C). The median values for each tissue type and population group suggest that there are no significant differences among the population groups except for the high-potential-exposure group.

Other aspects of the plutonium concentration in human tissue may be obtained from the log-normal probability graphs. We combined the data from Tables A-I through A-III and A-VII into a single unexposed population group and plotted the data for each tissue on log-normal probability graphs. These graphs provided estimates of the median, the 95th percentile, and the 5th percentile. These points include 90% of the results. These data are shown in Table C-II, along with similarly derived estimates of the occupationally exposed groups.

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APPENDIX A

TABLES OF INDIVIDUAL CASES

The data tabulations are divided into convenient population categories based on residential area and occupational exposure.

TABLE A-I. Los Alamos residents with no occupational exposure to plutonium.

TABLE A-II. Nonresidents of Los Alamos with no known occupational exposure to plutonium.

TABLE A-III. Colorado cases analyzed for plutonium.

Former employees of the Los Alamos Scientific Laboratory were grouped according to their potential exposure to plutonium. If the work area or job assignment was directly related to plutonium handling, or known potential exposure of short duration, the case was considered as having a high potential exposure and placed in Table A-V or A-VI. Because of the nature of the Laboratory's work, all other former employees have a potential for exposure to plutonium; these cases are listed in Table A-IV.

TABLE A-IV. LASL employees known to have a potential exposure to plutonium.

TABLE A-V. LASL employees known to have a high plutonium-exposure potential.

TABLE A-VI. Special cases. Cases discussed in other reports¹ and for which other than the standard set of tissues were analyzed for plutonium.

TABLE A-VII. New York City cases analyzed for plutonium. (These cases are listed separately because of the differences in weight of organs received and because the gonads were always included.)

The minimum reporting level (MRL) is based on the total counts, background, and recovery statistics. The MRL is 0.03 dis/min of plutonium found in the aliquot analyzed.

Uranium, mercury, and other elements have been determined and will be reported elsewhere. Tissues received during the past three years have been examined by gamma spectroscopy to determine ⁴⁰K, ¹³⁷Cs, and other radionuclides used therapeutically. Americium 241 and ²³⁸Pu will be reported separately. A complete review of the occupationally exposed cases reported here has been published.¹⁴

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TABLE A-1 RESIDENTS OF LOS ALAMOS: OCCUPATIONAL EXPOSURE TO PLUTONIUM

MRL = MINIMUM REPORTING LEVEL = 0.03 CPM PER SAMPLE VOL ANALYZED BASED ON TOTAL COUNTS/CM AND RECOVERY STATISTICS

				TISSUE	NET HEIGHT SAMPLE (GRAM)	VOLUME OF SAMPLE (CC)	VOLUME SAMPLE ANALYZED (CC)	ACTIVITY PER VOL ANAL (DIS/MIN)	ACTIVITY PER ORGAN WEIGHT (DIS/MIN)	ACTIVITY PER KG (DIS/MIN)	ACTIVITY PER STANDARD ORGAN (DIS/MIN)
CASE NO.	1- 88	SEX M	AGE 88	LIVER	1213.4	250	100	1.251	3.13	2.98	4.30
OCCUPATION	UNEMPLOYED			LUNG	990.0	1000	50	0.000	MRL	MRL	
RESIDENT	LOS ALAMOS			LYMPH	6.0	100	10	0.150	1.80	227.27	2.27
STATE	NEW MEXICO			KIDNEY	100.0	100	10	0.000	MRL	MRL	
CAUSE OF DEATH	PNEUMONIA			RIB	126.0	250	100	0.222	0.10	1.00	7.00
NEW CODE NO.	001.0	NO	NA	VERTEBRAL SPLEEN	172.0 129.0	250 100	100	0.004 0.700	1.77	14.14	2.12
CASE NO.	1- 64	SEX M	AGE 16	LIVER	615.0	500	50	0.000	0.00	0.00	1.11
OCCUPATION	STUDENT			LYMPH	4.5	25	10	0.010	MRL	MRL	
RESIDENT	LOS ALAMOS			KIDNEY	320.0	100	10	0.000	MRL	MRL	
STATE	NEW MEXICO			SPLEEN	234.0	100	10	0.000	MRL	MRL	
CAUSE OF DEATH	GUNSHOT IN HEAD										
NEW CODE NO.	0079.0	NO	NA								
CASE NO.	1- 70	SEX M	AGE 07	LIVER	701.0	500	50	0.000	0.00	0.00	1.00
OCCUPATION	CHILD			LUNG	210.0	500	50	0.020	MRL	MRL	
RESIDENT	LOS ALAMOS			LYMPH	5.0	25	10	0.020	MRL	MRL	
STATE	NEW MEXICO			KIDNEY	125.0	100	10	0.010	MRL	MRL	
CAUSE OF DEATH	ENCEPHALITIS										
NEW CODE NO.	203.0	NO	NA								
CASE NO.	1- 70	SEX F	AGE 11	LIVER	320.0	500	50	0.200	2.00	0.00	10.00
OCCUPATION	CHILD			LUNG	700.0	500	50	0.400	4.00	7.00	7.00
RESIDENT	LOS ALAMOS			LYMPH	35.0	25	10	0.050	0.13	0.17	0.04
STATE	NEW MEXICO			KIDNEY	05.0	100	10	0.040	0.00	0.21	1.20
CAUSE OF DEATH	ACUTE MENINGITIS										
NEW CODE NO.	340.0	NO	NA								
CASE NO.	1- 00	SEX M	AGE 00	LIVER	770.0	500	50	0.100	1.00	1.20	2.10
OCCUPATION	CHILD			LUNG	207.0	250	50	0.470	2.35	7.05	7.05
RESIDENT	LOS ALAMOS			LYMPH	1.0	25	10	0.000	0.10	100.00	1.00
STATE	NEW MEXICO			KIDNEY	124.0	100	10	0.010	MRL	MRL	
CAUSE OF DEATH	BRAIN TUMOR										
NEW CODE NO.	193.0	NO	NA								
CASE NO.	1- 90	SEX M	AGE 00	LIVER	2520.0	1000	50	0.000	0.00	0.02	0.04
OCCUPATION	RETIRED			LUNG	1010.0	1000	500	0.232	0.06	0.06	0.00
RESIDENT	LOS ALAMOS			LYMPH	10.0	50	10	0.020	MRL	MRL	
STATE	NEW MEXICO			KIDNEY	270.0	100	10	0.010	MRL	MRL	
CAUSE OF DEATH	LEUKEMIA										
NEW CODE NO.	204.0	NO	NA								
CASE NO.	1- 00	SEX F	AGE 00	LIVER	900.0	1000	50	0.030	0.00	0.00	1.13
OCCUPATION	HOUSEWIFE			LUNG	570.0	1000	500	0.203	0.01	0.70	0.70
RESIDENT	LOS ALAMOS			LYMPH	7.0	50	10	0.020	MRL	MRL	
STATE	NEW MEXICO			KIDNEY	100.0	100	10	0.030	0.00	1.07	0.00
CAUSE OF DEATH	CANCER										
NEW CODE NO.	194.0	NO	NA								
CASE NO.	1-100	SEX M	AGE 54	LIVER	2009.0	1000	50	0.120	2.00	1.00	1.00
OCCUPATION	RESIDENT			LUNG	1202.0	1000	50	0.300	7.20	5.57	5.57
RESIDENT	LOS ALAMOS			LYMPH	23.0	50	10	0.070	0.35	10.22	0.25
STATE	NEW MEXICO			KIDNEY	282.0	100	10	0.000	0.00	2.40	0.74
CAUSE OF DEATH	CORONARY DCC										
NEW CODE NO.	420.1	NO	NA								
CASE NO.	1-102	SEX F	AGE 55	LIVER	1000.0	1000	50	0.000	1.20	0.00	1.40
OCCUPATION	HOUSEWIFE			LUNG	000.0	1000	50	0.130	2.00	2.02	2.02
RESIDENT	LOS ALAMOS			LYMPH	35.0	50	10	0.000	MRL	MRL	
STATE	NEW MEXICO			KIDNEY	250.0	100	10	0.000	MRL	MRL	
CAUSE OF DEATH	PNEUMATIC HEART										
NEW CODE NO.	410.0	NO	NA								
CASE NO.	1-100	SEX M	AGE 61	LIVER	1141.0	1000	50	0.000	1.20	1.00	1.70
OCCUPATION	RESIDENT			LUNG	1200.0	1000	50	0.050	1.00	0.72	0.72
RESIDENT	LOS ALAMOS			LYMPH	20.0	50	10	0.030	0.15	5.77	0.04
STATE	NEW MEXICO			KIDNEY	230.0	100	10	0.040	0.00	1.07	0.00
CAUSE OF DEATH	EMPHYSEMA										
NEW CODE NO.	527.1	NO	NA								
CASE NO.	1-110	SEX M	AGE 47	LIVER	750.0	1000	50	0.100	2.00	2.00	3.00
OCCUPATION	RESIDENT			LUNG	10.0	50	10	0.033	0.10	0.37	0.00
RESIDENT	LOS ALAMOS			KIDNEY	200.0	100	10	0.000	MRL	MRL	
STATE	NEW MEXICO										
CAUSE OF DEATH	CORONARY DCC										
NEW CODE NO.	420.1	NO	NA								
CASE NO.	1-110	SEX M	AGE 35	LIVER	1355.0	1000	50	0.050	2.00	0.74	1.25
OCCUPATION	RESIDENT			LUNG	017.0	1000	50	0.000	MRL	MRL	
RESIDENT	LOS ALAMOS			LYMPH	10.0	50	10	0.010	MRL	MRL	
STATE	NEW MEXICO			KIDNEY	240.0	100	10	0.010	MRL	MRL	
CAUSE OF DEATH	VALVULAR DYSPLASIA										
NEW CODE NO.	451.0	NO	NA								

				TISSUE	NET WEIGHT SAMPLE (GRAM)	VOLUME OF SAMPLE (CC)	VOLUME ANALYZED (CC)	ACTIVITY PER VOL ANAL (DIS/MIN)	ACTIVITY PER 100G WEIGHT (DIS/MIN)	ACTIVITY PER 100 ML PL (DIS/MIN)	ACTIVITY PER STANDARD CRAB (DIS/MIN)
CASE NO.	1-134	SEX	F	LIVER	373.8	1000	80	.030	.00	.25	.97
OCCUPATION	HOUSEWIFE	AGE	48	LUNG	675.0	1000	80	.010	CHRL	CHRL	
RESIDENT	LOS ALAMOS	YEARS	91	LYMPH	5.0	80	10	0.000	CHRL	CHRL	
STATE	NEW MEXICO			KIDNEY	277.0	100	10	.010	CHRL	CHRL	
CAUSE OF DEATH	NOSE CANCER	YEAR	1961								
NEW CODE NO.	100.0	NO	NA								
CASE NO.	1-138	SEX	F	LIVER	1217.0	1000	80	.060	2.20	.91	1.55
OCCUPATION	HOUSEWIFE	AGE	76	LUNG	631.0	1000	800	.039	.02	.05	.25
RESIDENT	LOS ALAMOS	YEARS	82	LYMPH	10.0	80	10	.120	.00	37.00	.27
STATE	NEW MEXICO			KIDNEY	293.0	100	10	0.000	CHRL	CHRL	
CAUSE OF DEATH	RUPTURED AORTA	YEAR	1961								
NEW CODE NO.	031.9	NO	NA								
CASE NO.	2- 8	SEX	F	LIVER	1192.0	1000	80	.005	CHRL	CHRL	
OCCUPATION	HOUSEWIFE	AGE	53	LUNG	720.0	1000	80	.020	0.00	0.30	0.30
RESIDENT	LOS ALAMOS	YEARS	14	LYMPH	22.0	80	10	.005	CHRL	CHRL	
STATE	NEW MEXICO			KIDNEY	200.0	100	10	.002	CHRL	CHRL	
CAUSE OF DEATH	CANCER	YEAR	1961								
NEW CODE NO.	100.0	NO	NA								
CASE NO.	2- 10	SEX	M	LIVER	957.0	1000	80	.120	2.40	2.51	0.20
OCCUPATION	RETIRED	AGE	80	LUNG	345.0	100	10	.112	1.12	3.20	3.20
RESIDENT	LOS ALAMOS	YEARS	87	LYMPH	7.0	80	10	.210	1.05	100.00	1.00
STATE	NEW MEXICO			KIDNEY	170.0	100	10	.012	CHRL	CHRL	
CAUSE OF DEATH	ARTERIO SCLEROSIS	YEAR	1961								
NEW CODE NO.	430.0	NO	NA								
CASE NO.	2- 26	SEX	F	LIVER	1025.0	1000	80	.042	.04	.02	1.30
OCCUPATION	HOUSEWIFE	AGE	62	LUNG	705.0	1000	80	.000	CHRL	CHRL	
RESIDENT	LOS ALAMOS	YEARS	85	LYMPH	3.0	80	10	0.000	CHRL	CHRL	
STATE	NEW MEXICO			KIDNEY	235.0	100	10	0.000	CHRL	CHRL	
CAUSE OF DEATH	UNKNOWN	YEAR	1961								
NEW CODE NO.	NA	NO	NA								
CASE NO.	2- 34	SEX	F	LIVER	1027.0	1000	80	.009	1.70	1.00	1.00
OCCUPATION	HOUSEWIFE	AGE	71	LUNG	675.0	1000	800	.790	1.50	1.52	1.02
RESIDENT	LOS ALAMOS	YEARS	14	LYMPH	30.0	80	10	0.000	CHRL	CHRL	
STATE	NEW MEXICO										
CAUSE OF DEATH	PULMON EMBOLISM	YEAR	1962								
NEW CODE NO.	400.0	NO	NA								
CASE NO.	2- 36	SEX	M	LIVER	1005.0	1000	250	1.003	6.41	4.24	7.24
OCCUPATION	MOTEL OWNER	AGE	60	LUNG	690.0	1000	800	.462	.06	1.97	1.97
RESIDENT	LOS ALAMOS	YEARS	88	LYMPH	15.0	80	10	0.000	CHRL	CHRL	
STATE	NEW MEXICO			KIDNEY	270.0	100	10	.000	CHRL	CHRL	
CAUSE OF DEATH	MYOCARDIAL INF	YEAR	1962								
NEW CODE NO.	420.1	NO	NA								
CASE NO.	2- 60	SEX	F	LIVER	2789.0	1000	80	.016	CHRL	CHRL	
OCCUPATION	HOUSEWIFE	AGE	66	LUNG	441.0	800	80	.302	3.02	6.05	6.05
RESIDENT	LOS ALAMOS	YEARS	12	LYMPH	3.0	80	10	.003	CHRL	CHRL	
STATE	NEW MEXICO			KIDNEY	226.0	100	10	.003	CHRL	CHRL	
CAUSE OF DEATH	CANCER	YEAR	1962	VERTEBRAE	156.0	250	10	.007	CHRL	CHRL	
NEW CODE NO.	100.0	NO	NA								
CASE NO.	2- 90	SEX	M	LIVER	1203.0	1000	80	.150	2.00	2.40	0.24
OCCUPATION	STUDENT	AGE	16	LUNG	775.0	1000	80	.200	0.02	0.10	0.10
RESIDENT	LOS ALAMOS	YEARS	19	LYMPH	9.0	80	10	.040	.20	00.00	.00
STATE	NEW MEXICO			KIDNEY	240.0	100	10	.010	CHRL	CHRL	
CAUSE OF DEATH	HEAD INJURIES	YEAR	1962	VERTEBRAE	102.0	250	10	.030	.75	4.12	20.00
NEW CODE NO.	033.0	NO	NA								
CASE NO.	2- 92	SEX	F	LIVER	1233.0	1000	80	.040	.00	.00	1.02
OCCUPATION	HOUSEWIFE	AGE	72	LUNG	609.0	1000	80	.000	1.20	1.70	1.70
RESIDENT	LOS ALAMOS	YEARS	83	LYMPH	4.0	80	10	.010	CHRL	CHRL	
STATE	NEW MEXICO			KIDNEY	295.0	100	10	.020	.30	1.10	.30
CAUSE OF DEATH	UNKNOWN	YEAR	1962								
NEW CODE NO.	NA	NO	NA								
CASE NO.	2-102	SEX	F	LIVER	1015.0	1000	80	.100	2.12	1.31	2.23
OCCUPATION	CLERK	AGE	44	LUNG	1190.0	1000	80	.421	0.42	7.00	7.00
RESIDENT	LOS ALAMOS	YEARS	10	LYMPH	3.0	80	10	.110	.05	102.33	1.03
STATE	NEW MEXICO			KIDNEY	237.0	100	10	.002	CHRL	CHRL	
CAUSE OF DEATH	DRUGS	YEAR	1962	VERTEBRAE	267.0	250	10	.224	0.00	20.07	100.02
NEW CODE NO.	072.0	NO	NA								
CASE NO.	2-122	SEX	F	LIVER	1200.0	1000	80	0.000	CHRL	CHRL	
OCCUPATION	CLERK	AGE	51	LUNG	949.0	1000	80	0.000	CHRL	CHRL	
RESIDENT	LOS ALAMOS	YEARS	10	LYMPH	11.0	80	10	0.000	CHRL	CHRL	
STATE	NEW MEXICO			KIDNEY	125.0	100	10	0.000	CHRL	CHRL	
CAUSE OF DEATH	CANCER OF BREAST	YEAR	1962	RIB	140.0	210	10	0.430	CHRL	CHRL	
NEW CODE NO.	170.0	NO	NA								

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TABLE A-11 NON-RESIDENTS OF LOS ALAMOS, NO OCCUPATIONAL EXPOSURE TO PLUTONIUM

COUNT = MINIMUM REPORTING LEVEL = 0.03 DPM PER SAMPLE VOL ANALYZED BASED ON TOTAL COUNTS/SEC AND RECOVERY STATISTICS

				TISSUE	NET WEIGHT SAMPLE (GRAM)	VOLUME OF SAMPLE ANALYZED (CC)	VOLUME OF SAMPLE ANALYZED (CC)	ACTIVITY PER VOL ANAL (DPS/MIN)	ACTIVITY PER ORGAN WEIGHT (DPS/MIN)	ACTIVITY PER KG (DPS/MIN)	ACTIVITY PER STANDARD ORGAN (DPS/MIN)
CASE NO.	1- 72	SEX	M	LIVER	1785.0	1000	50	.050	1.20	.70	1.25
OCCUPATION	RETIRED	AGE	76	LUNG	884.0	1000	500	.030	.07	.70	.70
RESIDENT	NEW ORLEANS	YEARS	NA	LYMPH	.20.0	25	10	.000	.15	7.90	.57
STATE	LOUISIANA			KIDNEY	300.0	100	10	0.000	CMRL	CMRL	
CAUSE OF DEATH	POST OP SHOCK	YEAR	1960								
NEW CODE NO.	000.0	NO	NA								
CASE NO.	1- 78	SEX	F	LIVER	1301.0	1000	50	0.000	CMRL	CMRL	
OCCUPATION	HOUSEWIFE	AGE	72	LUNG	073.0	1000	500	.007	1.30	2.93	2.93
RESIDENT	LAS VEGAS	YEARS	NA	LYMPH	12.0	25	10	0.000	CMRL	CMRL	
STATE	NEW MEXICO			KIDNEY	242.0	100	10	.020	.30	1.24	.37
CAUSE OF DEATH	POST OP SHOCK	YEAR	1960								
NEW CODE NO.	000.0	NO	NA								
CASE NO.	1- 82	SEX	F	LUNG	053.0	1000	500	1.266	2.73	3.20	3.20
OCCUPATION	RESIDENT	AGE	75	LYMPH	16.0	100	10	.010	CMRL	CMRL	
RESIDENT	SCRANTON	YEARS	NA	KIDNEY	300.0	300	30	.030	0.30	20.90	7.70
STATE	PENNA.										
CAUSE OF DEATH	CARDIAC	YEAR	1960								
NEW CODE NO.	420.3	NO	NA								
CASE NO.	1- 84	SEX	F	LUNG	1060.0	1000	500	.016	1.03	1.72	1.72
OCCUPATION	HOUSEWIFE	AGE	68	LYMPH	6.0	100	10	.010	CMRL	CMRL	
RESIDENT	NA	YEARS	NA	KIDNEY	234.0	100	10	.110	1.10	4.70	1.41
STATE	NA										
CAUSE OF DEATH	POST OP SHOCK	YEAR	1960								
NEW CODE NO.	000.0	NO	NA								
CASE NO.	1- 86	SEX	F	LIVER	2220.0	1000	50	.000	1.00	.72	1.23
OCCUPATION	HOUSEWIFE	AGE	60	LUNG	486.0	1000	500	1.101	2.20	3.96	3.96
RESIDENT	SANTA FE	YEARS	NA	LYMPH	2.0	50	10	.010	CMRL	CMRL	
STATE	NEW MEXICO			KIDNEY	450.0	100	10	.010	CMRL	CMRL	
CAUSE OF DEATH	LEUKEMIA	YEAR	1960								
NEW CODE NO.	200.0	NO	NA								
CASE NO.	1- 92	SEX	F	LIVER	1100.0	1000	50	.050	1.00	.05	1.44
OCCUPATION	HOUSEWIFE	AGE	77	LUNG	517.0	1000	500	.002	1.00	3.40	3.40
RESIDENT	NA	YEARS	NA	LYMPH	3.0	50	10	.010	CMRL	CMRL	
STATE	NA			KIDNEY	266.0	100	10	0.000	CMRL	CMRL	
CAUSE OF DEATH	ARTERIOSCLEROSIS	YEAR	1960								
NEW CODE NO.	420.0	NO	NA								
CASE NO.	1- 98	SEX	F	LIVER	054.0	1000	50	.030	.00	.70	1.10
OCCUPATION	HOUSEWIFE	AGE	80	LUNG	030.0	1000	500	.030	.00	.01	.01
RESIDENT	NOVA SCOTIA	YEARS	0	LYMPH	14.0	50	10	.000	.40	27.14	.32
STATE	BRITISH CO			KIDNEY	143.0	100	10	.000	.40	2.00	.04
CAUSE OF DEATH	PNEUMONIA	YEAR	1960								
NEW CODE NO.	493.0	NO	NA								
CASE NO.	1-100	SEX	M	LIVER	2120.0	1000	50	.000	1.20	.07	.06
OCCUPATION	NA	AGE	31	LUNG	1400.0	1000	500	1.240	2.00	1.71	1.71
RESIDENT	NA	YEARS	NA	LYMPH	11.0	25	10	.000	1.00	145.45	1.00
STATE	NA			KIDNEY	370.0	100	10	.140	1.40	3.73	1.12
CAUSE OF DEATH	ALCOHOLISM	YEAR	1960								
NEW CODE NO.	301.0	NO	NA								
CASE NO.	1-142	SEX	F	LIVER	1400.0	1000	50	.140	2.00	1.07	3.22
OCCUPATION	HOUSEWIFE	AGE	70	LUNG	044.0	1000	500	.070	1.20	1.05	1.05
RESIDENT	NA	YEARS	NA	LYMPH	20.0	50	10	.100	.50	17.40	.15
STATE	NA			KIDNEY	170.0	100	10	.130	1.30	7.65	2.20
CAUSE OF DEATH	MYOCARDIAL HYPER	YEAR	1961								
NEW CODE NO.	022.0	NO	NA								
CASE NO.	1-144	SEX	F	LIVER	2070.0	1000	50	.040	.00	.30	.00
OCCUPATION	HOUSEWIFE	AGE	45	LUNG	1415.0	1000	500	.020	1.20	.00	.07
RESIDENT	NA	YEARS	NA	LYMPH	7.0	50	10	.140	.70	100.00	1.00
STATE	NA			KIDNEY	207.0	100	10	.040	.40	1.50	.05
CAUSE OF DEATH	PNEUMONIA	YEAR	1961								
NEW CODE NO.	490.0	NO	NA								
CASE NO.	1-146	SEX	F	LIVER	3140.0	1000	50	.100	3.00	3.13	3.33
OCCUPATION	HOUSEWIFE	AGE	50	LUNG	775.0	1000	50	.210	4.20	0.42	0.42
RESIDENT	NA	YEARS	NA	LYMPH	6.0	50	10	0.000	CMRL	CMRL	
STATE	NA			KIDNEY	291.0	100	10	.000	.00	2.04	.02
CAUSE OF DEATH	BREAST CANCER	YEAR	1961								
NEW CODE NO.	370.0	NO	NA								
CASE NO.	1-160	SEX	M	LIVER	1292.0	1000	50	.000	.00	.02	1.00
OCCUPATION	POST SERV	AGE	70	LUNG	010.0	1000	500	.000	1.10	2.13	2.13
RESIDENT	SANTA FE	YEARS	NA	LYMPH	21.0	50	10	.010	CMRL	CMRL	
STATE	NEW MEXICO			KIDNEY	175.0	100	10	0.200	CMRL	CMRL	
CAUSE OF DEATH	RUPTURED AORTA	YEAR	1961								
NEW CODE NO.	451.0	NO	NA								

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CASE NO.	OCCUPATION	RESIDENT	STATE	CAUSE OF DEATH	NEW CODE NO.	SEX	AGE	YEARS	YEAR	MO	DA	TISSUE	ACTIVITY PER ORGAN (DIS/MIN)	ACTIVITY PER ORGAN (DIS/MIN)	ACTIVITY PER ORGAN (DIS/MIN)	ACTIVITY PER ORGAN (DIS/MIN)	
2- 0	RETIRED	NA	NA	RUPT VENTRICLE	420.1	M	70	NA	1961	NA	NA	LIVER	1440.0	1000	50	.000	.00
2- 12	RETIRED	NA	NEW JERSEY	HEPATITIS	503.0	M	70	NA	1961	NA	NA	LIVER	1440.0	1000	50	.000	.00
2- 10	HOUSEWIFE	NA	NEW JERSEY	PANCREAS CANCER	397.0	F	60	NA	1961	NA	NA	LIVER	1440.0	1000	50	.000	.00
2- 20	HOUSEWIFE	NA	NEW JERSEY	PANCREAS CANCER	397.0	F	60	NA	1961	NA	NA	LIVER	1440.0	1000	50	.000	.00
2- 24	HOUSEWIFE	NA	NEW JERSEY	PANCREAS CANCER	397.0	F	60	NA	1961	NA	NA	LIVER	1440.0	1000	50	.000	.00
2- 28	HOUSEWIFE	NA	NEW JERSEY	PANCREAS CANCER	397.0	F	60	NA	1961	NA	NA	LIVER	1440.0	1000	50	.000	.00
2- 32	RETIRED	ESPANOLA	NEW MEXICO	EMPHYSEMA	527.1	M	60	NA	1962	NA	NA	LIVER	1440.0	1000	50	.000	.00
2- 36	RETIRED	CHARLOTTE	N CAROLINA	UNKNOWN	NA	M	60	NA	1962	NA	NA	LIVER	1440.0	1000	50	.000	.00
2- 40	RETIRED	ESPANOLA	NEW MEXICO	PNEUMONIA	491.0	M	67	NA	1962	NA	NA	LIVER	1440.0	1000	50	.000	.00
2- 42	RETIRED	ESPANOLA	NEW MEXICO	UNKNOWN	NA	M	77	NA	1962	NA	NA	LIVER	1440.0	1000	50	.000	.00
2- 62	HOUSEWIFE	NA	TEXAS	UNKNOWN	NA	F	72	NA	1962	NA	NA	LIVER	1440.0	1000	50	.000	.00

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CASE NO.	OCCUPATION	RESIDENT	STATE	CAUSE OF DEATH	NEW CODE NO.	SEX	AGE	YEARS	TISSUE	NET WEIGHT (GRAMS)	VOLUME OF TISSUE (CC)	VOLUME OF TISSUE (CC)	ACTIVITY PER UNIT (DIS/MIN)	ACTIVITY PER UNIT (DIS/MIN)	ACTIVITY PER UNIT (DIS/MIN)	ACTIVITY PER UNIT (DIS/MIN)
2-72	NA	NA	ESPANOLA	CHOLIC	430.7	M	67	NA	LIVER	1121.0	1000	50	.050	1.00	.05	1.56
2-100	CHILD	NA	ESPANOLA	LEUKEMIA	204.9	F	12	NA	LIVER	940.0	1000	50	.020	0.00	0.00	0.00
2-100	TPUCK DRIV	NA	ESPANOLA	CHOLIC	430.7	M	27	NA	LIVER	1300.0	1000	50	.020	1.20	1.45	1.95
2-100	HOUSEWIFE	NA	ESPANOLA	CHOLIC	430.7	F	67	NA	LIVER	1117.0	1000	50	.030	.00	.04	.02
2-110	HOUSEWIFE	NA	ESPANOLA	CHOLIC	430.7	F	64	NA	LIVER	1875.0	1000	50	.030	.00	.30	.05
2-110	HOUSEWIFE	NA	ESPANOLA	CHOLIC	430.7	F	70	NA	LIVER	1210.0	1000	50	.040	1.00	1.49	2.03
2-120	NA	NA	ALBUQUERQUE	SKULL FRACTURE	402.0	M	23	NA	LIVER	1341.0	1000	50	.000	0.00	0.00	0.00
2-120	DENT ASST	NA	POJOAQUE	LEUKEMIA	204.3	F	30	NA	LIVER	2040.0	1000	25	.032	1.20	.03	.70
2-130	RETIRED	NA	LAS VEGAS	MYOCARDIAL INF	420.1	M	69	NA	LIVER	1271.0	1000	50	.000	0.00	0.00	0.00
2-100	NA	NA	VIENNA AMARILLA	PNEUMONIA	401.0	M	71	NA	LIVER	800.0	1000	25	.100	4.20	5.25	8.92
2-150	CHILD	NA	OLD CALIENTE	LEUKEMIA	NA	M	13	NA	LIVER	1140.0	1000	25	.070	3.00	3.00	4.52
2-30	NA	NA	CHAMA	STOMACH CANCER	151.0	M	64	NA	LIVER	1000.0	1000	25	.100	4.00	3.01	6.40

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CASE NO.	OCCUPATION	RESIDENT	STATE	CAUSE OF DEATH	NEW CODE NO.	SEX	AGE	YEARS	TISSUE	WET WEIGHT (GRAMS)	VOLUME OF SAMPLE (CC)	VOLUME OF SAMPLE ANALYZED (CC)	ACTIVITY PER G (DIS/MIN)	ACTIVITY PER G (DIS/MIN)	ACTIVITY PER G (DIS/MIN)	ACTIVITY PLP STANDARD (DIS/MIN)
3- 30	MILITARY	NA	NEW MEXICO	CANCER	330.0	M	71	NA	LUNG	1027.0	1000	800	.000	1.00	.07	.07
3- 30	MILITARY	NA	NEW MEXICO	CANCER	330.0	M	71	NA	LYMPH	3.0	50	10	.000	.000	.000	
3- 30	MILITARY	NA	NEW MEXICO	CANCER	330.0	M	71	NA	KIDNEY	300.0	100	10	.000	1.00	0.00	00.00
3- 30	MILITARY	NA	NEW MEXICO	CANCER	330.0	M	71	NA	RIB	320.0	200	10	.000			
3- 34	COOK/WALTER J	NA	NEW MEXICO	NA	010.0	M	64	NA	LIVER	907.0	1000	20	.000	2.32	2.25	0.00
3- 34	COOK/WALTER J	NA	NEW MEXICO	NA	010.0	M	64	NA	LUNG	1000.0	1000	200	.000	2.10	2.02	2.02
3- 34	COOK/WALTER J	NA	NEW MEXICO	NA	010.0	M	64	NA	LYMPH	20.0	50	10	.000	.000	.000	
3- 34	COOK/WALTER J	NA	NEW MEXICO	NA	010.0	M	64	NA	KIDNEY	277.0	100	10	.000	.000	.000	00.33
3- 34	COOK/WALTER J	NA	NEW MEXICO	NA	010.0	M	64	NA	RIB	00.0	200	10	.000	.75	0.32	
3- 40	ESPAÑOLA	NA	NEW MEXICO	PERITONITIS	070.0	M	07	NA	LIVER	1000.0	1000	25	.000	0.24	2.04	0.00
3- 40	ESPAÑOLA	NA	NEW MEXICO	PERITONITIS	070.0	M	07	NA	LUNG	070.0	1000	25	.000	.000	.000	
3- 40	ESPAÑOLA	NA	NEW MEXICO	PERITONITIS	070.0	M	07	NA	LYMPH	10.0	50	10	.000	.000	.000	
3- 40	ESPAÑOLA	NA	NEW MEXICO	PERITONITIS	070.0	M	07	NA	KIDNEY	300.0	100	10	.000	.000	.000	
3- 50	7A05	NA	NEW MEXICO	PNEUMONIA	000.0	M	70	NA	LIVER	1000.0	1000	25	.000	3.20	1.70	3.02
3- 50	7A05	NA	NEW MEXICO	PNEUMONIA	000.0	M	70	NA	LUNG	1010.0	1000	25	.000	1.04	1.02	1.02
3- 50	7A05	NA	NEW MEXICO	PNEUMONIA	000.0	M	70	NA	LYMPH	10.0	50	10	.000	.000	.000	
3- 50	7A05	NA	NEW MEXICO	PNEUMONIA	000.0	M	70	NA	KIDNEY	520.0	100	10	.000	.000	.000	.31
3- 50	7A05	NA	NEW MEXICO	PNEUMONIA	000.0	M	70	NA	RIB	170.0	250	10	.000	0.02	33.00	237.00
3- 52	NA	NA	NEW MEXICO	SKULL FRACTURE	000.0	F	20	NA	LIVER	2100.0	1000	25	.000	.000	.000	1.00
3- 52	NA	NA	NEW MEXICO	SKULL FRACTURE	000.0	F	20	NA	LUNG	000.0	1000	25	.000	1.00	1.00	1.00
3- 52	NA	NA	NEW MEXICO	SKULL FRACTURE	000.0	F	20	NA	LYMPH	0.0	50	10	.000	.77	300.00	2.00
3- 52	NA	NA	NEW MEXICO	SKULL FRACTURE	000.0	F	20	NA	KIDNEY	320.0	100	10	.000	.000	.000	
3- 52	NA	NA	NEW MEXICO	SKULL FRACTURE	000.0	F	20	NA	RIB	70.0	250	10	.000	0.00	00.00	020.00
3- 54	HOUSEWIFE	NA	NEW MEXICO	SPLEEN	000.0	F	01	NA	LIVER	1330.0	1000	25	.000	0.20	0.04	0.70
3- 54	HOUSEWIFE	NA	NEW MEXICO	SPLEEN	000.0	F	01	NA	LUNG	040.0	1000	25	.000	1.02	2.03	0.00
3- 54	HOUSEWIFE	NA	NEW MEXICO	SPLEEN	000.0	F	01	NA	LYMPH	10.0	50	10	.000	.10	11.00	.11
3- 54	HOUSEWIFE	NA	NEW MEXICO	SPLEEN	000.0	F	01	NA	KIDNEY	220.0	100	10	.000	.37	1.00	.00
3- 54	HOUSEWIFE	NA	NEW MEXICO	SPLEEN	000.0	F	01	NA	RIB	00.0	250	10	.000	7.02	320.70	000.00
3- 04	HOUSEWIFE	NA	NEW MEXICO	PERFORATED ULCER	000.0	F	70	NA	LIVER	1300.0	1000	25	.000	.000	.000	0.00
3- 04	HOUSEWIFE	NA	NEW MEXICO	PERFORATED ULCER	000.0	F	70	NA	LUNG	750.0	1000	25	.000	7.20	0.00	.13
3- 04	HOUSEWIFE	NA	NEW MEXICO	PERFORATED ULCER	000.0	F	70	NA	LYMPH	10.0	50	10	.000	.000	.000	
3- 04	HOUSEWIFE	NA	NEW MEXICO	PERFORATED ULCER	000.0	F	70	NA	KIDNEY	100.0	100	10	.000	.000	.000	00.00
3- 04	HOUSEWIFE	NA	NEW MEXICO	PERFORATED ULCER	000.0	F	70	NA	RIB	00.0	250	10	.000	2.00	02.00	200.00
3- 00	FARMER	NA	NEW MEXICO	PNEUMATIC HEART	010.0	M	00	NA	LIVER	1000.0	1000	25	.000	.000	.000	1.10
3- 00	FARMER	NA	NEW MEXICO	PNEUMATIC HEART	010.0	M	00	NA	LUNG	1020.0	1000	25	.000	2.12	1.10	
3- 00	FARMER	NA	NEW MEXICO	PNEUMATIC HEART	010.0	M	00	NA	LYMPH	2.0	50	10	.000	.000	.000	
3- 00	FARMER	NA	NEW MEXICO	PNEUMATIC HEART	010.0	M	00	NA	KIDNEY	050.0	100	10	.000	.000	.000	
3- 00	FARMER	NA	NEW MEXICO	PNEUMATIC HEART	010.0	M	00	NA	RIB	70.0	200	10	.000	.012	.000	
3- 70	ESPAÑOLA	NA	NEW MEXICO	PNEUMONIA	000.0	M	00	NA	LIVER	1000.0	1000	25	.000	2.32	2.32	3.00
3- 70	ESPAÑOLA	NA	NEW MEXICO	PNEUMONIA	000.0	M	00	NA	LUNG	1310.0	1000	25	.000	0.20	0.70	0.70
3- 70	ESPAÑOLA	NA	NEW MEXICO	PNEUMONIA	000.0	M	00	NA	LYMPH	0.0	50	10	.000	.000	.000	
3- 70	ESPAÑOLA	NA	NEW MEXICO	PNEUMONIA	000.0	M	00	NA	KIDNEY	270.0	100	10	.000	.000	.000	
3- 70	ESPAÑOLA	NA	NEW MEXICO	PNEUMONIA	000.0	M	00	NA	RIB	30.0	100	10	.000	.023	.000	
3- 00	HOUSEWIFE	NA	NEW MEXICO	ACUTE ASTHMA	000.0	F	70	NA	LIVER	1020.0	1000	25	.000	0.04	1.02	2.02
3- 00	HOUSEWIFE	NA	NEW MEXICO	ACUTE ASTHMA	000.0	F	70	NA	LUNG	000.0	1000	25	.000	.000	.000	
3- 00	HOUSEWIFE	NA	NEW MEXICO	ACUTE ASTHMA	000.0	F	70	NA	LYMPH	0.0	50	10	.000	.000	.000	
3- 00	HOUSEWIFE	NA	NEW MEXICO	ACUTE ASTHMA	000.0	F	70	NA	KIDNEY	310.0	100	10	.000	.000	.000	
3- 00	HOUSEWIFE	NA	NEW MEXICO	ACUTE ASTHMA	000.0	F	70	NA	RIB	00.0	100	10	.000	.000	.000	
3- 00	FARMER	NA	NEW MEXICO	LEUKEMIA	000.0	M	20	NA	LIVER	2710.0	1000	25	.000	0.50	1.00	2.00
3- 00	FARMER	NA	NEW MEXICO	LEUKEMIA	000.0	M	20	NA	LUNG	1020.0	1000	25	.000	.000	.000	
3- 00	FARMER	NA	NEW MEXICO	LEUKEMIA	000.0	M	20	NA	LYMPH	2.0	50	10	.000	.000	.000	
3- 00	FARMER	NA	NEW MEXICO	LEUKEMIA	000.0	M	20	NA	KIDNEY	005.0	100	10	.000	.000	.000	
3- 00	FARMER	NA	NEW MEXICO	LEUKEMIA	000.0	M	20	NA	RIB	00.0	100	10	.000	.027	.000	
3- 02	TEACHER	NA	NEW MEXICO	PNEUMONIA	000.0	M	00	NA	LIVER	1000.0	1000	25	.000	.000	.000	1.00
3- 02	TEACHER	NA	NEW MEXICO	PNEUMONIA	000.0	M	00	NA	LUNG	1210.0	1000	25	.000	.000	.000	
3- 02	TEACHER	NA	NEW MEXICO	PNEUMONIA	000.0	M	00	NA	LYMPH	0.0	50	10	.000	.000	.000	
3- 02	TEACHER	NA	NEW MEXICO	PNEUMONIA	000.0	M	00	NA	KIDNEY	200.0	100	10	.000	.000	.000	
3- 02	TEACHER	NA	NEW MEXICO	PNEUMONIA	000.0	M	00	NA	RIB	30.0	100	10	.000	.013	.000	

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CASE NO.	SEX	AGE	YEARS	STATE	CAUSE OF DEATH	NEW CODE NO.	TISSUE	WET WEIGHT (GRAMS)	WET WEIGHT OF SAMPLE (G)	VOLUME OF SAMPLE (CC)	ACTIVITY PER VOL ANAL (DPM/ML)	ACTIVITY PER CCAN ANAL (DPM/ML)	ACTIVITY PER KG (DPM/KG)	ACTIVITY PER STANDARD CCAN (DPM/ML)
5-54	M	70	70	NEBRASKA	CAECILIA	199-0	LIVER	901.0	1000	250	.012	3.03	3.00	4.05
5-54	M	70	70	NEBRASKA	CAECILIA	199-0	LUNG	733.0	1000	250	.010	.03	.04	.04
5-54	M	70	70	NEBRASKA	CAECILIA	199-0	LYMPH	5.0	50	10	.033	.10	22.90	.33
5-54	M	70	70	NEBRASKA	CAECILIA	199-0	KIDNEY	203.0	100	10	.004	.04	2.11	.03
5-54	M	70	70	NEBRASKA	CAECILIA	199-0	VERTEBRAL	135.0	250	100	.010	CMRL	CMRL	
5-52	M	64	64	TEXAS	PETRY UNH	201-1	LIVER	975.0	500	250	.002	.70	.70	1.33
5-52	M	64	64	TEXAS	PETRY UNH	201-1	LUNG	1019.0	500	250	.073	.75	.41	.41
5-52	M	64	64	TEXAS	PETRY UNH	201-1	LYMPH	5.0	25	10	.043	.11	21.90	.21
5-52	M	64	64	TEXAS	PETRY UNH	201-1	KIDNEY	297.0	100	10	.023	CMRL	CMRL	
5-52	M	64	64	TEXAS	PETRY UNH	201-1	VERTEBRAL	100.0	250	100	.004	.10	1.32	0.25
5-50	M	70	70	NEBRASKA	CAECILIA	199-0	LUNG	1002.0	500	250	.703	1.03	1.00	1.00
5-50	M	70	70	NEBRASKA	CAECILIA	199-0	LYMPH	3.0	25	10	.006	.11	20.33	.20
5-50	M	70	70	NEBRASKA	CAECILIA	199-0	KIDNEY	103.0	100	10	.021	.31	1.01	.00
5-50	M	70	70	NEBRASKA	CAECILIA	199-0	VERTEBRAL	172.0	250	100	.000	.20	1.02	0.97
5-50	M	40	47	NEBRASKA	CAECILIA	199-0	LIVER	2267.0	500	250	1.970	3.90	1.75	2.97
5-50	M	40	47	NEBRASKA	CAECILIA	199-0	LUNG	1024.0	500	250	1.900	3.02	1.02	1.02
5-50	M	40	47	NEBRASKA	CAECILIA	199-0	LYMPH	4.0	25	10	.009	.17	43.12	.03
5-50	M	40	47	NEBRASKA	CAECILIA	199-0	KIDNEY	404.0	100	10	.000	CMRL	CMRL	
5-50	M	40	47	NEBRASKA	CAECILIA	199-0	VERTEBRAL	00.0	250	100	.000	.13	2.25	19.75
5-70	M	60	59	NEBRASKA	CAECILIA	199-0	LIVER	1003.0	500	250	2.900	3.93	3.79	0.00
5-70	M	60	59	NEBRASKA	CAECILIA	199-0	LUNG	007.0	500	250	.004	1.37	1.99	1.99
5-70	M	60	59	NEBRASKA	CAECILIA	199-0	LYMPH	10.0	25	10	.002	.15	15.00	.15
5-70	M	60	59	NEBRASKA	CAECILIA	199-0	KIDNEY	275.0	100	10	.000	.40	1.75	.03
5-70	M	60	59	NEBRASKA	CAECILIA	199-0	VERTEBRAL	120.0	250	100	.027	CMRL	CMRL	
5-70	M	57	NA	NEBRASKA	CAECILIA	199-0	LIVER	710.0	500	250	.152	.30	.03	.03
5-70	M	57	NA	NEBRASKA	CAECILIA	199-0	LUNG	5.0	25	10	.001	.15	31.50	.10
5-70	M	57	NA	NEBRASKA	CAECILIA	199-0	KIDNEY	325.0	100	10	.007	.37	1.75	.03
5-70	M	57	NA	NEBRASKA	CAECILIA	199-0	VERTEBRAL	125.0	200	100	.110	.24	1.00	13.33
5-70	F	50	NA	NEBRASKA	CAECILIA	199-0	LIVER	1295.0	500	250	1.470	2.95	2.20	3.07
5-70	F	50	NA	NEBRASKA	CAECILIA	199-0	LUNG	950.0	500	250	.200	.00	.03	.03
5-70	F	50	NA	NEBRASKA	CAECILIA	199-0	LYMPH	5.0	25	10	.024	CMRL	CMRL	
5-70	F	50	NA	NEBRASKA	CAECILIA	199-0	KIDNEY	283.0	100	10	0.000	CMRL	CMRL	
5-70	F	50	NA	NEBRASKA	CAECILIA	199-0	VERTEBRAL	90.0	200	100	.025	CMRL	CMRL	
5-82	F	60	NA	NEBRASKA	CAECILIA	199-0	LIVER	1673.0	500	250	.190	0.70	0.30	11.10
5-82	F	60	NA	NEBRASKA	CAECILIA	199-0	LUNG	007.0	500	250	.121	.24	.30	.30
5-82	F	60	NA	NEBRASKA	CAECILIA	199-0	LYMPH	10.0	25	10	.011	CMRL	CMRL	
5-82	F	60	NA	NEBRASKA	CAECILIA	199-0	KIDNEY	195.0	100	10	.014	CMRL	CMRL	
5-82	F	60	NA	NEBRASKA	CAECILIA	199-0	VERTEBRAL	00.0	200	100	.024	.07	1.13	7.00
5-84	F	70	NA	NEBRASKA	CAECILIA	199-0	LIVER	1010.0	500	250	1.703	3.00	3.00	0.00
5-84	F	70	NA	NEBRASKA	CAECILIA	199-0	LUNG	043.0	500	250	.207	.07	.00	.00
5-84	F	70	NA	NEBRASKA	CAECILIA	199-0	LYMPH	0.0	25	10	.140	.30	05.00	.00
5-84	F	70	NA	NEBRASKA	CAECILIA	199-0	KIDNEY	254.0	100	10	0.000	CMRL	CMRL	
5-84	F	70	NA	NEBRASKA	CAECILIA	199-0	VERTEBRAL	00.0	200	100	0.000	CMRL	CMRL	
5-80	F	61	NA	NEBRASKA	CAECILIA	199-0	LIVER	2033.0	500	250	.700	1.01	.07	.07
5-80	F	61	NA	NEBRASKA	CAECILIA	199-0	LUNG	053.0	500	250	.204	1.02	2.17	2.17
5-80	F	61	NA	NEBRASKA	CAECILIA	199-0	LYMPH	2.0	25	10	.151	.30	104.75	1.00
5-80	F	61	NA	NEBRASKA	CAECILIA	199-0	KIDNEY	300.0	100	10	.000	CMRL	CMRL	
5-80	F	61	NA	NEBRASKA	CAECILIA	199-0	VERTEBRAL	50.0	200	100	.030	.07	1.31	9.10
5-80	F	61	NA	NEBRASKA	CAECILIA	199-0	LIVER	2142.0	500	250	2.753	5.01	2.07	4.37
5-80	F	61	NA	NEBRASKA	CAECILIA	199-0	LUNG	010.0	500	250	.310	.03	.00	.00
5-80	F	61	NA	NEBRASKA	CAECILIA	199-0	LYMPH	10.0	25	10	0.000	CMRL	CMRL	
5-80	F	61	NA	NEBRASKA	CAECILIA	199-0	KIDNEY	305.0	100	10	0.000	CMRL	CMRL	
5-80	F	61	NA	NEBRASKA	CAECILIA	199-0	VERTEBRAL	100.0	200	100	.043	.00	.00	3.25
5-82	M	61	NA	NEBRASKA	CAECILIA	199-0	LIVER	1727.0	500	250	1.105	2.23	1.25	2.29
5-82	M	61	NA	NEBRASKA	CAECILIA	199-0	LUNG	031.0	500	250	.107	.07	.00	.00
5-82	M	61	NA	NEBRASKA	CAECILIA	199-0	LYMPH	17.0	25	10	0.000	CMRL	CMRL	
5-82	M	61	NA	NEBRASKA	CAECILIA	199-0	KIDNEY	350.0	100	10	0.000	CMRL	CMRL	
5-82	M	61	NA	NEBRASKA	CAECILIA	199-0	VERTEBRAL	100.0	200	100	.030	.00	5.00	41.10

CASE NO.	SEX	AGE	YEARS	STATE	CAUSE OF DEATH	NEW CODE NO.	TISSUE	WEIGHT OF SAMPLE (GRAM)	VOLUME OF SAMPLE (CC)	VOLUME ANALYZED (CC)	ACTIVITY PER GWL G/L (CIS/MIN)	ACTIVITY PER GWL G/L (CIS/MIN)	ACTIVITY PER GWL G/L (CIS/MIN)	ACTIVITY PER GWL G/L (CIS/MIN)
5- 91	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	1076.0	500	250	2.178	4.36	2.32	3.99
5- 92	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	824.0	500	250	2.227	4.5	2.3	3.5
5- 93	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	7.0	25	10	2.23	4.5	2.3	3.5
5- 94	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	215.0	140	10	2.25	4.5	2.3	3.5
5- 95	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	104.0	240	100	2.25	4.5	2.3	3.5
5- 96	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	2076.0	500	250	2.211	4.2	2.2	3.5
5- 97	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	1572.0	500	250	2.25	4.1	2.2	3.5
5- 98	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	18.0	25	10	2.25	4.1	2.2	3.5
5- 99	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	464.0	100	10	2.25	4.1	2.2	3.5
5- 100	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	93.0	200	100	2.25	4.1	2.2	3.5
5- 101	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	460.0	500	250	2.276	4.5	2.5	3.5
5- 102	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	5.0	25	10	2.277	4.5	2.5	3.5
5- 103	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	263.0	100	10	2.277	4.5	2.5	3.5
5- 104	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	1425.0	500	250	2.750	3.70	2.33	3.95
5- 105	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	1000.0	1000	250	2.130	3.6	2.3	3.9
5- 106	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	7.0	25	10	2.135	3.6	2.3	3.9
5- 107	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	307.0	100	10	2.135	3.6	2.3	3.9
5- 108	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	91.0	200	100	2.135	3.6	2.3	3.9
5- 109	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	1390.0	1000	250	2.609	2.60	1.42	3.27
5- 110	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	700.0	1000	250	2.643	2.17	2.23	3.23
5- 111	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	2.0	25	10	2.647	2.17	2.23	3.23
5- 112	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	204.0	100	10	2.611	2.17	2.23	3.23
5- 113	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	93.0	200	100	2.674	2.17	2.23	3.23
5- 114	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	1720.0	1000	250	2.920	3.72	2.14	3.86
5- 115	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	1917.0	1000	250	2.109	2.76	2.39	3.39
5- 116	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	0.0	25	10	2.104	2.76	2.39	3.39
5- 117	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	223.0	100	10	2.112	2.76	2.39	3.39
5- 118	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	76.0	200	100	2.119	2.76	2.39	3.39
5- 119	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	1474.0	1000	250	2.840	3.96	2.65	3.11
5- 120	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	1025.0	1000	250	2.141	3.96	2.65	3.11
5- 121	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	3.0	25	10	2.100	3.96	2.65	3.11
5- 122	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	237.0	100	10	2.106	3.96	2.65	3.11
5- 123	M	52	NA	NEW MEXICO	HEART ATTACK	428-1	LIVER	102.0	200	100	2.130	3.96	2.65	3.11

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TABLE A-111 COLORADO CASES ANALYZED FOR PLUTONIUM

Case, a MINIMUM REPORTING LEVEL = 0.01 DPM PER SAMPLE VOL ANALYZED BASED ON TOTAL COUNTS, DRUG AND RECOVERY STATISTICS

CASE NO.	OCCUPATION	RESIDENT	STATE	CAUSE OF DEATH	NEW CODE NO.	SEX	AGE	YEARS	ORGAN	TOTAL ACTIVITY PER SAMPLE (DPM)	VOL ANALYZED (CC)	VOL ANALYZED (CC)	ACTIVITY PER SAMPLE (DPM/MIN)	ACTIVITY PER SAMPLE (DPM/MIN)	ACTIVITY PER SAMPLE (DPM/MIN)	ACTIVITY PER SAMPLE (DPM/MIN)
6-100	SUPERVISOR	DRIVER	COLORADO	CHRONARY DEC	420.1	MA	40	NA	LUNG	1255.0	500	250	.031	.04	.04	.09
									LYMPH	10.0	25	10	.012	CMPLD	CMPLD	
									KIDNEY	400.0	100	10	.010	CMPLD	CMPLD	
									RIB	117.0	200	100	.079	.16	1.35	0.48
6-2	NA	NA	COLORADO	NA	NA	MA	NA	NA	LIVER	445.0	500	250	.040	1.32	2.04	0.43
									LUNG	190.0	500	250	.125	.25	1.32	1.32
									LYMPH	3.0	25	10	.012	CMPLD	CMPLD	
									RIB	162.0	200	50	.000	CMPLD	CMPLD	
6-4	NA	NA	COLORADO	NA	NA	MA	NA	NA	LIVER	560.0	500	250	.044	1.23	2.00	0.53
									LUNG	325.0	500	250	.040	1.10	2.37	2.37
									LYMPH	3.0	25	10	.051	.13	0.50	.02
									RIB	150.0	200	50	.023	.13	.00	0.10
6-5	NA	NA	COLORADO	NA	NA	MA	NA	NA	LIVER	307.0	500	250	.012	.02	2.12	2.02
									LUNG	233.0	500	250	.044	.13	.55	.55
									LYMPH	25.0	25	10	0.000	CMPLD	CMPLD	
									RIB	151.0	200	50	.021	CMPLD	CMPLD	
6-8	NA	NA	COLORADO	NA	NA	MA	NA	NA	LIVER	1013.0	500	250	1.045	3.05	3.05	0.10
									LUNG	502.0	500	250	.113	.27	.53	.53
									LYMPH	10.0	25	10	.074	CMPLD	CMPLD	
									RIB	144.0	200	50	.004	CMPLD	CMPLD	
6-10	NA	NA	COLORADO	NA	NA	MA	NA	NA	LUNG	804.0	500	250	1.000	2.00	4.05	4.05
									LYMPH	17.0	25	10	.050	.13	7.35	.02
									RIB	197.0	200	50	.057	.23	1.10	0.10
6-12	NA	NA	COLORADO	NA	NA	MA	NA	NA	LIVER	343.0	500	250	.040	.07	1.47	2.03
									LUNG	137.0	500	250	.030	.06	.04	.04
									LYMPH	2.0	25	10	.000	CMPLD	CMPLD	
									RIB	110.0	200	50	.037	.13	1.25	0.43
6-14	NA	NA	COLORADO	NA	NA	MA	NA	NA	LUNG	1165.0	500	250	.004	1.19	1.02	1.02
									LYMPH	107.0	25	10	.010	CMPLD	CMPLD	
									RIB	830.0	200	50	.054	.22	.04	0.57
6-16	NA	NA	COLORADO	NA	NA	MA	NA	NA	LIVER	410.0	500	250	.015	1.23	3.00	0.10
									LUNG	300.0	500	250	.125	.25	.04	.04
									RIB	220.0	200	50	0.000	CMPLD	CMPLD	
6-18	NA	NA	COLORADO	NA	NA	MA	NA	NA	LIVER	715.0	500	250	1.140	2.30	3.21	0.40
									LYMPH	3.0	25	10	.000	CMPLD	CMPLD	
									RIB	120.0	200	50	.063	.25	2.02	10.11
6-20	NA	NA	COLORADO	NA	NA	MA	NA	NA	LIVER	913.0	500	250	.010	1.04	1.00	2.07
									LUNG	043.0	500	250	.102	.30	.07	.07
									LYMPH	12.0	25	10	0.000	CMPLD	CMPLD	
									RIB	210.0	200	50	0.000	CMPLD	CMPLD	
6-22	NA	NA	COLORADO	NA	NA	MA	NA	NA	LIVER	310.0	500	250	.004	.31	.00	1.00
									LYMPH	5.0	25	10	0.000	CMPLD	CMPLD	
									RIB	130.0	200	50	.020	CMPLD	CMPLD	

CASE NO.	AGE	SEX	TISSUE	ACT RELATIVE SAMPLE COUNT	VOLUME OF SAMPLE (CC)	VOLUME OF SAMPLE (G)	ACTIVITY PER MG DISPERSED	ACTIVITY PER MG WIGHT (DISPERSED)	ACTIVITY PER MG WIGHT (DISPERSED)	ACTIVITY PER MG WIGHT (DISPERSED)
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6- 25 NA NA COLORADO NA NA	SEX AGE YEARS NA NA	LUNG LYMPH RIB	428.0 159.0	1000 250	250 50	0.071 0.076 0.076	0.071 0.076 0.076	0.071 0.076 0.076	0.071 0.076 0.076
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6- 28 SMITHMAN NA COLORADO HEART DISEASE 428.1	SEX AGE YEARS M 75 NA	LIVER LUNG KIDNEY RIB	858.0 1215.0 23.0	1000 1000 100	250 250 50	0.022 0.039 0.044 0.023	0.022 0.039 0.044 0.023	0.022 0.039 0.044 0.023	0.022 0.039 0.044 0.023
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6- 30 SMITHMAN NA COLORADO HEART DISEASE 428.3	SEX AGE YEARS M 52 NA	LIVER LUNG LYMPH KIDNEY RIB	2038.0 1001.0 274.0 470.0 101.0	1000 1000 250 100 100	250 250 50 50 50	0.052 0.047 0.008 0.042 0.071	0.052 0.047 0.008 0.042 0.071	0.052 0.047 0.008 0.042 0.071	0.052 0.047 0.008 0.042 0.071
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6- 32 NA NA COLORADO NA NA	SEX AGE YEARS NA NA	LIVER LUNG LYMPH RIB	847.0 255.0 2.0 44.0	1000 1000 250 250	250 250 50 50	0.066 0.066 0.030 0.000	0.066 0.066 0.030 0.000	0.066 0.066 0.030 0.000	0.066 0.066 0.030 0.000
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6- 34 NA NA COLORADO NA NA	SEX AGE YEARS NA NA	LIVER LUNG RIB	423.0 378.0 225.0	1000 1000 250	250 250 50	0.327 0.336 0.000	0.327 0.336 0.000	0.327 0.336 0.000	0.327 0.336 0.000
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6- 36 WELDEN NA COLORADO HEART DISEASE 428.8	SEX AGE YEARS M 72 NA	LIVER KIDNEY RIB GONAD	1408.0 225.0 16.0 72.0	1000 100 250 100	250 10 50 10	0.073 0.096 0.006 0.077	0.073 0.096 0.006 0.077	0.073 0.096 0.006 0.077	0.073 0.096 0.006 0.077
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6- 38 PHARMACIST NA COLORADO HEART FAILURE 428.2	SEX AGE YEARS M 61 NA	LIVER LUNG LYMPH KIDNEY RIB	1745.0 1182.0 10.0 300.0 37.0	1000 1000 250 100 200	250 250 50 50 50	0.493 0.466 0.027 0.321 0.070	0.493 0.466 0.027 0.321 0.070	0.493 0.466 0.027 0.321 0.070	0.493 0.466 0.027 0.321 0.070
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6- 40 NA NA COLORADO PULMONARY THROMB 455.0	SEX AGE YEARS F 70 NA	LIVER LUNG KIDNEY RIB	1100.0 1213.0 257.0 20.0	1000 1000 100 200	250 250 10 50	0.449 0.776 0.010 0.000	0.449 0.776 0.010 0.000	0.449 0.776 0.010 0.000	0.449 0.776 0.010 0.000
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6- 42 MINISTER NA COLORADO LIVER ASCITES 502.0	SEX AGE YEARS M 74 NA	LIVER LUNG LYMPH KIDNEY RIB	1014.0 1310.0 93.0 1044.0 17.0	1000 1000 250 100 200	250 250 10 10 50	0.055 0.341 0.000 0.010 0.020	0.055 0.341 0.000 0.010 0.020	0.055 0.341 0.000 0.010 0.020	0.055 0.341 0.000 0.010 0.020
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6- 44 SAP FORMER NA COLORADO ARTERIAL OCC 424.1	SEX AGE YEARS M 53 NA	LIVER LUNG LYMPH RIB GONAD	2142.0 2251.0 2.0 30.0 68.0	1000 1000 250 200 100	250 250 10 50 10	0.013 0.344 0.000 0.010 0.110	0.013 0.344 0.000 0.010 0.110	0.013 0.344 0.000 0.010 0.110	0.013 0.344 0.000 0.010 0.110
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6- 46 HOUSEWIFE NA COLORADO MYOCARDIAL INF 428.1	SEX AGE YEARS F 60 NA	LIVER LUNG LYMPH RIB	717.0 1000.0 5.0 255.0	1000 1000 250 200	250 250 10 50	0.411 0.075 0.000 0.017	0.411 0.075 0.000 0.017	0.411 0.075 0.000 0.017	0.411 0.075 0.000 0.017
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	NA- 48 FED EMPLOY NA COLORADO CARCINOMA 172	SEX AGE YEARS F 59 NA	LIVER LUNG RIB	905.0 1000.0 50.0	1000 1000 250	250 250 50	0.000 0.077 0.077	0.000 0.077 0.077	0.000 0.077 0.077	0.000 0.077 0.077

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				TISSUE	NET WEIGHT SAMPLE (GRAM)	VOLUME OF SAMPLE (CC)	VOLUME SAMPLE ANALYZED (CC)	ACTIVITY PER VOL ANAL (DPS/MIN)	ACTIVITY PER CC OF TISSUE (DPS/MIN)	ACTIVITY PER KG OF TISSUE (DPS/MIN)	ACTIVITY PER STANDARD ORGAN (DPS/MIN)
CASE NO.	6- 50	SEX M	LIVER	1299.0	1000	250	.357	1.43	1.43	1.75	
OCCUPATION	MOTEL MGR	AGE 50	LUNG	1500.0	1000	250	.002	.97	.74	.24	
RESIDENT	NA	YEARS NA	LYMPH	6.0	25	10	.017	CHNL	CHNL		
STATE	COLORADO		KIDNEY	243.0	100	10	.017	CHNL	CHNL		
CAUSE OF DEATH	CORONARY SCC	YEAR 1971	RIB	96.0	200	50	.019	CHNL	CHNL		
NEW CODE NO.	420.1	KG NA									
CASE NO.	6- 52	SEX F	LIVER	2156.0	1000	250	.322	1.29	.66	1.02	
OCCUPATION	HOUSEWIFE	AGE 46	LUNG	1613.0	1000	250	.161	.66	.66	.46	
RESIDENT	NA	YEARS NA	LYMPH	3.0	25	10	.026	.60	20.00	.30	
STATE	COLORADO		KIDNEY	263.0	100	10	.100	1.00	8.02	.05	
CAUSE OF DEATH	DIABETES MELL	YEAR 1971									
NEW CODE NO.	260.0	KG NA									
CASE NO.	6- 54	SEX M	LIVER	1076.0	1000	250	.400	1.06	1.01	3.00	
OCCUPATION	MEAT GRINDER	AGE 46	LUNG	1575.0	1000	250	.075	.50	.19	.19	
RESIDENT	NA	YEARS NA	KIDNEY	400.0	100	10	.040	.60	1.00	.31	
STATE	COLORADO		RIB	10.0	200	50	.006	CHNL	CHNL		
CAUSE OF DEATH	PERITONITIS	YEAR 1971	BONAD	68.0	100	10	.020	.30	0.01	.10	
NEW CODE NO.	970	KG NA									
CASE NO.	6- 5A	SEX F	LIVER	1076.0	1000	250	.017	CHNL	CHNL		
OCCUPATION	NA	AGE 66	LUNG	925.0	1000	250	.160	1.30	1.30	1.50	
RESIDENT	NA	YEARS NA	LYMPH	6.0	25	10	.003	CHNL	CHNL		
STATE	COLORADO		KIDNEY	425.0	100	10	.075	CHNL	CHNL		
CAUSE OF DEATH	HEART DISEASE	YEAR 1971	RIB	14.0	200	50	.010	CHNL	CHNL		
NEW CODE NO.	470.0	KG NA									
CASE NO.	6- 58	SEX M	LUNG	978.0	1000	250	.101	.40	.41	.41	
OCCUPATION	NA	AGE 72	LYMPH	6.0	25	10	.023	CHNL	CHNL		
RESIDENT	NA	YEARS NA	KIDNEY	297.0	100	10	.071	.71	2.00	.09	
STATE	COLORADO		RIB	30.0	200	50	0.000	CHNL	CHNL		
CAUSE OF DEATH	HEART DISEASE	YEAR 1971									
NEW CODE NO.	470.2	KG NA									
CASE NO.	6- 60	SEX M	LIVER	1520.0	1000	250	.471	1.00	1.24	2.11	
OCCUPATION	SALESMAN	AGE NA	LUNG	1470.0	1000	250	.110	.47	.32	.32	
RESIDENT	NA	YEARS NA	LYMPH	3.0	25	10	0.000	CHNL	CHNL		
STATE	COLORADO		RIB	27.0	200	50	0.000	CHNL	CHNL		
CAUSE OF DEATH	EMPHYSEMA	YEAR 1971									
NEW CODE NO.	502.0	KG NA									
CASE NO.	6- 62	SEX M	LIVER	1000.0	1000	250	1.327	0.31	3.32	0.04	
OCCUPATION	FLR MILLER	AGE 71	LUNG	845.0	1000	250	.120	.52	.21	.21	
RESIDENT	NA	YEARS NA	LYMPH	7.0	25	10	.000	CHNL	CHNL		
STATE	COLORADO		RIB	142.0	200	50	.029	CHNL	CHNL		
CAUSE OF DEATH	EMPHYSEMA	YEAR 1971	BONAD	95.0	100	10	0.000	CHNL	CHNL		
NEW CODE NO.	527.1	KG NA									
CASE NO.	6- 64	SEX M	LIVER	2311.0	1000	250	.202	1.17	.91	.86	
OCCUPATION	FARMER	AGE 75	LUNG	998.0	1000	250	.061	.24	.27	.27	
RESIDENT	NA	YEARS NA	LYMPH	6.0	25	10	.014	CHNL	CHNL		
STATE	COLORADO		KIDNEY	240.0	100	10	.066	.66	2.66	.80	
CAUSE OF DEATH	HEART DISEASE	YEAR 1971	RIB	70.0	200	50	.131	.62	7.69	52.00	
NEW CODE NO.	420.1	KG NA									
CASE NO.	6- 66	SEX M	LIVER	1007.0	1000	250	1.431	0.72	0.36	0.12	
OCCUPATION	CARPENTER	AGE 70	LUNG	1519.0	1000	250	.262	1.05	.65	.60	
RESIDENT	NA	YEARS NA	KIDNEY	410.0	100	10	.030	.30	.73	.22	
STATE	COLORADO		RIB	120.0	270	50	0.000	CHNL	CHNL		
CAUSE OF DEATH	CARCINOMA	YEAR 1971	BONAD	35.0	100	10	.000	.60	17.14	.60	
NEW CODE NO.	160.1	KG NA									
CASE NO.	6- 68	SEX F	LIVER	1128.0	1000	250	.351	1.40	1.24	2.12	
OCCUPATION	HOUSEWIFE	AGE 63	LUNG	919.0	1000	250	.145	.74	.70	.70	
RESIDENT	NA	YEARS NA	LYMPH	9.0	25	10	0.000	CHNL	CHNL		
STATE	COLORADO		KIDNEY	120.0	100	10	.070	.70	5.83	1.75	
CAUSE OF DEATH	HYDRODIAL IMP	YEAR 1971	RIB	105.0	200	50	.057	.23	1.23	6.63	
NEW CODE NO.	420.1	KG NA	BONAD	3.0	100	10	.000	.60	200.00	0.00	
CASE NO.	6- 70	SEX M	LIVER	830.0	1000	250	.351	1.40	1.60	2.00	
OCCUPATION	COAL MINR	AGE 60	LUNG	1070.0	1000	250	.223	.60	.83	.82	
RESIDENT	NA	YEARS NA	LYMPH	30.0	25	10	.014	CHNL	CHNL		
STATE	COLORADO		KIDNEY	197.0	100	10	.007	CHNL	CHNL		
CAUSE OF DEATH	PUL EMPHYSEMA	YEAR 1971	RIB	301.0	200	50	.154	.62	1.60	11.49	
NEW CODE NO.	445.0	KG NA									
CASE NO.	6- 72	SEX F	LIVER	1320.0	1000	250	.465	1.06	1.40	2.30	
OCCUPATION	NA	AGE 60	LUNG	890.0	1000	250	.066	.70	.30	.20	
RESIDENT	NA	YEARS NA	LYMPH	140.0	25	10	0.000	CHNL	CHNL		
STATE	COLORADO		KIDNEY	272.0	100	10	.210	CHNL	CHNL		
CAUSE OF DEATH	PNEUMONIA	YEAR 1971	RIB	190.0	200	50	.200	.83	4.33	20.60	
NEW CODE NO.	493.0	KG NA									

CASE NO.	SEX	AGE	YEARS	CAUSE OF DEATH	WEIGHT (KG)	HEIGHT (CM)	ACTIVITY PER DAY	ACTIVITY PER DAY	ACTIVITY PER DAY	ACTIVITY PER DAY
6-76 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M NA NA COLORADO SCIENTOSCELOSIS	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	850.0 740.0 2.0 22.0	187.0 170.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
6-78 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M OFFICER NA COLORADO EMPHYSEMA	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	1114.0 870.0 2.0 100.0	180.0 170.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
6-80 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M MINTCERMAN NA COLORADO PNEUMONITIS	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	1050.0 80.0 2.0 77.0	180.0 170.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
6-82 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M PATIENT NA COLORADO ARD ANEURISM	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	1076.0 1323.0 2.0 600.0	180.0 180.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
6-84 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M DR INS MAN NA COLORADO ARTERIAL OCC	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	1750.0 930.0 2.0 444.0	180.0 180.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
6-86 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M MINISTER NA COLORADO HEART FAILURE	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	1014.0 970.0 2.0 150.0	180.0 180.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
6-88 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M LAWYER NA COLORADO PNEUMONIA	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	1011.0 1013.0 2.2 132.0	180.0 180.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
6-90 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M FARMER NA COLORADO PUL INFARCTION	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	2432.0 1005.0 3.0 415.0	180.0 180.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
6-92 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M US MR STDS NA COLORADO SI MEMORRANCE	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	2704.0 1110.0 2.7 370.0	180.0 180.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
6-94 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M NA NA COLORADO CNS SHAIN SYND	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	850.0 840.0 2.4 122.0	180.0 180.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
6-96 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M NA NA COLORADO PULMONY EMBOLI	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	840.0 1000.0 2.0 200.0	180.0 180.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
6-98 OCCUPATION RESIDENT STATE CAUSE OF DEATH MEN CODE NO.	M NA NA COLORADO CH-3 OVIDOS	46 66 NA 1971	46 66 NA 1971	LIVER LUNG LYMPH RIB	1000.0 170.0 2.0 50.0	180.0 180.0 75 10	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000

CASE NO.	OCCUPATION	RESIDENT	STATE	CAUSE OF DEATH	NEW CODE NO.	SEX	AGE	YEARS	YEAR 1971	NO	MA	WISSE	NET WEIGHT (GRAM)	VOLUME OF SAMPLE (CC)	VOLUME ANALYZED (CC)	ACTIVITY OF VIT. B12 (DIS/MIN)	ACTIVITY OF VIT. B12 (DIS/MIN)	ACTIVITY OF VIT. B12 (DIS/MIN)	ACTIVITY OF VIT. B12 (DIS/MIN)
6-100	C.O. CLERK	NA	COLORADO	EMPHYSEMA	527.1	M	60	NA	1971	NA	NA		2010.0	1000	250	1.290	0.04	2.91	4.20
													200.0	200	50	1.164	0.04	2.28	22.40
6-102	M. SAMP. WKR	NA	COLORADO	KID CANCER	700.0	M	60	NA	1971	NA	NA		1470.0	1000	250	0.830	3.35	2.20	3.00
													1200.0	1000	250	1.122	0.09	0.38	0.38
													100.0	25	10	0.007	0.000	0.000	
													100.0	200	50	0.000	0.000	0.000	
6-104	PROFESSOR	NA	COLORADO	MYOCARDIAL INF	420.1	M	66	NA	1971	NA	NA		1210.0	1000	250	1.005	4.02	3.32	0.01
													1270.0	1000	250	1.122	0.09	0.30	0.30
													10.0	25	10	0.004	0.000	0.000	
													220.0	100	10	0.050	0.00	1.72	0.02
													100.0	200	50	0.016	0.000	0.000	
6-106		NA	COLORADO	PULMON EMPHOL	491.0	M	60	NA	1971	NA	NA		1700.0	1000	250	0.020	0.000	0.000	0.00
													170.0	100	10	0.050	0.00	3.20	
													60.0	200	50	0.004	0.000	0.000	
													210.0	200	50	0.016	0.000	0.000	
6-108	PHYSICIST	NA	COLORADO	CAPPA MONIIO	942.7	M	60	NA	1971	NA	NA		1270.0	1000	250	1.103	0.05	0.51	0.07
													970.0	1000	250	0.030	2.50	2.02	2.02
													100.0	100	10	0.000	0.00	3.02	1.10
													50.0	200	50	0.004	0.000	0.000	
6-110	BARNER	NA	COLORADO	COLON CANCER	153.2	M	63	NA	1971	NA	NA		1601.0	1000	250	0.421	4.21	2.24	3.00
													810.0	1000	250	0.003	0.37	0.00	0.00
													117.0	100	10	0.000	0.00	4.10	1.20
													50.0	200	50	0.007	0.000	0.000	
													220.0	200	50	0.007	0.000	0.000	
6-112		NA	COLORADO	THYRD CANCER	190.0	F	75	NA	1971	NA	NA		1307.0	1000	250	0.430	1.70	1.33	2.70
													550.0	1000	250	0.003	0.37	0.00	0.07
													50.0	200	50	0.012	0.000	0.000	
6-114		NA	COLORADO	EMPHYSEMA	434.7	M	65	NA	1971	NA	NA		1200.0	1000	250	0.420	1.00	1.00	2.30
													1430.0	1000	250	0.257	1.03	0.71	0.71
													172.0	100	10	0.000	0.00	2.05	0.05
													127.0	200	50	0.010	0.000	0.000	
6-116		NA	COLORADO	PULM INFANCT	445.0	F	60	NA	1971	NA	NA		990.0	1000	250	0.407	1.43	1.00	2.00
													1021.0	1000	250	0.150	0.62	0.00	0.00
													100.0	100	10	0.000	0.00	0.33	1.00
													100.0	200	50	0.004	0.000	0.000	
													52.0	200	50	0.000	0.000	0.000	
6-118	CUSTODIAN	NA	COLORADO	CAN THROMOS	420.1	M	57	NA	1971	NA	NA		1062.0	1000	250	0.700	2.90	1.70	3.03
													1000.0	1000	250	0.153	0.01	0.50	0.50
													101.0	100	10	0.000	0.00	3.01	1.10
													133.0	200	50	0.000	0.000	0.000	
6-120						M							1270.0	1000	250	0.747	0.00	0.77	1.32

CASE NO.	DATE	SEX	AGE	TISSUE	WT HEIGHT SAMPLE (G/M)	VOLUME OF SAMPLE (CC)	VOLUME ANALYZED (CC)	ACTIVITY PER VOL. ANAL (DIS/MIN)	ACTIVITY PER GRAM WEIGHT (DIS/MIN)	ACTIVITY PER MS (DIS/MIN)	ACTIVITY PER STANDARD COUNT (DIS/MIN)
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-12- NA NA COLORADO CIRCUMSIS 541.0	SEX F AGE 45 YEARS NA YEAR 1971 MO NA	LIVER LUNG KIDNEY VERTEBRAE	544.0 1072.0 127.0 163.0	1000 1000 100 200	250 250 10 100	.023 .044 .060 .210	400.0 .19 4.62 .22	400.0 .19 4.62 1.35	.12 .12 1.45 4.45	
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-126 NA NA COLORADO PNEUMONIA 493.0	SEX M AGE 44 YEARS NA YEAR 1971 MO NA	LIVER LUNG KIDNEY GONAD	1072.0 2512.0 194.0 47.0	1000 1000 100 100	10 10 10 10	.060 .290 .024 .043	50.00 29.00 400.0 .03	50.00 29.00 400.0 0.15	04.01 11.54 1.45 .37	
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-128 IND WORKER NA COLORADO FRACT SKULL 801.0	SEX M AGE 49 YEARS NA YEAR 1971 MO NA	LIVER LUNG KIDNEY VERTEBRAE GONAD	604.0 2534.0 104.0 17.0 50.0	1000 1000 100 200 100	10 250 10 100 10	.010 .062 .040 .073 .040	61.00 .32 .40 .15 .08	61.00 .32 .40 .15 0.60	151.17 .21 .42 5.87 .30	
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-130 NA NA COLORADO FRACT SKULL 803.0	SEX M AGE 46 YEARS NA YEAR 1971 MO NA	LIVER LUNG KIDNEY VERTEBRAE GONAD	2220.0 1137.0 347.0 149.0 72.0	1000 1000 100 200 100	10 250 10 100 10	.150 .071 .010 .041 .120	10.00 .20 400.0 .10 1.20	6.76 .25 400.0 1.30 10.00	11.49 .25 4.10 .06	
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-132 NA NA COLORADO SKULL FRACT 803.0	SEX M AGE 80 YEARS NA YEAR 1971 MO NA	LIVER LUNG KIDNEY GONAD	1372.0 820.0 237.0 20.0	1000 1000 100 100	10 250 10 10	.010 .105 .040 .040	91.00 .74 .40 .40	91.00 .74 1.60 20.00	112.76 .00 .51 .00	
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-134 HOUSEWIFE NA COLORADO HEART DISEASE 820.0	SEX F AGE 34 YEARS NA YEAR 1971 MO NA	LIVER LUNG LYMPH KIDNEY	752.0 91.0 8.2 113.0	1000 1000 25 100	250 250 10 10	.204 .113 .030 .030	1.10 .45 .07 .00	1.07 .50 34.00 7.00	2.40 .50 .34 2.12	
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-137 NA NA COLORADO NA NA	SEX F AGE 37 YEARS NA YEAR 1971 MO NA	LUNG LYMPH KIDNEY VERTEBRAE	1101.0 4.0 94.0 120.0	1000 25 100 500	250 10 10 100	.334 .100 0.000 .060	1.35 .45 400.0 .34	1.23 02.75 400.0 2.54	1.23 .96 17.76	
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-131 NA NA COLORADO PNEUMONIA 581.0	SEX NA AGE 40 YEARS NA YEAR 1971 MO NA	LIVER LUNG KIDNEY VERTEBRAE GONAD	791.0 1119.0 227.0 255.0 24.0	1000 1000 100 500 100	250 250 10 100 10	.204 .257 .055 .223 .050	.02 1.43 .55 1.10 .50	1.03 .02 2.02 4.57 25.00	1.75 .02 .73 31.00 1.00	
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-140 NA NA COLORADO SUICIDE 879.0	SEX F AGE 75 YEARS NA YEAR 1971 MO NA	LIVER LUNG KIDNEY VERTEBRAE	505.0 399.0 80.0 72.0	1000 1000 100 200	250 250 10 100	.204 .130 .076 .012	1.04 .55 .76 400.0	1.02 1.20 0.04 400.0	1.00 1.20 2.05	
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-141 NA NA COLORADO GUN AND HEAD 879.0	SEX M AGE 21 YEARS NA YEAR 1971 MO NA	LIVER LUNG LYMPH KIDNEY VERTEBRAE GONAD	534.0 1040.0 1.0 70.0 103.0 20.0	1000 1000 25 100 200 100	250 250 10 10 100 10	.400 .003 .100 .004 .041 0.000	1.07 .33 .42 .60 .00 400.0	1.01 .32 202.50 0.05 .77 400.0	1.04 .32 2.02 2.45 5.42	
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-144 DENTIST NA COLORADO NA NA	SEX NA AGE 84 YEARS NA YEAR 1971 MO NA	LIVER LUNG GONAD	1010.0 1037.0 72.0	1000 1000 100	250 250 10	3.271 .110 .100	5.00 .47 1.00	3.35 .00 13.00	5.00 .00 .50	
CASE NO. OCCUPATION RESIDENT STATE CAUSE OF DEATH NEW CODE NO.	6-148 NA NA COLORADO GUN AND HEAD 879.0	SEX M AGE 61 YEARS NA YEAR 1971 MO NA	LIVER LUNG LYMPH VERTEBRAE GONAD	1000.0 1050.0 4.7 125.0 37.0	1000 1000 25 200 100	250 250 10 100 10	.000 .137 .005 .132 .751	2.12 .55 .21 .76 .51	1.20 .23 45.71 2.11 12.75	2.17 .32 .45 10.77 .55	

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				ISSUE	WT WEIGHT SAMPLE (GRAM)	VOLUME OF SAMPLE (CC)	VOLUME ANALYZED (CC)	ACTIVITY PER VOL ANAL (DIS/MIN)	ACTIVITY PER ORGAN WEIGHT (DIS/MIN)	ACTIVITY PER KG (DIS/MIN)	ACTIVITY PER STANDARD ORGAN (DIS/MIN)
CASE NO.	0-108	SEX	M	LUNG	1242.0	1000	250	.101	.40	.32	.33
OCCUPATION	NA	AGE	24	LYMPH	8.1	25	10	.068	.17	33.33	.33
RESIDENT	NA	YEARS	NA	KIDNEY	235.0	100	10	.073	400.0	400.0	
STATE	COLORADO			VERTEBRAE	97.0	200	100	.067	.13	1.31	9.67
CAUSE OF DEATH	PNEUMONIA	YEAR	1971	GONAD	24.0	100	10	.044	.00	12.90	.52
NEW CODE NO.	001.0	RS	NA								
CASE NO.	0-106	SEX	M	LUNG	1370.0	1000	200	.034	1.74	1.27	1.27
OCCUPATION	NA	AGE	55	LYMPH	2.0	25	10	.157	.39	190.25	1.06
RESIDENT	NA	YEARS	NA	KIDNEY	201.0	100	10	.061	.01	2.17	.05
STATE	COLORADO			VERTEBRAE	202.0	800	100	.090	.00	1.70	11.01
CAUSE OF DEATH	NA	YEAR	1971	GONAD	35.0	100	10	.104	1.00	20.71	1.19
NEW CODE NO.	NA	RS	NA								

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TABLE A-IV LUNG EMPLOYEES KNOWN TO HAVE A POTENTIAL LOW EXPOSURE TO PLUTONIUM

NOTE: A MINIMUM REPORTING LEVEL = 0.33 DPM PER SAMPLE VOL ANALYZED BASED ON TOTAL COUNTS INCLUDING RECOVERY STATISTICS

			TISSUE	LET DPM/G GROSS (10000)	VOLUME OF SAMPLE ANALYZED (CC)	ACTIVITY PER VOL ANAL (DPM/ML)	ACTIVITY PER CC OF TLC ORGAN (DPM/CC)	ACTIVITY PER % (DPM/ML)	ACTIVITY PER STANDARD (DPM/ML)
CASE NO.	1- 54	SEA M	LUNG	354.0	200	10	1.741	14.80	41.81
OCCUPATION	MACHINIST	AGE 40	LYMPH	73.4	25	10	1.820	3.76	123.64
RESIDENT	LOS ALAMOS	YEARS 10							
STATE	NEW MEXICO								
CAUSE OF DEATH	CHOCOLATE	YEAR 1959							
NEW CODE NO.	434-1	NS	70						
CASE NO.	1- 58	SEA M	LIVER	1325.0	1000	100	1.030	10.70	7.89
OCCUPATION	MACHINIST	AGE 50	LUNG	1022.0	1000	100	1.270	12.70	13.23
RESIDENT	LOS ALAMOS	YEARS 60	LYMPH	22.0	100	100	0.600	0.60	2.02
STATE	NEW MEXICO		WINTERBEE	222.0	100	100	0.820	0.82	0.82
CAUSE OF DEATH	CHOCOLATE	YEAR 1959	WINTERBEE	174.0	100	100	0.800	0.80	0.80
NEW CODE NO.	420-1	NS	NA	163.0	100	100	0.820	0.80	0.80
			SPLEEN	303.0	200	100	0.800	0.80	0.26
CASE NO.	1- 60	SEA M	LIVER	2152.0	1000	50	0.870	1.40	0.85
OCCUPATION	MACHINIST	AGE 34	LUNG	712.0	1000	50	0.820	0.80	0.80
RESIDENT	LOS ALAMOS	YEARS 07	LYMPH	22.0	25	10	0.810	0.80	0.80
STATE	NEW MEXICO		KIDNEY	200.0	250	10			
CAUSE OF DEATH	BAC ENDOCARDITIS	YEAR 1960							
NEW CODE NO.	420-0	NS	NA						
CASE NO.	1- 74	SEA M	LIVER	1354.0	1000	50	0.830	0.80	0.80
OCCUPATION	MACHINIST	AGE 48	LUNG	1207.0	1000	50	0.800	0.80	2.40
RESIDENT	LOS ALAMOS	YEARS 07	LYMPH	2.0	25	10	0.820	0.80	27.30
STATE	NEW MEXICO		KIDNEY	207.0	100	10	0.820	0.80	0.80
CAUSE OF DEATH	CIRRHOSIS	YEAR 1960							
NEW CODE NO.	394-0	NS	NA						
CASE NO.	1- 80	SEA M	LIVER	1720.0	1000	50	0.840	0.80	0.80
OCCUPATION	ACCOUNTANT	AGE 54	LUNG	736.0	1000	50	0.810	0.80	5.71
RESIDENT	LOS ALAMOS	YEARS 12	LYMPH	7.0	50	10	0.820	0.80	0.80
STATE	NEW MEXICO		KIDNEY	247.0	100	10	0.870	0.80	0.80
CAUSE OF DEATH	MULTIPLE MYELOMA	YEAR 1960							
NEW CODE NO.	203-0	NS	03						
CASE NO.	1- 94	SEA F	LIVER	1529.0	1000	50	1.200	24.00	15.70
OCCUPATION	CLERK	AGE 40	LUNG	572.0	1000	50	0.800	17.20	29.05
RESIDENT	LOS ALAMOS	YEARS 11	LYMPH	14.0	50	10	0.390	1.90	130.39
STATE	NEW MEXICO		KIDNEY	221.0	100	10	0.800	0.80	0.80
CAUSE OF DEATH	CHRONARY ECLUSY	YEAR 1960							
NEW CODE NO.	424-1	NS	NA						
CASE NO.	1-104	SEA M	LIVER	1745.0	1000	50	0.870	1.40	0.80
OCCUPATION	TECHNICIAN	AGE 40	LUNG	1043.0	1000	50	0.870	1.40	1.34
RESIDENT	LOS ALAMOS	YEARS 03	LYMPH	10.0	50	10	0.800	0.80	0.80
STATE	NEW MEXICO		KIDNEY	226.0	100	10	0.800	0.80	0.80
CAUSE OF DEATH	SKULL FRACTURE	YEAR 1961							
NEW CODE NO.	403-0	NS	NA						
CASE NO.	1-120	SEA M	LIVER	1770.0	1000	50	1.140	2.00	1.50
OCCUPATION	TECHNICIAN	AGE 31	LUNG	822.0	1000	50	0.830	4.50	9.74
RESIDENT	LOS ALAMOS	YEARS 04	LYMPH	15.0	50	10	0.430	1.15	29.08
STATE	NEW MEXICO		KIDNEY	207.0	100	10	0.800	0.80	0.80
CAUSE OF DEATH	SPONTANEOUS	YEAR 1961							
NEW CODE NO.	462-1	NS	71						
CASE NO.	1-120	SEA M	LIVER	2134.0	1000	50	1.140	2.00	1.31
OCCUPATION	MACHINIST	AGE 50	LUNG	1315.0	1000	50	1.240	8.80	9.29
RESIDENT	LOS ALAMOS	YEARS 11	LYMPH	22.0	50	10	0.440	0.30	15.00
STATE	NEW MEXICO		KIDNEY	228.0	100	10	0.800	0.80	0.80
CAUSE OF DEATH	LUNG CANCER	YEAR 1961							
NEW CODE NO.	163-0	NS	NA						
CASE NO.	1-132	SEA M	LIVER	2179.0	1000	50	0.880	1.20	0.85
OCCUPATION	RAFTSMAN	AGE 32	LUNG	928.0	1000	50	0.890	1.80	1.03
RESIDENT	LOS ALAMOS	YEARS 05	LYMPH	8.0	50	10	0.800	0.80	0.80
STATE	NEW MEXICO		KIDNEY	410.0	100	10	0.800	0.80	0.80
CAUSE OF DEATH	CHRONARY CCC	YEAR 1961							
NEW CODE NO.	429-1	NS	NA						
CASE NO.	1-134	SEA M	LIVER	1741.0	1000	50	1.180	3.00	1.72
OCCUPATION	TECHNICIAN	AGE 50	LUNG	908.0	1000	50	1.10	2.20	8.44
RESIDENT	LOS ALAMOS	YEARS 12	LYMPH	10.0	50	10	0.800	0.80	0.80
STATE	NEW MEXICO		KIDNEY	204.0	100	10	1.170	7.20	25.00
CAUSE OF DEATH	CHRONARY CCC	YEAR 1961							
NEW CODE NO.	426-1	NS	NA						
CASE NO.	1-140	SEA M	LIVER	2210.0	1000	50	0.890	1.00	0.70
OCCUPATION	CLERK	AGE 30	LUNG	921.0	1000	50	0.880	12.00	13.03
RESIDENT	LOS ALAMOS	YEARS 14	LYMPH	9.0	50	10	0.120	0.80	0.80
STATE	NEW MEXICO		KIDNEY	515.0	100	10	0.220	0.80	0.80
CAUSE OF DEATH	P.A. INFARCTION	YEAR 1961							
NEW CODE NO.	041-0	NS	NA						

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CASE NO.	SEX	AGE	YEARS	TISSUE	NET WEIGHT (G)	VOLUME OF SAMPLE (CC)	VOLUME SAMPLE (CC)	ACTIVITY PER VOL. (DPM/ML)	ACTIVITY PER CCM (DPM/CC)	ACTIVITY PER KG (DPM/KG)	ACTIVITY PER STANDARD CPM/KG (DPM/KG)
CASE NO. 2-2 OCCUPATION: CLERK RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: LEUKEMIA NEW CODE NO. 224.0	SEX: M AGE: 32 YEARS: 16	SEX: M AGE: 32 YEARS: 16	YEARS: 16	LIVER LUNG LYMPH KIDNEY	1044.0 1122.0 0.0 262.0	1000 1000 00 100	00 00 10 10	.190 .040 .000 .020	3.00 .00 200.33 0.00	2.01 .71 300.33 0.00	3.41 .71 3.03
CASE NO. 2-14 OCCUPATION: ELECTRICIAN RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: TUBERCULOPNEUMONIA NEW CODE NO. 420.1	SEX: M AGE: 42 YEARS: 18	SEX: M AGE: 42 YEARS: 18	YEARS: 18	LIVER LUNG LYMPH KIDNEY	1090.0 015.0 00.0 252.0	1000 1000 00 100	00 00 10 10	.040 .045 .000 .053	0.00 10.00 0.00 0.00	0.10 32.02 0.00 1.72	10.03 32.02 0.00 0.21
CASE NO. 2-20 OCCUPATION: MECHANIC RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: CANCER OF RECTUM NEW CODE NO. 154.0	SEX: F AGE: 47 YEARS: 2	SEX: F AGE: 47 YEARS: 2	YEARS: 2	LIVER LUNG LYMPH KIDNEY	0070.0 010.0 0.0 230.0	1000 1000 00 100	00 00 10 10	.060 .040 0.000 0.000	0.00 0.00 0.00 0.00	1.04 1.16 0.00 0.00	2.13 1.16
CASE NO. 2-66 OCCUPATION: TECHNICIAN RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: DRUGS NEW CODE NO. 972.0	SEX: M AGE: 40 YEARS: 11	SEX: M AGE: 40 YEARS: 11	YEARS: 11	LIVER LUNG LYMPH KIDNEY VERTEBRAL	0625.0 064.0 10.0 20.0 305.0	1000 1000 00 100 000	00 00 10 10 10	.070 .030 .170 0.000 0.000	1.40 0.00 0.00 0.00 0.00	.00 0.00 0.00 0.00 0.00	1.10 0.00 0.00 0.00 0.00
CASE NO. 2-70 OCCUPATION: CLERK RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: CARDIAC NEW CODE NO. 420.1	SEX: M AGE: 54 YEARS: 33	SEX: M AGE: 54 YEARS: 33	YEARS: 33	LIVER LYMPH KIDNEY VERTEBRAL	1760.0 10.0 200.0 251.0	1000 100 000 000	00 10 10 10	.000 0.000 0.000 0.000	2.00 0.00 0.00 0.00	.07 0.00 0.00 0.00	.00 0.00
CASE NO. 2-94 OCCUPATION: MICROSCOPIST RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: CARDIAC NEW CODE NO. 424.0	SEX: M AGE: 42 YEARS: 16	SEX: M AGE: 42 YEARS: 16	YEARS: 16	LIVER LUNG LYMPH KIDNEY	005.0 025.0 0.0 251.0	1000 1000 00 100	00 00 10 10	.100 .000 0.000 0.000	3.00 0.00 0.00 0.00	3.62 0.79 0.00 0.00	6.10 0.79 0.00 0.00
CASE NO. 2-98 OCCUPATION: PHYSICIST RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: CANCER NEW CODE NO. NA	SEX: M AGE: 34 YEARS: 16	SEX: M AGE: 34 YEARS: 16	YEARS: 16	LUNG LYMPH KIDNEY VERTEBRAL	405.0 14.0 170.0 31.0	1000 00 100 200	00 10 10 20	.130 .160 .020 .010	3.00 0.00 0.00 0.00	4.46 0.00 0.00 0.00	4.46 0.00
CASE NO. 2-100 OCCUPATION: RESIDENT RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: CIRRHOSIS NEW CODE NO. 501.1	SEX: M AGE: 42 YEARS: 07	SEX: M AGE: 42 YEARS: 07	YEARS: 07	LIVER LUNG LYMPH KIDNEY VERTEBRAL	2095.0 1000.0 31.0 360.0 304.0	1000 1000 00 200 000	25 25 10 10 10	.002 .140 .000 .001 .043	3.20 0.00 1.00 1.52 37.15	1.37 3.70 0.00 4.14 107.17	2.33 3.70 0.00 1.24 750.17
CASE NO. 2-102 OCCUPATION: MECHANIC RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: PNEUMONIA NEW CODE NO. 490.0	SEX: M AGE: 34 YEARS: 10	SEX: M AGE: 34 YEARS: 10	YEARS: 10	LIVER LUNG LYMPH KIDNEY	0100.0 1050.0 10.0 470.0	1000 1000 00 200	00 00 10 10	0.000 0.000 0.000 0.000	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00
CASE NO. 2-102 OCCUPATION: ELECT. TECH. RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: ALL. EPIDERMIC NEW CODE NO. 400.0	SEX: M AGE: 47 YEARS: 10	SEX: M AGE: 47 YEARS: 10	YEARS: 10	LIVER LUNG LYMPH KIDNEY VERTEBRAL	2005.0 700.0 21.0 200.0 350.0	1000 1000 00 100 000	00 00 10 10 10	0.000 .000 0.000 0.000 0.000	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00
CASE NO. 2-104 OCCUPATION: CLERK RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: PNEUMONIA NEW CODE NO. 430.2	SEX: M AGE: 45 YEARS: 03	SEX: M AGE: 45 YEARS: 03	YEARS: 03	LIVER LUNG LYMPH KIDNEY VERTEBRAL	1000.0 1720.0 20.0 320.0 304.0	1000 1000 00 100 000	00 00 10 10 10	0.000 0.000 0.000 0.000 0.000	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00
CASE NO. 2-10 OCCUPATION: CLERK RESIDENT: LOS ALAMOS STATE: NEW MEXICO CAUSE OF DEATH: CANCER NEW CODE NO. 144.0	SEX: M AGE: 47 YEARS: 10	SEX: M AGE: 47 YEARS: 10	YEARS: 10	LIVER LUNG LYMPH KIDNEY VERTEBRAL	0745.0 710.0 10.0 100.0 220.0	1000 1000 00 100 200	00 00 10 10 10	0.000 .000 .000 .000 .000	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00

CASE NO.	OCCUPATION	RESIDENT	STATE	CAUSE OF DEATH	NEW CODE NO.	SEX	AGE	YEARS	YEAR	MO	DA	TISSUE	WGT GMS	VOLUME OF SAMPLE (CC)	VOLUME SAMPLE ANALYZED (CC)	ACTIVITY PER MILLIGRAM (DIS/HR)	ACTIVITY PER MILLIGRAM (DIS/HR)	ACTIVITY PER MILLIGRAM (DIS/HR)	ACTIVITY PER MILLIGRAM (DIS/HR)
8-64	PHYSICIST		NEW MEXICO	CAUSE OF DEATH	879-0	M	49	43	1970	NA	NA	LIVER	1700.0	800	250	3.000	0.02	4.70	7.00
8-64	PHYSICIST		NEW MEXICO	CAUSE OF DEATH	879-0	M	49	43	1970	NA	NA	LUNG	452.0	100	250	0.740	11.40	17.40	17.40
8-64	PHYSICIST		NEW MEXICO	CAUSE OF DEATH	879-0	M	49	43	1970	NA	NA	LYMPH	4.0	25	10	0.074	0.10	40.20	0.06
8-64	PHYSICIST		NEW MEXICO	CAUSE OF DEATH	879-0	M	49	43	1970	NA	NA	KIDNEY	203.0	250	10	0.029	0.07	3.40	1.10
8-64	PHYSICIST		NEW MEXICO	CAUSE OF DEATH	879-0	M	49	43	1970	NA	NA	VERTEBRAE	100.0	100	10	0.003	0.00	0.00	0.00
8-70	LABORER		NEW MEXICO	HEPATIC FAIL	803-0	M	64	64	1970	NA	NA	LIVER	1720.0	800	250	0.090	4.00	2.70	0.73
8-70	LABORER		NEW MEXICO	HEPATIC FAIL	803-0	M	64	64	1970	NA	NA	LUNG	1043.0	1000	250	10.000	21.00	20.00	20.00
8-70	LABORER		NEW MEXICO	HEPATIC FAIL	803-0	M	64	64	1970	NA	NA	LYMPH	20.0	25	10	0.002	0.00	0.00	0.00
8-70	LABORER		NEW MEXICO	HEPATIC FAIL	803-0	M	64	64	1970	NA	NA	KIDNEY	404.0	100	10	0.000	0.00	0.00	0.00
8-70	LABORER		NEW MEXICO	HEPATIC FAIL	803-0	M	64	64	1970	NA	NA	VERTEBRAE	00.0	200	10	0.070	1.40	15.50	100.00
8-80	PRO FENCE		NEW MEXICO	HEART ATTACK	420-0	M	50	03	1970	NA	NA	LIVER	2013.0	800	250	0.260	13.00	0.00	11.30
8-80	PRO FENCE		NEW MEXICO	HEART ATTACK	420-0	M	50	03	1970	NA	NA	LUNG	077.0	100	250	0.000	0.00	15.50	15.50
8-80	PRO FENCE		NEW MEXICO	HEART ATTACK	420-0	M	50	03	1970	NA	NA	LYMPH	0.0	25	10	0.000	0.00	01.25	0.01
8-80	PRO FENCE		NEW MEXICO	HEART ATTACK	420-0	M	50	03	1970	NA	NA	KIDNEY	003.0	100	10	0.010	0.00	0.00	0.00
8-80	PRO FENCE		NEW MEXICO	HEART ATTACK	420-0	M	50	03	1970	NA	NA	VERTEBRAE	100.0	200	10	0.007	0.17	1.30	0.74
8-100	SEC PR FRC		NEW MEXICO	HEART ATTACK	420-0	M	50	03	1970	NA	NA	LIVER	2050.0	800	250	0.001	0.01	2.44	4.10
8-100	SEC PR FRC		NEW MEXICO	HEART ATTACK	420-0	M	50	03	1970	NA	NA	LYMPH	4.0	25	10	0.001	0.10	20.00	0.20
8-100	SEC PR FRC		NEW MEXICO	HEART ATTACK	420-0	M	50	03	1970	NA	NA	KIDNEY	200.0	100	10	0.010	0.00	0.00	0.00
8-100	SEC PR FRC		NEW MEXICO	HEART ATTACK	420-0	M	50	03	1970	NA	NA	VERTEBRAE	04.0	200	100	0.000	0.07	0.71	4.00
8-110	SEC CONW		NEW MEXICO	HEART ATTACK	421-0	M	40	14	1970	NA	NA	LIVER	1003.0	800	250	0.440	2.22	1.10	2.00
8-110	SEC CONW		NEW MEXICO	HEART ATTACK	421-0	M	40	14	1970	NA	NA	LUNG	1274.0	1000	250	0.100	0.70	0.00	0.00
8-110	SEC CONW		NEW MEXICO	HEART ATTACK	421-0	M	40	14	1970	NA	NA	LYMPH	304.0	100	10	0.017	0.00	0.00	0.00
8-110	SEC CONW		NEW MEXICO	HEART ATTACK	421-0	M	40	14	1970	NA	NA	KIDNEY	00.0	200	100	0.000	0.13	2.20	10.70
8-110	SEC CONW		NEW MEXICO	HEART ATTACK	421-0	M	40	14	1970	NA	NA	VERTEBRAE	00.0	200	100	0.000	0.13	2.20	10.70
8-110	TECHNICAL		NEW MEXICO	CANCER	100-0	F	52	20	1970	NA	NA	LIVER	1203.0	800	250	0.014	0.07	3.22	5.40
8-110	TECHNICAL		NEW MEXICO	CANCER	100-0	F	52	20	1970	NA	NA	LUNG	000.0	1000	250	0.074	0.70	1.00	1.00
8-110	TECHNICAL		NEW MEXICO	CANCER	100-0	F	52	20	1970	NA	NA	LYMPH	0.0	25	10	0.000	0.00	0.00	0.00
8-110	TECHNICAL		NEW MEXICO	CANCER	100-0	F	52	20	1970	NA	NA	KIDNEY	200.0	100	10	0.000	0.00	0.00	0.00
8-110	TECHNICAL		NEW MEXICO	CANCER	100-0	F	52	20	1970	NA	NA	VERTEBRAE	100.0	200	10	0.120	2.50	20.30	102.20
8-150	CHEMIST		NEW MEXICO	HEART ATTACK	420-0	M	41	11	1971	NA	NA	LIVER	1070.0	1000	250	1.000	4.30	2.50	4.30
8-150	CHEMIST		NEW MEXICO	HEART ATTACK	420-0	M	41	11	1971	NA	NA	LUNG	1300.0	1000	250	2.300	0.30	0.00	0.00
8-150	CHEMIST		NEW MEXICO	HEART ATTACK	420-0	M	41	11	1971	NA	NA	KIDNEY	300.0	100	10	0.000	0.00	0.00	0.00
8-150	CHEMIST		NEW MEXICO	HEART ATTACK	420-0	M	41	11	1971	NA	NA	VERTEBRAE	00.0	200	100	0.000	0.00	0.00	0.00
7-4	ACCIDENT		NEW MEXICO	CARCINOMA	100-0	M	70	24	1971	NA	NA	LIVER	0020.0	1000	250	0.000	1.00	0.70	1.00
7-4	ACCIDENT		NEW MEXICO	CARCINOMA	100-0	M	70	24	1971	NA	NA	LUNG	070.0	1000	250	0.700	2.00	4.70	0.70
7-4	ACCIDENT		NEW MEXICO	CARCINOMA	100-0	M	70	24	1971	NA	NA	LYMPH	4.7	25	10	1.000	0.00	0.00	0.00
7-4	ACCIDENT		NEW MEXICO	CARCINOMA	100-0	M	70	24	1971	NA	NA	KIDNEY	200.0	100	10	0.000	0.00	0.00	0.00
7-4	ACCIDENT		NEW MEXICO	CARCINOMA	100-0	M	70	24	1971	NA	NA	VERTEBRAE	100.0	200	100	0.100	0.30	3.00	21.30
7-6	PRO FRC		NEW MEXICO	CARCINOMA	100-0	M	52	14	1971	NA	NA	LIVER	1000.0	1000	250	1.101	4.72	2.62	4.40
7-6	PRO FRC		NEW MEXICO	CARCINOMA	100-0	M	52	14	1971	NA	NA	LUNG	1320.0	1000	250	0.100	0.43	0.33	0.33
7-6	PRO FRC		NEW MEXICO	CARCINOMA	100-0	M	52	14	1971	NA	NA	LYMPH	2.4	25	10	0.000	0.00	0.00	0.00
7-6	PRO FRC		NEW MEXICO	CARCINOMA	100-0	M	52	14	1971	NA	NA	KIDNEY	300.0	100	10	0.000	0.00	0.00	0.00
7-6	PRO FRC		NEW MEXICO	CARCINOMA	100-0	M	52	14	1971	NA	NA	BID	100.0	200	100	0.107	0.30	3.33	23.30

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TABLE A-W LAST EMPLOYEES KNOWN TO HAVE HAD POTENTIAL EXPOSURE TO PLUTONIUM

MINIMUM REPORTING LEVEL = 0.05 DPM PER SAMPLE VOL ANALYZED BASED ON TOTAL COUNTS/GRAND REELECTR STATISTICS

			TISSUE	NET HEIGHT SCALE (10000)	VOLUME OF SAMPLE (CC)	VOLUME ANALYZED (CC)	ACTIVITY PER VOL ANAL (DPM/ML)	ACTIVITY PER ORGAN (DPM/ML)	ACTIVITY PER GR (DPM/GR)	ACTIVITY PER STANDARD (DPM/STANDARD)
CASE NO.	3-39	SEX M	LIVER	1952.0	1000	100	1918.117	1918.117	4226.50	14723.15
OCCUPATION	TECHNICIAN	AGE 38	LUNG	875.0	1000	100	830.707	830.707	4320.47	6774.74
RESIDENT	LCS ALAMOS	YEARS 11	LYMPH	8.0	100	10	45.101	44.101	8545.83	67.46
STATE	NEW MEXICO		KIDNEY	275.0	100	10	1.212	1.212	47.62	14.74
CAUSE OF DEATH	TEILMA	YEAR 1959	VERTEBRAL	181.0	100	10	43.000	42.100	2388.75	14723.15
NEW CODE NO.	2518.0	RG 78	RIB	21.2	100	10	2.442	24.42	1167.32	8124.75
			HEART	450.0	100	10	2.240	22.40	84.10	14.67
			MUSCLE	394.8	100	10	1.158	1.58	7.42	27.36
			SPLEEN	110.0	100	10	2.064	20.64	140.50	27.36
			STERNUM	122.0	100	10	12.046	120.46	1118.32	7874.97
CASE NO.	3-100	SEX M	LIVER	1717.0	1000	100	2.963	39.63	22.08	34.24
OCCUPATION	PAIDINIST	AGE 31	LUNG	1120.0	1000	100	30.335	30.335	272.63	272.63
RESIDENT	LCS ALAMOS	YEARS 10	LYMPH	30.0	100	10	2.040	12.40	512.50	5.12
STATE	NEW MEXICO		KIDNEY	232.0	100	10	0.376	8.76	0.31	2.44
CAUSE OF DEATH	CARDIAC	YEAR 1959								
NEW CODE NO.	433.1	RG NA								
CASE NO.	2-4	SEX M	LIVER	1275.0	1000	100	807.200	8972.00	4243.27	7303.56
OCCUPATION	MP LABORER	AGE 60	LUNG	1240.0	1000	100	362.980	3629.80	2321.91	2321.91
RESIDENT	LCS ALAMOS	YEARS 11	LYMPH	5.0	100	10	64.170	320.40	64170.00	641.70
STATE	NEW MEXICO		KIDNEY	208.0	100	10	1.480	14.80	50.40	15.00
CAUSE OF DEATH	LUNG CANCER	YEAR 1961								
NEW CODE NO.	163.0	RG 68								
CASE NO.	2-36	SEX M	LIVER	1019.0	1000	100	290.920	2909.20	2046.27	4472.03
OCCUPATION	MP WOLITOR	AGE 46	LUNG	477.0	1000	100	378.530	3780.30	8536.11	8536.11
RESIDENT	LCS ALAMOS	YEARS 13	LYMPH	12.0	100	10	362.150	1810.75	15049.83	1504.98
STATE	NEW MEXICO		KIDNEY	127.0	100	10	0.007	0.07	70.43	21.10
CAUSE OF DEATH	CARDIAC	YEAR 1962	VERTEBRAL	14.0	100	10	1.735	0.57	0.12	0.27
NEW CODE NO.	456.1	RG 62								
CASE NO.	2-58	SEX M	LIVER	1718.0	1000	100	2.417	36.17	21.09	35.79
OCCUPATION	PLUMBER	AGE 39	LUNG	1160.0	1000	100	6.427	64.27	55.61	55.61
RESIDENT	LCS ALAMOS	YEARS 11	LYMPH	8.0	100	10	0.641	6.40	641.00	6.41
STATE	NEW MEXICO		KIDNEY	323.0	100	10	0.054	0.54	16.04	0.22
CAUSE OF DEATH	CEREBRAL MEN	YEAR 1962	VERTEBRAL	207.0	100	10	0.011	0.01	0.01	0.01
NEW CODE NO.	420.1	RG NA								
CASE NO.	2-64	SEX M	LIVER	1358.0	1000	100	1.305	13.05	9.61	16.36
OCCUPATION	CARPENTER	AGE 49	LUNG	809.0	1000	100	2.371	23.71	24.31	24.31
RESIDENT	LCS ALAMOS	YEARS 22	LYMPH	12.0	100	10	0.000	2.00	200.13	2.00
STATE	NEW MEXICO		KIDNEY	280.0	100	10	0.004	0.04	0.01	0.01
CAUSE OF DEATH	CARDIAC	YEAR 1962	VERTEBRAL	167.0	100	10	0.042	1.02	0.29	44.01
NEW CODE NO.	420.1	RG NA								
CASE NO.	2-68	SEX M	LIVER	1600.0	1000	100	1.910	10.10	6.33	16.78
OCCUPATION	ENGINEER	AGE 42	LUNG	1050.0	1000	100	0.940	0.94	0.97	0.97
RESIDENT	LCS ALAMOS	YEARS 14	LYMPH	7.0	100	10	0.335	1.07	230.70	2.30
STATE	NEW MEXICO		KIDNEY	280.0	100	10	0.042	0.42	1.40	0.45
CAUSE OF DEATH	CARDIAC	YEAR 1962	VERTEBRAL	240.0	100	10	0.006	0.06	0.01	0.01
NEW CODE NO.	420.1	RG NA								
CASE NO.	2-80	SEX M	LIVER	3719.0	1000	100	0.022	0.22	2.21	2.76
OCCUPATION	TAX DRIVER	AGE 32	LUNG	102.0	1000	100	0.700	7.00	11.20	11.20
RESIDENT	LCS ALAMOS	YEARS 22	LYMPH	17.0	100	10	0.307	1.04	140.05	1.40
STATE	NEW MEXICO		KIDNEY	224.0	100	10	0.000	0.00	0.00	0.00
CAUSE OF DEATH	LIVER CANCER	YEAR 1954								
NEW CODE NO.	156.0	RG NA								
CASE NO.	2-100	SEX M	LIVER	2800.0	1000	100	0.220	4.00	2.20	3.75
OCCUPATION	MP WOLITOR	AGE 46	LUNG	640.0	1000	100	0.990	9.90	18.13	18.13
RESIDENT	LCS ALAMOS	YEARS 18	LYMPH	0.0	100	10	0.207	1.03	172.50	1.72
STATE	NEW MEXICO		KIDNEY	243.0	100	10	0.713	2.05	10.44	3.75
CAUSE OF DEATH	PERITONITIS	YEAR 1962	VERTEBRAL	355.0	100	10	0.057	22.05	64.37	453.54
NEW CODE NO.	434.0	RG 77								
CASE NO.	2-130	SEX M	LIVER	1760.0	1000	100	40.430	404.30	262.01	446.44
OCCUPATION	ENGINEER	AGE 47	LUNG	1144.0	1000	100	64.000	640.00	472.00	472.00
RESIDENT	LCS ALAMOS	YEARS 19	LYMPH	20.0	100	10	1.030	7.05	293.75	2.94
STATE	NEW MEXICO		KIDNEY	370.0	100	10	4.453	111.32	204.31	80.35
CAUSE OF DEATH	CEREBRAL CEC	YEAR 1962	VERTEBRAL	310.0	100	10	1.130	64.50	177.67	1243.71
NEW CODE NO.	420.1	RG 78								
CASE NO.	2-14	SEX M	LIVER	1995.0	1000	100	42.102	421.02	216.00	368.05
OCCUPATION	PHYSICIAN	AGE 35	LUNG	1002.0	1000	100	1.010	10.10	10.13	10.13
RESIDENT	LCS ALAMOS	YEARS 23	LYMPH	10.0	100	10	0.144	0.73	45.45	0.44
STATE	NEW MEXICO		KIDNEY	100.0	100	10	0.000	1.00	9.02	2.04
CAUSE OF DEATH	CARDIAC	YEAR 1955	RIA	0.0	100	10	1.000	0.52	100.00	1000.00
NEW CODE NO.	420.1	RG 77								

CASE NO.	2- 16	SEX	M	LIVER	1055.0	1000	100	76.825	768.25	761.51	1192.66
OCCUPATION	PEYTONIST	AGE	20	LUNG	625.0	1000	100	20.151	201.51	370.82	376.82
RESIDENT	LCS ALAMOS	YEARS	29	LYMPH	2.0	100	10	11.001	110.01	268.5.05	268.55
STATE	NEW MEXICO			KIDNEY	278.0	100	10	.021	.021	.021	
CAUSE OF DEATH	BRAIN TUMOR	YEAR	1959								
NEW CODE NO.	823.2	NO	75								
CASE NO.	3- 22	SEX	M	LIVER	2720.0	1000	100	.380	3.80	3.15	1.89
OCCUPATION	ENGINEER	AGE	53	LUNG	1168.0	1000	100	1.464	14.64	3.39	3.39
RESIDENT	LCS ALAMOS	YEARS	29	LYMPH	25.0	100	10	.083	.83	14.31	.14
STATE	NEW MEXICO			KIDNEY	185.0	100	10	.186	1.86	18.46	3.82
CAUSE OF DEATH	MYEOSTIC TUMOR	YEAR	1968	VERTEBRAL	145.0	250	10	.017	.017	.017	
NEW CODE NO.	203.0	NO	NA								
CASE NO.	8-138	SEX	M	LUNG	71.0	100	1	4.010	401.00	8064.79	8454.79
OCCUPATION	JR SCIENTIST	AGE	42	LYMPH	1.0	100	1	22.750	2275.00	563750.00	5637.50
RESIDENT	LCS ALAMOS	YEARS	NA	MUSCLE	1.0	100	1	.030	.30	9750.00	17250.00
STATE	NEW MEXICO			RIB	24.0	100	1	.710	71.00	2580.00	2480.00
CAUSE OF DEATH	GIROST SARFLE	YEAR	1959								
NEW CODE NO.	229.0	NO	NA								
CASE NO.	7- 16	SEX	M	LIVER	2082.0	1000	250	3.313	33.23	6.62	11.29
OCCUPATION	MACHINIST	AGE	42	LUNG	1018.0	1000	250	7.381	73.81	29.47	29.47
RESIDENT	LCS ALAMOS	YEARS	NA	LYMPH	2.0	100	10	.051	.51	262.02	2.02
STATE	NEW MEXICO			KIDNEY	221.0	100	10	0.000	.000	.000	
CAUSE OF DEATH	HEART ATTACK	YEAR	1971	VERTEBRAL	98.0	200	100	.001	.00	0.07	21.27
NEW CODE NO.	429.1	NO	54								

TABLE A-71

SPECIAL CASE STUDY REPLICATE ASSAYS

*MPL = MINIMUM REPORTING LEVEL = 0.03 DPM PER SAMPLE VOL ANALYZED BASED ON TOTAL COUNTS, GROSS AND RECOVERY STATISTICS

				TISSUE	NET COUNT SAMPLER (GROSS)	VOLUME OF SAMPLER (CC)	VOLUME SAMPLER ANALYZED (CC)	ACTIVITY PER VOL ANAL (DPM/ML)	ACTIVITY PER ORGAN (DPM/ML)	ACTIVITY PER KG (DPM/KG)	ACTIVITY PER STANDARD ORGAN (DPM/ML)
CASE NO.	3- 39	SEX	M	LIVER	1950.0	1000	100	2053.350	20533.50	10630.00	17901.88
OCCUPATION	TECHNICIAN	AGE	20	LIVER	1950.0	1000	100	1782.685	17826.85	9143.00	19403.18
RESIDENT	LCS ALAMOS	YEARS	22	LUNG	850.0	1000	100	465.000	4650.00	5480.00	5480.00
STATE	NEW MEXICO			LUNG	850.0	1000	100	488.750	4887.50	5750.00	5750.00
CAUSE OF DEATH	TRAUMA	YEAR	1959	LUNG	850.0	1000	100	572.500	5725.00	6730.00	6730.00
NEW CODE NO.	8918.3	NO	75	LUNG	850.0	1000	100	322.065	3220.65	3789.00	3789.00
				LUNG	850.0	1000	100	1013.425	10134.25	11525.00	11525.00
				LUNG	850.0	1000	100	876.400	8764.00	6764.00	6764.00
				LUNG	850.0	1000	100	832.750	8327.50	6270.00	6270.00
				LUNG	850.0	1000	100	334.145	3341.45	3637.00	3637.00
				LYMPH	5.3	100	10	103.350	1033.50	10500.00	1050.00
				LYMPH	5.3	100	10	15.777	157.77	26874.53	268.25
				LYMPH	5.3	100	10	17.282	172.82	32487.55	324.88
				LYMPH	5.3	100	10	44.495	444.95	6352.83	635.23
				KIDNEY	270.0	100	10	1.674	16.74	62.00	16.40
				KIDNEY	270.0	100	10	.091	.91	33.00	0.90
				VERTEBRAL	180.0	100	10	53.440	534.40	2960.00	2960.00
				VERTEBRAL	180.0	100	10	49.572	495.72	2754.00	19274.00
				VERTEBRAL	180.0	100	10	85.812	858.12	1430.00	10030.00
				STERNUM	122.0	100	10	16.726	167.26	1331.00	910.00
				STERNUM	122.0	100	10	11.665	116.65	966.97	6744.77
				RIB	21.2	100	10	2.620	26.20	962.83	6694.81
				RIB	21.2	100	10	3.099	30.99	1481.79	10232.55
				RIB	21.2	100	10	2.288	22.88	1049.41	7688.48
				HEART	400.0	100	10	.620	6.20	23.00	4.00
				HEART	400.0	100	10	3.160	31.60	49.00	26.70
				SPLEEN	116.0	100	10	1.480	14.80	168.87	74.34
				SPLEEN	116.0	100	10	2.215	22.15	160.95	88.44
				MUSCLE	199.5	100	10	.278	2.78	13.48	419.55
				MUSCLE	199.5	100	10	.038	.38	1.90	87.14

LANL

TABLE A-VII NEW YORK CITY CASES ANALYZED FOR LUNG CANCER

BASED ON MINIMUM REPORTING LEVEL OF 25 CASES FOR SAMPLE VOL ANALYZED BASED ON TOTAL COUNTY-LEVEL REPORTING STATISTICS

CASE NO.	AGE	SEX	LIVER	WRIGHT SAMPLE VOL	VOLUME OF SAMPLE VOL	ACTIVITY PER VOL ANAL (1015/1015)	ACTIVITY PER VOL ANAL (1015/1015)	ACTIVITY PER VOL ANAL (1015/1015)	ACTIVITY PER VOL ANAL (1015/1015)
CASE NO.	4- 2	SEX M	LIVER	410.0	250	25	0.050	1.30	2.00
OCCUPATION	NA	AGE 47	LUNG	425.0	200	24	0.200	4.02	7.00
RESIDENT	NA	YEARS 44	OTHER	23.0	50	10	0.010	0.010	0.010
STATE	NEW YORK	NA	RIS	155.0	250	10	0.020	0.75	4.00
CAUSE OF DEATH	BL. SHOT IN ARM	YEAR 1948	NA						31.07
NEW CODE NO.	2910.0	NO	NA						
CASE NO.	4- 4	SEX M	LIVER	420.0	200	25	0.000	0.000	0.000
OCCUPATION	NA	AGE 50	LUNG	525.0	200	25	0.100	0.000	0.000
RESIDENT	NA	YEARS 44	OTHER	35.0	50	10	0.007	0.000	0.000
STATE	NEW YORK	NA	RIS	160.0	250	10	0.000	0.000	0.000
CAUSE OF DEATH	CEREBRAL CONT	YEAR 1948	NA						6.39
NEW CODE NO.	202.0	NO	NA						
CASE NO.	4- 6	SEX M	LIVER	430.0	200	25	0.027	0.000	0.000
OCCUPATION	NA	AGE 34	LUNG	405.0	200	25	0.057	1.30	1.20
RESIDENT	NA	YEARS 44	OTHER	25.0	50	10	0.053	0.20	10.00
STATE	NEW YORK	NA	RIS	205.0	250	10	0.007	2.17	19.01
CAUSE OF DEATH	ARTERIOSELEBROSIS	YEAR 1948	NA						74.27
NEW CODE NO.	470.3	NO	NA						
CASE NO.	4- 8	SEX M	LIVER	275.0	250	25	0.020	0.000	0.000
OCCUPATION	NA	AGE 30	LUNG	405.0	200	25	0.203	0.20	10.00
RESIDENT	NA	YEARS 44	OTHER	30.0	50	10	0.020	0.000	0.000
STATE	NEW YORK	NA	RIS	130.0	250	10	0.030	0.05	6.10
CAUSE OF DEATH	MULTIPLE INJ	YEAR 1948	NA						43.10
NEW CODE NO.	2225.0	NO	NA						
CASE NO.	4- 10	SEX M	LIVER	450.0	200	25	0.150	3.00	6.00
OCCUPATION	NA	AGE 44	LUNG	600.0	200	25	0.003	1.20	1.01
RESIDENT	NA	YEARS 44	OTHER	32.0	50	10	0.010	0.000	0.000
STATE	NEW YORK	NA	RIS	170.0	250	10	0.100	4.00	23.53
CAUSE OF DEATH	HEMORRHAGE PANIS	YEAR 1948	NA						100.71
NEW CODE NO.	972.0	NO	NA						
CASE NO.	4- 12	SEX M	LIVER	207.0	250	25	0.000	0.00	2.00
OCCUPATION	NA	AGE 45	LUNG	605.0	200	25	0.007	0.000	0.000
RESIDENT	NA	YEARS 44	OTHER	37.0	50	10	0.021	0.000	0.000
STATE	NEW YORK	NA	RIS	150.0	250	10	0.010	0.000	0.000
CAUSE OF DEATH	BRAIN SKULL WD	YEAR 1948	NA						4.00
NEW CODE NO.	850.1	NO	NA						
CASE NO.	4- 14	SEX M	LIVER	250.0	250	25	0.000	0.00	2.00
OCCUPATION	NA	AGE 45	LUNG	375.0	200	25	0.010	0.000	0.000
RESIDENT	NA	YEARS 44	OTHER	30.0	50	10	0.002	0.000	0.000
STATE	NEW YORK	NA	RIS	100.0	250	10	0.053	1.32	6.20
CAUSE OF DEATH	HEART STAB WOUND	YEAR 1948	NA						87.07
NEW CODE NO.	261.1	NO	NA						
CASE NO.	4- 16	SEX M	LIVER	550.0	200	25	0.014	0.000	0.000
OCCUPATION	NA	AGE 30	LUNG	445.0	200	25	0.000	0.000	0.000
RESIDENT	NA	YEARS 44	OTHER	20.0	50	10	0.000	0.000	0.000
STATE	NEW YORK	NA	RIS	150.0	250	10	0.014	0.000	0.000
CAUSE OF DEATH	GUN INJ SKULL	YEAR 1948	NA						
NEW CODE NO.	2010.4	NO	NA						
CASE NO.	4- 18	SEX M	LIVER	415.0	200	25	0.001	1.02	2.00
OCCUPATION	NA	AGE 30	LUNG	600.0	200	25	0.075	1.00	2.27
RESIDENT	NA	YEARS 44	OTHER	30.0	50	10	0.005	0.20	7.00
STATE	NEW YORK	NA	RIS	100.0	250	10	0.010	0.000	0.000
CAUSE OF DEATH	ALTC ACCIDENT	YEAR 1948	NA						0.30
NEW CODE NO.	2025.1	NO	NA						
CASE NO.	4- 20	SEX M	LIVER	340.0	200	25	0.025	0.70	2.00
OCCUPATION	NA	AGE 40	LUNG	600.0	200	25	0.025	0.70	1.03
RESIDENT	NA	YEARS 44	OTHER	71.0	50	10	0.000	0.000	0.000
STATE	NEW YORK	NA	RIS	235.0	250	10	0.025	0.000	0.000
CAUSE OF DEATH	NA	YEAR 1948	NA						
NEW CODE NO.	NA	NO	NA						
CASE NO.	4- 22	SEX M	LIVER	405.0	200	25	0.103	2.00	2.13
OCCUPATION	NA	AGE 33	LUNG	1000.0	200	25	0.010	0.000	0.000
RESIDENT	NA	YEARS 44	OTHER	25.0	50	10	0.001	0.000	0.000
STATE	NEW YORK	NA	RIS	100.0	250	10	0.004	0.000	0.000
CAUSE OF DEATH	HEART HYPERTH	YEAR 1948	NA						3.03
NEW CODE NO.	434.3	NO	NA						
CASE NO.	4- 24	SEX NA	LIVER	300.0	200	25	0.051	0.51	1.70
OCCUPATION	NA	AGE 44	LUNG	670.0	200	25	0.021	0.000	0.000
RESIDENT	NA	YEARS 44	OTHER	50.0	50	10	0.012	0.000	0.000
STATE	NEW YORK	NA	RIS	100.0	250	10	0.011	0.000	0.000
CAUSE OF DEATH	NA	YEAR 1948	NA						2.00
NEW CODE NO.	NA	NO	NA						

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				TISSUE	NET WEIGHT SAMPLE (GMS)	VOLUME OF SAMPLE (CC)	VOLUME SAMPLE ANALYZED (CC)	ACTIVITY PER VOL ANAL (DPS/MIN)	ACTIVITY PER GRAM WEIGHT (DPS/GM)	ACTIVITY PER GR (DPS/MIN)	ACTIVITY PER STANDARD GRAM (DPS/MIN)
CASE NO.	4- 24	SEX	M	LIVER	435.0	250	25	.004	.00	1.30	2.34
OCCUPATION	NA	AGE	28	LUNG	380.0	200	25	.017	.00	.00	.00
RESIDENT	NA	YEARS	NA	OSNAD	40.0	50	10	.011	.00	.00	.00
STATE	NEW YORK			RIN	100.0	250	10	.014	.00	.00	.00
CAUSE OF DEATH	ALTC ACCIDENT	YEAR	1940								
NEW CODE NO.	E255.0	MO	NA								
CASE NO.	4- 26	SEX	M	LIVER	310.0	250	25	.104	1.44	4.60	7.90
OCCUPATION	NA	AGE	27	LUNG	600.0	200	25	.017	.00	.00	.00
RESIDENT	NA	YEARS	NA	OSNAD	40.0	50	10	.000	.00	.00	.00
STATE	NEW YORK			RIN	210.0	250	10	.000	.00	.00	.00
CAUSE OF DEATH	ALTC ACCIDENT	YEAR	1940								
NEW CODE NO.	E255.0	MO	NA								
CASE NO.	4- 30	SEX	M	LIVER	670.0	250	25	.020	.00	.00	.00
OCCUPATION	NA	AGE	35	LUNG	430.0	200	25	.041	.00	1.00	1.00
RESIDENT	NA	YEARS	NA	OSNAD	30.0	50	10	.000	.00	.00	.00
STATE	NEW YORK			RIN	100.0	250	10	.141	3.32	10.55	137.00
CAUSE OF DEATH	BLN INJ HEAD	YEAR	1940								
NEW CODE NO.	E210.0	MO	NA								
CASE NO.	4- 32	SEX	M	LIVER	620.0	250	25	.025	.00	1.70	2.61
OCCUPATION	NA	AGE	30	LUNG	550.0	200	25	.014	.00	.00	.00
RESIDENT	NA	YEARS	NA	OSNAD	30.0	50	10	.000	.00	.00	.00
STATE	NEW YORK			RIN	430.0	200	10	.000	.00	.00	.00
CAUSE OF DEATH	STAR WOUNDS	YEAR	1940								
NEW CODE NO.	E243.0	MO	NA								
CASE NO.	4- 34	SEX	M	LIVER	205.0	250	25	.031	.00	.00	1.30
OCCUPATION	NA	AGE	31	LUNG	705.0	200	25	.020	.00	.00	.00
RESIDENT	NA	YEARS	NA	OSNAD	42.0	50	10	.000	.00	.00	.00
STATE	NEW YORK			RIN	155.0	250	10	.001	.00	.00	.00
CAUSE OF DEATH	CHEST STAR WD	YEAR	1940								
NEW CODE NO.	001.0	MO	NA								
CASE NO.	4- 36	SEX	M	LIVER	330.0	250	25	.002	.00	2.30	3.90
OCCUPATION	NA	AGE	37	LUNG	340.0	250	25	.024	.00	.00	.00
RESIDENT	NA	YEARS	NA	OSNAD	30.0	50	10	.020	.00	.00	.00
STATE	NEW YORK			RIN	220.0	250	10	.005	.00	.00	.00
CAUSE OF DEATH	STAR WOUNDS	YEAR	1960								
NEW CODE NO.	005.0	MO	NA								
CASE NO.	4- 38	SEX	M	LIVER	205.0	100	25	.009	.00	2.95	4.99
OCCUPATION	NA	AGE	31	LUNG	630.0	200	25	.005	.00	.00	.00
RESIDENT	NA	YEARS	NA	OSNAD	40.0	50	10	.000	.00	.00	.00
STATE	NEW YORK			RIN	240.0	250	10	.031	.07	3.52	20.00
CAUSE OF DEATH	ALTC ACCIDENT	YEAR	1940								
NEW CODE NO.	E255.0	MO	NA								
CASE NO.	4- 40	SEX	F	LIVER	270.0	100	25	.002	.00	.00	1.30
OCCUPATION	NA	AGE	22	LUNG	640.0	200	25	.011	.00	.00	.00
RESIDENT	NA	YEARS	NA	OSNAD	15.0	50	10	.000	.00	.00	.00
STATE	NEW YORK			RIN	200.0	250	10	.010	.00	.00	.00
CAUSE OF DEATH	HEAD INJURIES	YEAR	1940								
NEW CODE NO.	E255.0	MO	NA								
CASE NO.	4- 42	SEX	M	LIVER	450.0	250	25	.077	.79	1.71	2.91
OCCUPATION	NA	AGE	30	LUNG	540.0	200	25	.012	.00	.00	.00
RESIDENT	NA	YEARS	NA	OSNAD	30.0	50	10	.003	.00	.00	.00
STATE	NEW YORK			RIN	270.0	250	10	.052	1.30	4.61	25.70
CAUSE OF DEATH	MYOCARDIAL INFAR	YEAR	1960								
NEW CODE NO.	444.5	MO	NA								
CASE NO.	4- 44	SEX	F	LIVER	400.0	250	25	.110	1.10	2.57	4.30
OCCUPATION	NA	AGE	27	LUNG	370.0	200	25	.034	.00	1.00	1.00
RESIDENT	NA	YEARS	NA	OSNAD	15.0	50	10	.007	.00	10.00	.70
STATE	NEW YORK			RIN	250.0	250	10	.040	1.00	3.02	27.45
CAUSE OF DEATH	STATUS ASTHMATIC	YEAR	1940								
NEW CODE NO.	241.0	MO	NA								
CASE NO.	4- 45	SEX	M	LIVER	640.0	250	25	.005	.00	.00	.00
OCCUPATION	NA	AGE	34	LUNG	305.0	200	25	.003	.00	.00	.00
RESIDENT	NA	YEARS	NA	OSNAD	30.0	50	10	.011	.00	.00	.00
STATE	NEW YORK			RIN	240.0	250	10	.105	4.02	10.11	133.70
CAUSE OF DEATH	MULTIPLE INJ	YEAR	1940								
NEW CODE NO.	E255.0	MO	NA								
CASE NO.	4- 48	SEX	M	LIVER	300.0	250	25	.057	.57	1.50	2.55
OCCUPATION	NA	AGE	37	LUNG	700.0	200	25	.025	.00	.00	.00
RESIDENT	NA	YEARS	NA	OSNAD	30.0	50	10	.010	.00	.00	.00
STATE	NEW YORK			RIN	200.0	250	10	.117	2.92	12.72	40.02
CAUSE OF DEATH	MULTIPLE INJ	YEAR	1940								
NEW CODE NO.	446.0	MO	NA								

				TISSUE	NET WEIGHT OF SAMPLE (GRAMS)	VOLUME OF SAMPLE ANALYZED (CC)	VOLUME OF SAMPLE ANALYZED (CC)	ACTIVITY PPM VOL ANAL (DIS/MIN)	ACTIVITY PER GRAM WEIGHT (DIS/MIN)	ACTIVITY PER CC VOL ANAL (DIS/MIN)	ACTIVITY PER STANDARD TUBE (DIS/MIN)
CASE NO.	0-5A	SEX	M	LIVER	310.0	250	25	0.051	0.01	1.42	2.01
OCCUPATION	NA	AGE	41	LUNG	40.0	500	25	0.070	0.010	0.010	
RESIDENT	NA	YEARS AS	GOVERN	GOVERN	50.0	50	10	0.008	0.010	0.010	
STATE	NEW YORK			BIS	250.0	250	10	0.010	0.010	0.010	
CAUSE OF DEATH	MULTIPLE INJ	YEAR	1944								
NEW CODE NO.	044.1	PS	41								

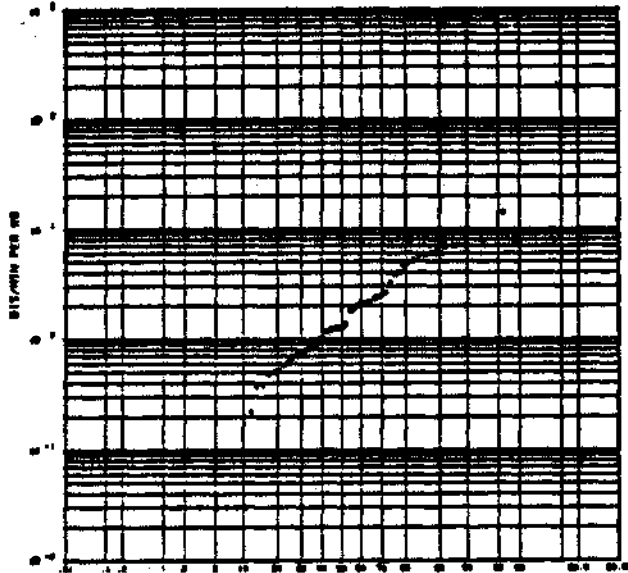
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APPENDIX B

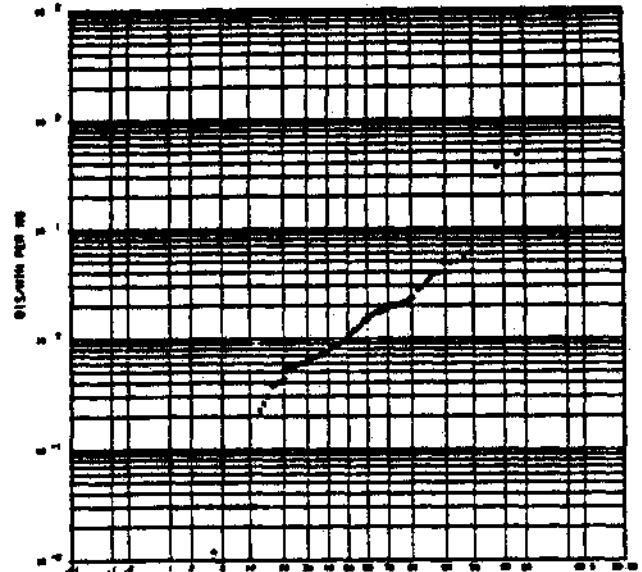
CUMULATIVE FREQUENCY DISTRIBUTIONS

FIG. B-1 LOS ALAMOS CASES. LUNG DATA FROM TABLE A-I



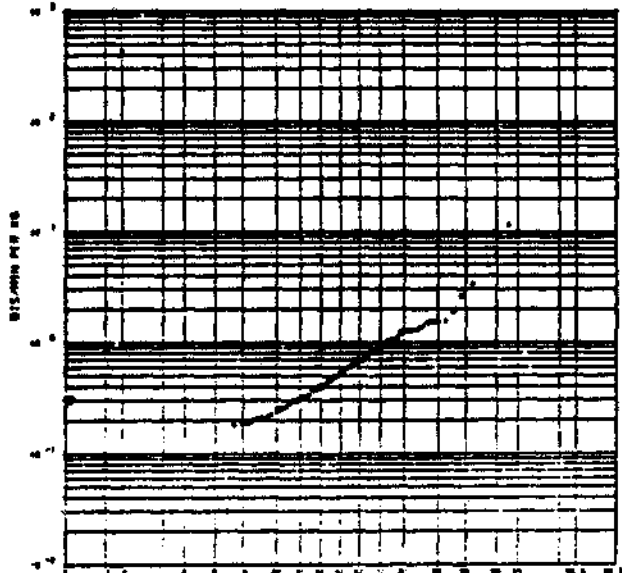
LOG-PROBABILITY PLOT OF Pu IN LUNG TISSUE CONCENTRATION PER KG
NO. OF CASES = 57 MEDIAN = 1.3 5TH AND 95 PERCENTILE = 0.3 - 10.0

FIG. B-2 NEW MEXICO AND OTHER AREAS. LUNG DATA FROM TABLE A-II



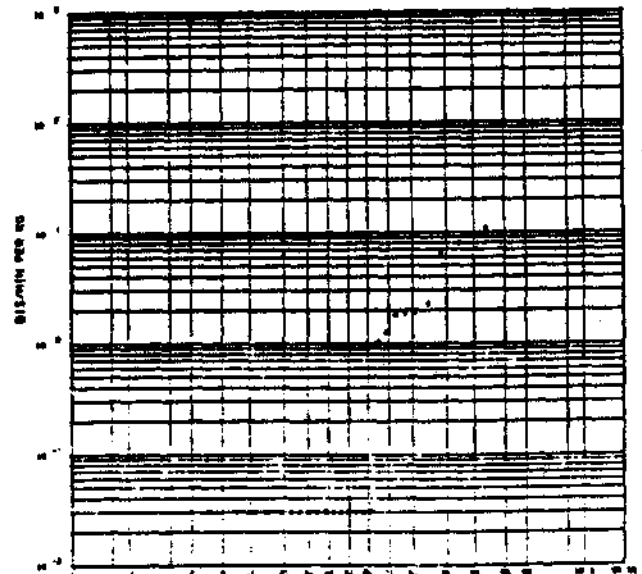
LOG-PROBABILITY PLOT OF Pu IN LUNG TISSUE CONCENTRATION PER KG
NO. OF CASES = 76 MEDIAN = 1.0 5TH AND 95 PERCENTILE = 0.3 - 7.0

FIG. B-3 COLORADO CASES. LUNG DATA FROM TABLE A-III



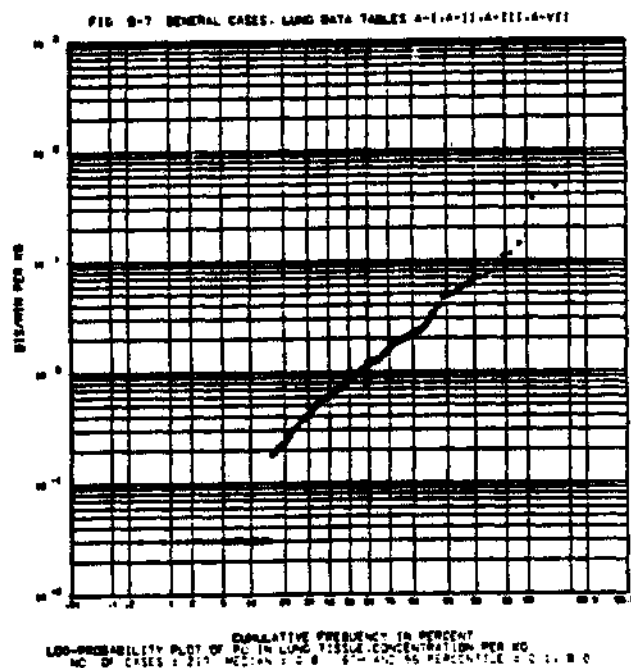
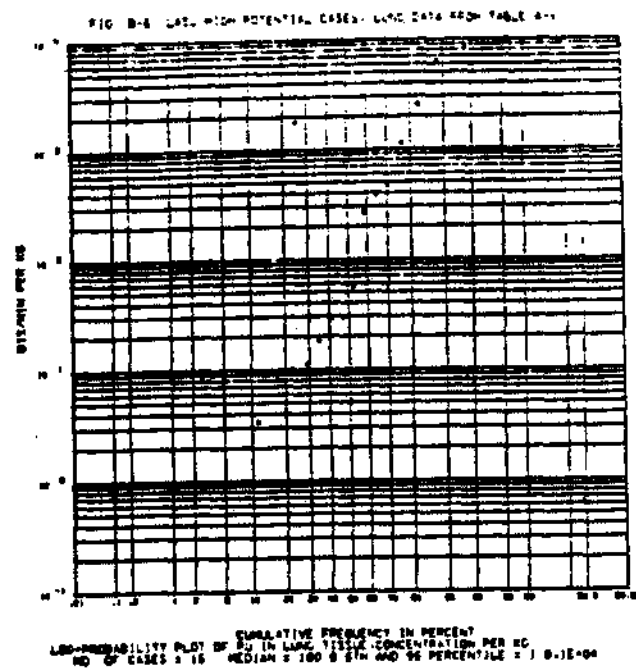
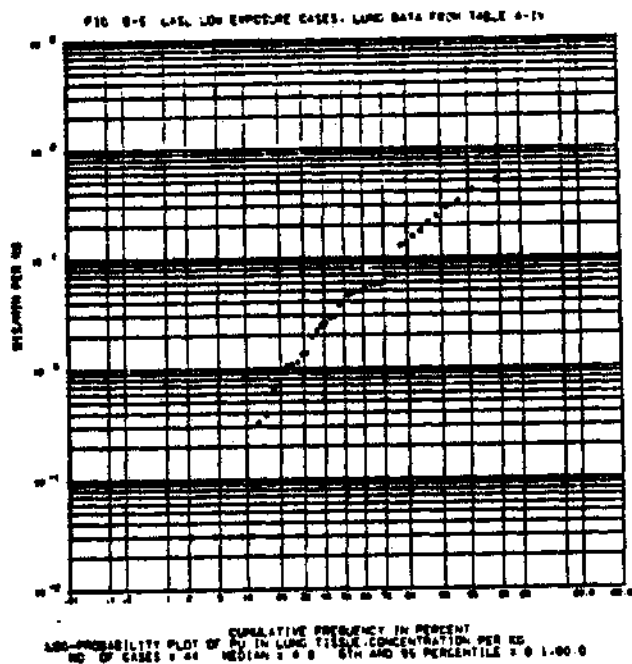
LOG-PROBABILITY PLOT OF Pu IN LUNG TISSUE CONCENTRATION PER KG
NO. OF CASES = 61 MEDIAN = 1.5 5TH AND 95 PERCENTILE = 0.3 - 2.0

FIG. B-4 NEW YORK CITY CASES. LUNG DATA FROM TABLE A-VII



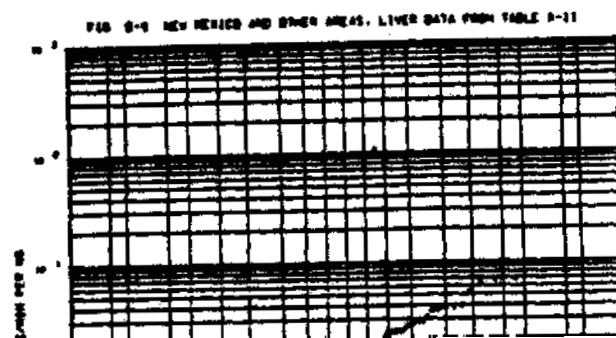
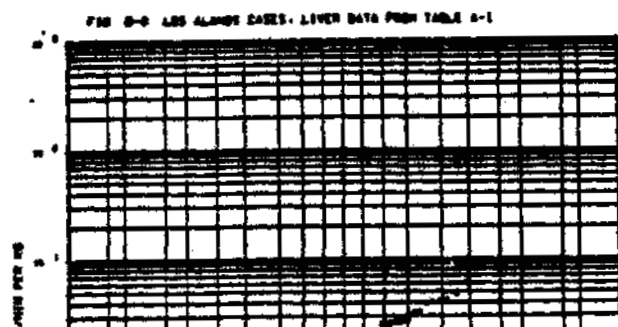
LOG-PROBABILITY PLOT OF Pu IN LUNG TISSUE CONCENTRATION PER KG
NO. OF CASES = 71 MEDIAN = 1.4 5TH AND 95 PERCENTILE = 0.3 - 10.0

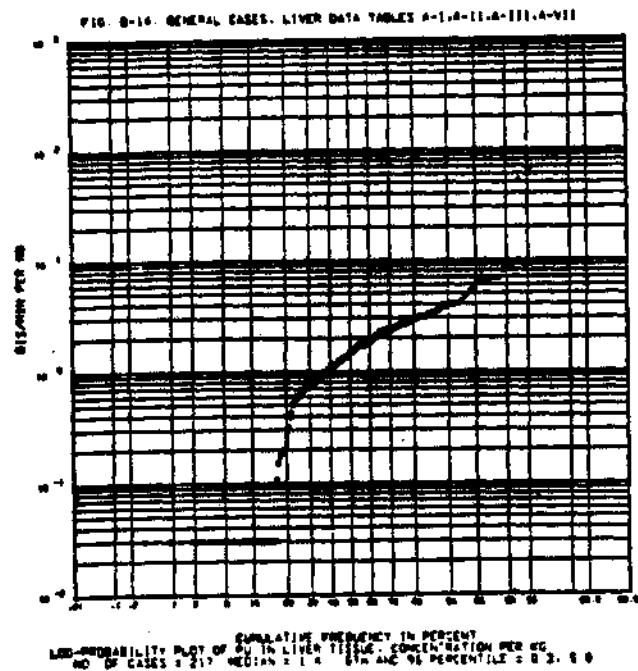
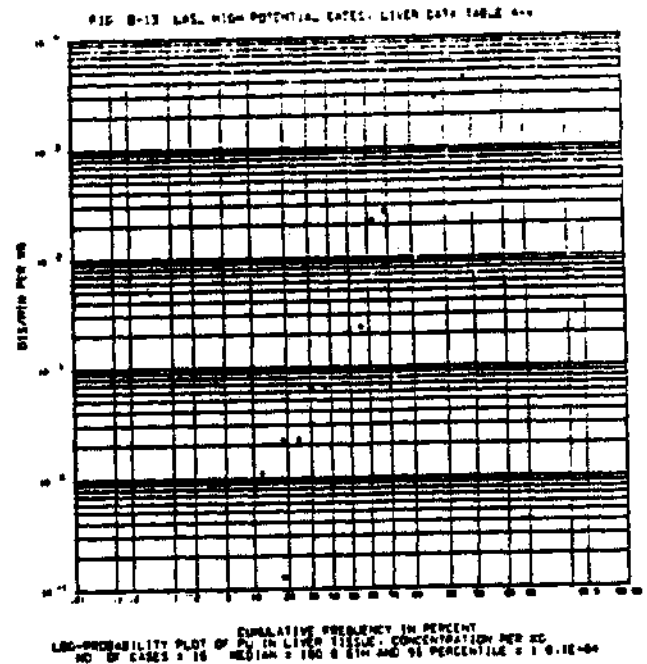
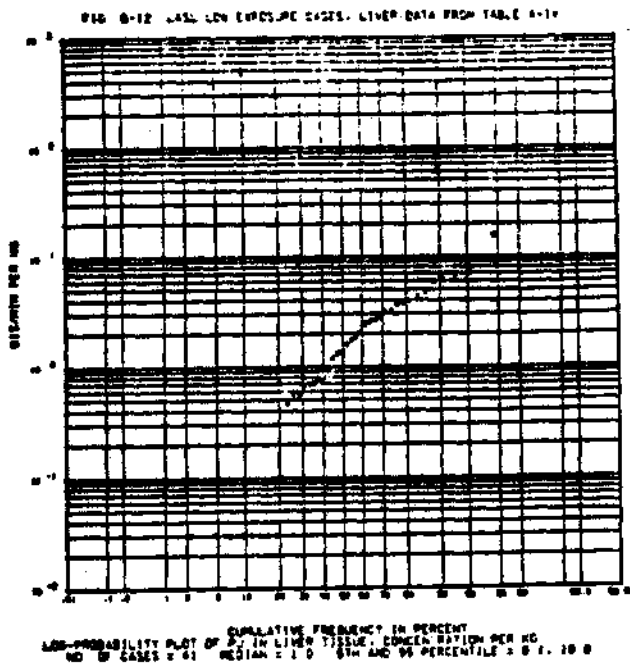
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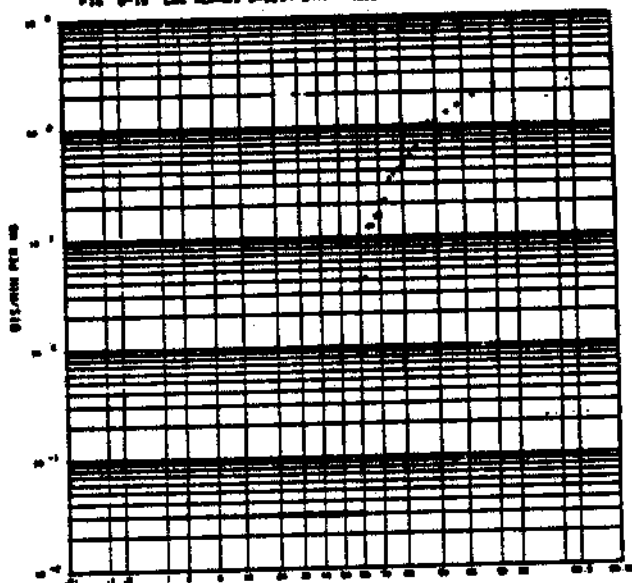




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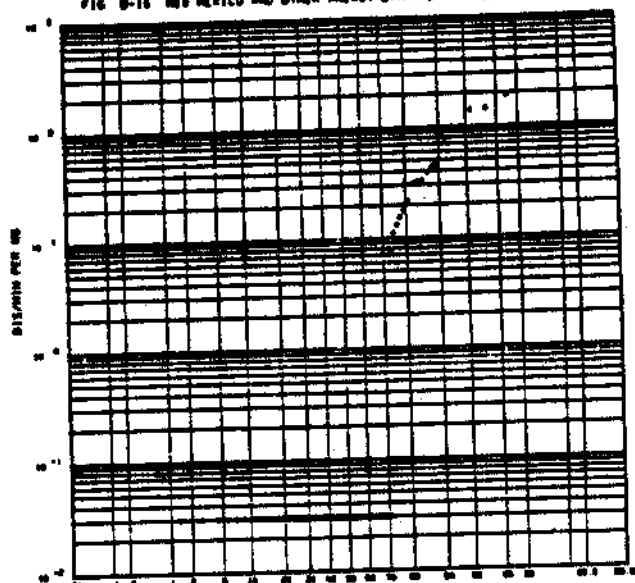
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FIG. 8-15 LOS ALAMOS CASES. LYMPH NODE DATA FROM TABLE A-1



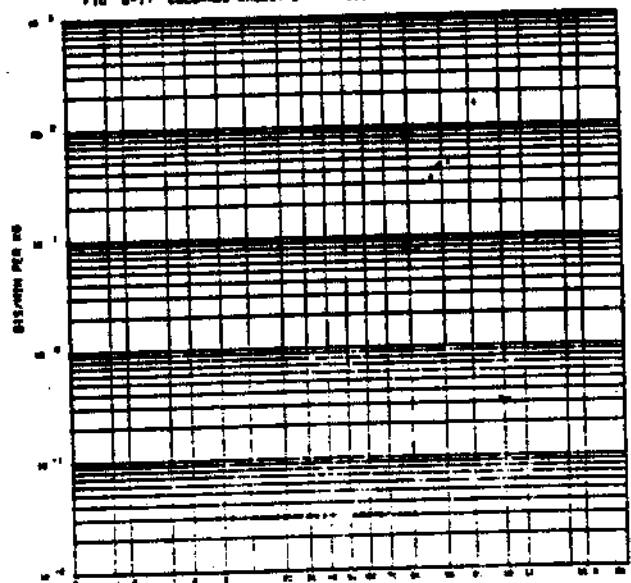
LOG-PROBABILITY PLOT OF PU IN LYMPH NODE TISSUE CONCENTRATION PER KG
NO. OF CASES = 62 MEDIAN = 0.0 5TH AND 95 PERCENTILE = 0.1, 100.0

FIG. 8-16 NEW MEXICO AND OTHER AREAS. LYMPH DATA TABLE A-11



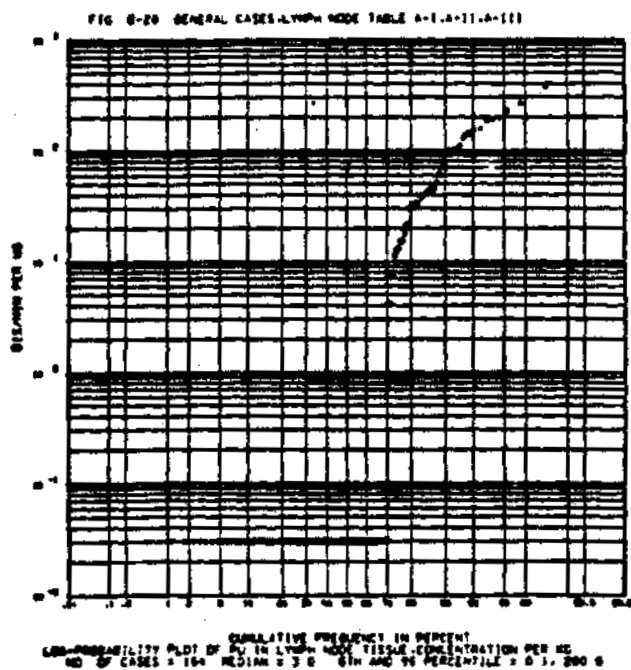
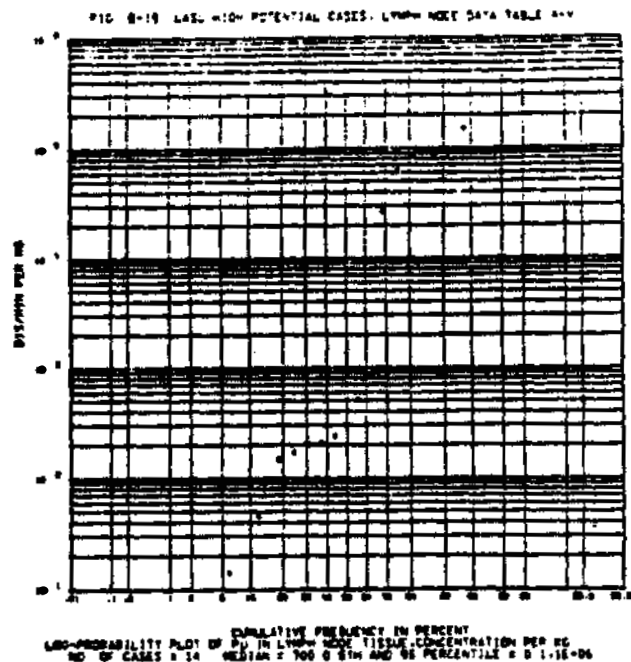
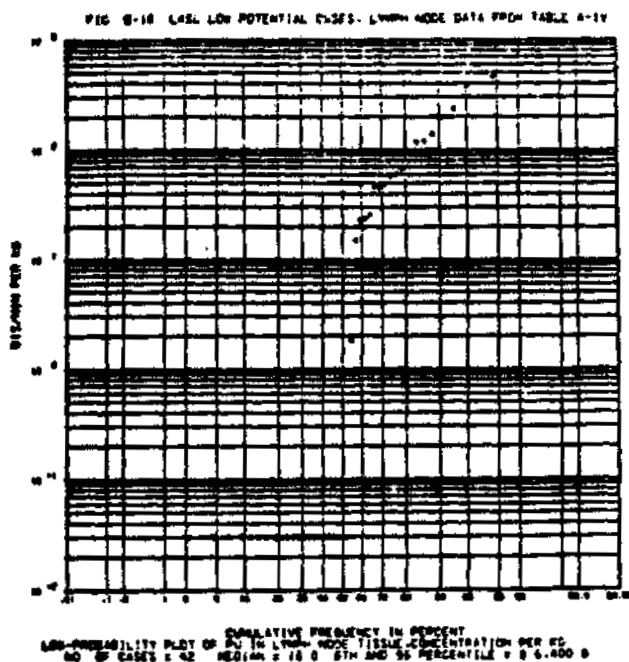
LOG-PROBABILITY PLOT OF PU IN LYMPH NODE TISSUE CONCENTRATION PER KG
NO. OF CASES = 66 MEDIAN = 0.0 5TH AND 95 PERCENTILE = 0.1, 100.0

FIG. 8-17 COLORADO CASES. LYMPH NODE DATA FROM TABLE A-111



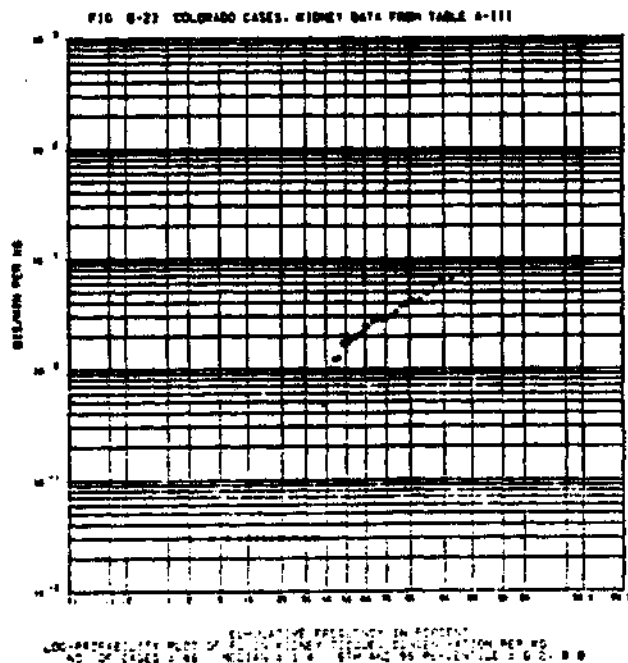
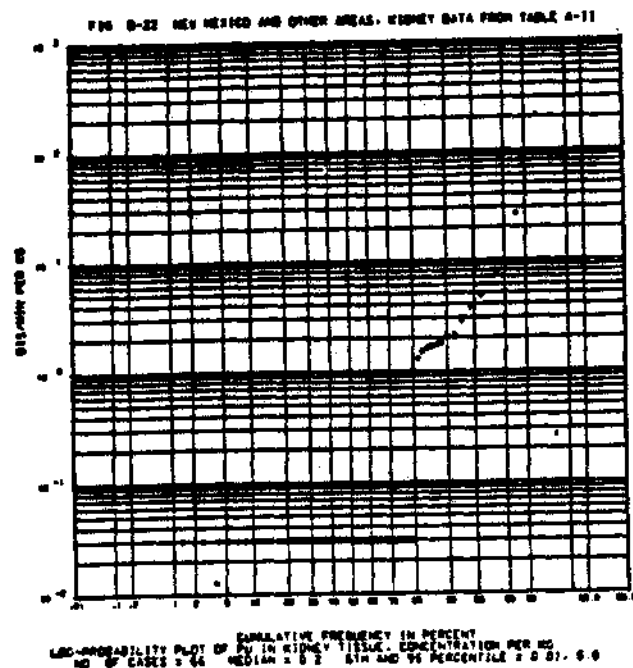
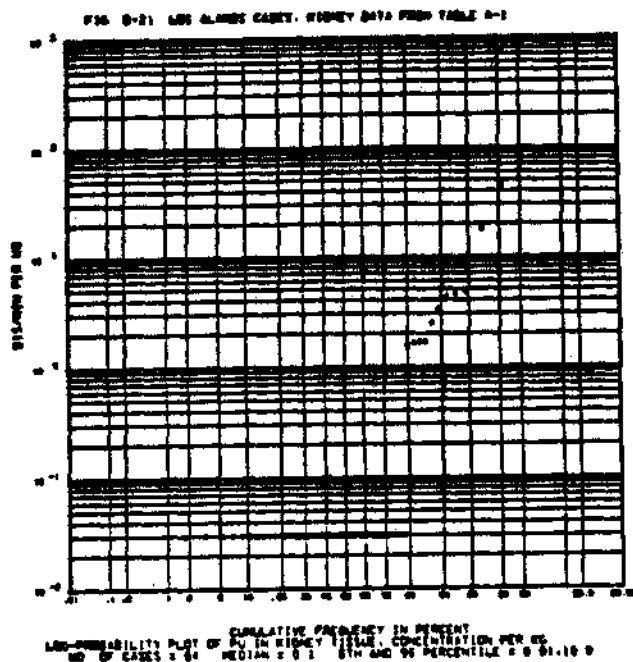
LOG-PROBABILITY PLOT OF PU IN LYMPH NODE TISSUE CONCENTRATION PER KG
NO. OF CASES = 46 MEDIAN = 0.0 5TH AND 95 PERCENTILE = 0.1, 100.0

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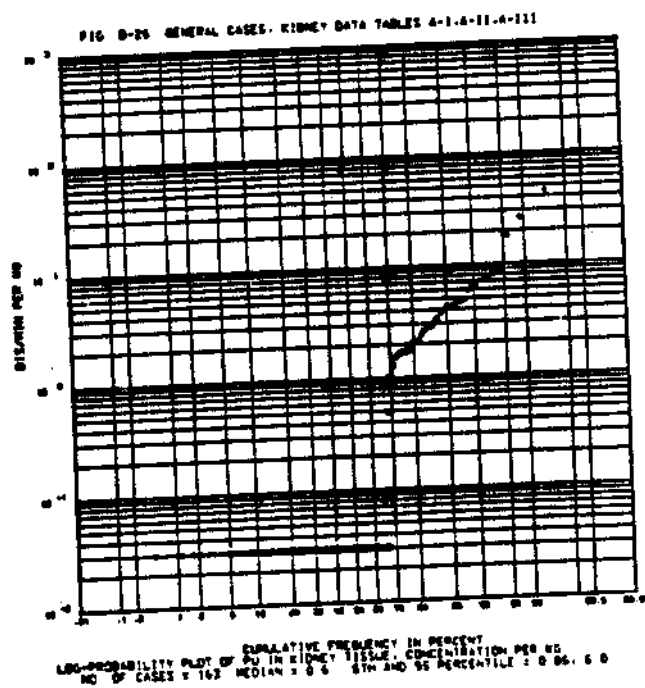
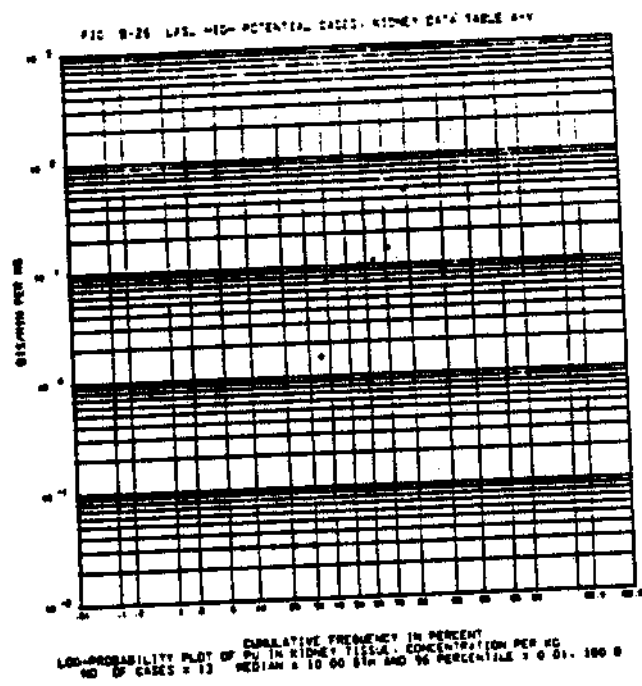
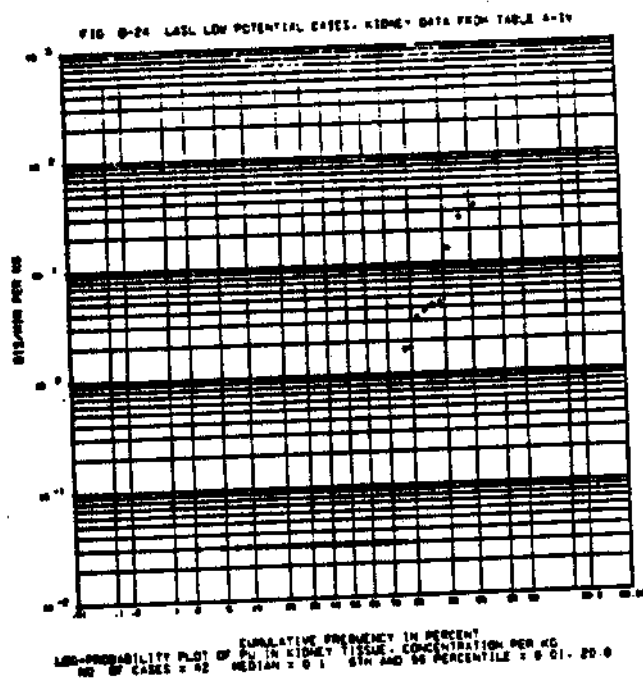


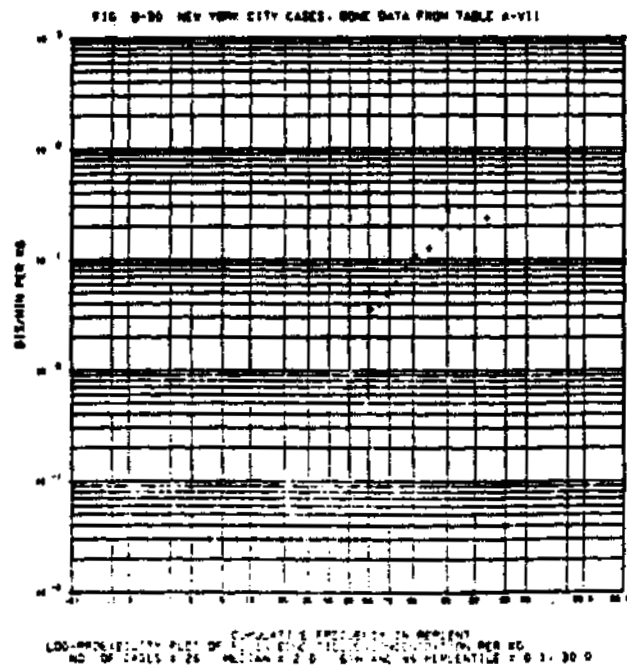
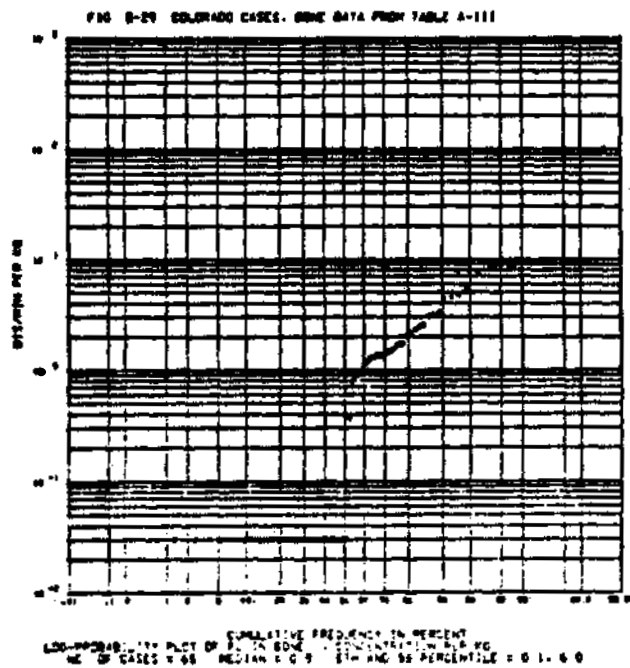
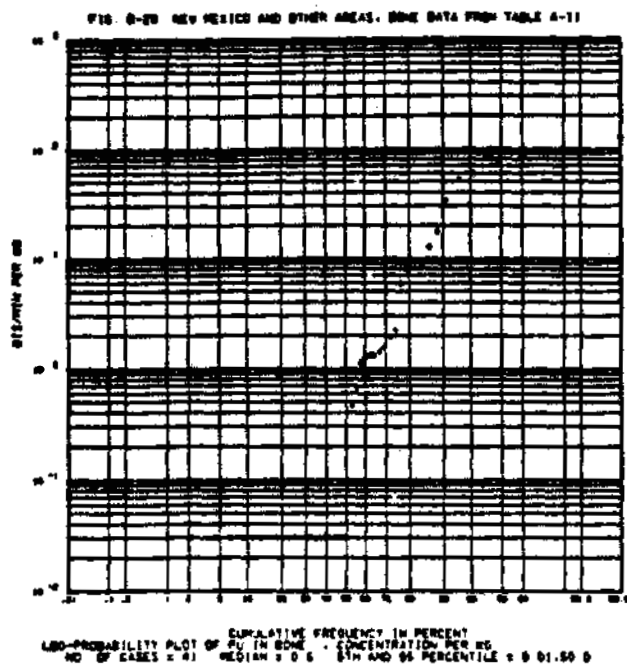
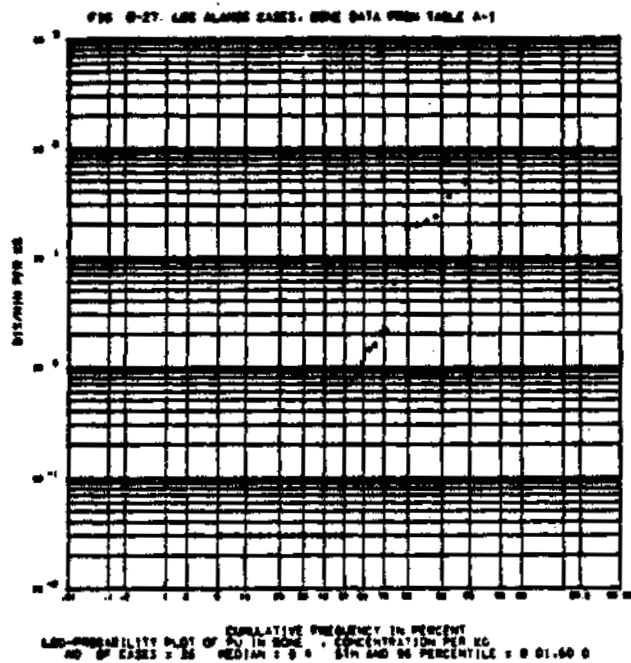
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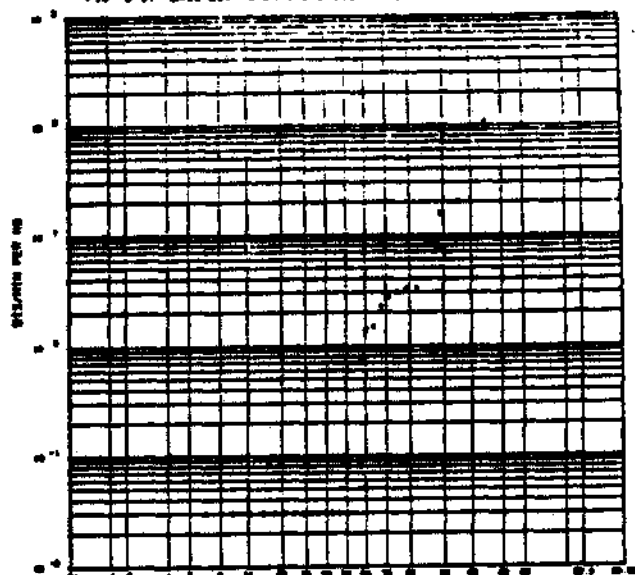
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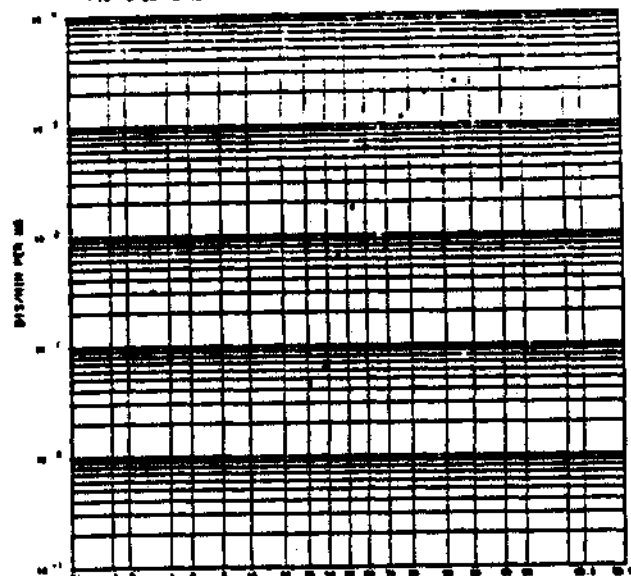
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FIG. B-31 LANL LOW POTENTIAL CASES. BONE DATA FROM TABLE A-IV



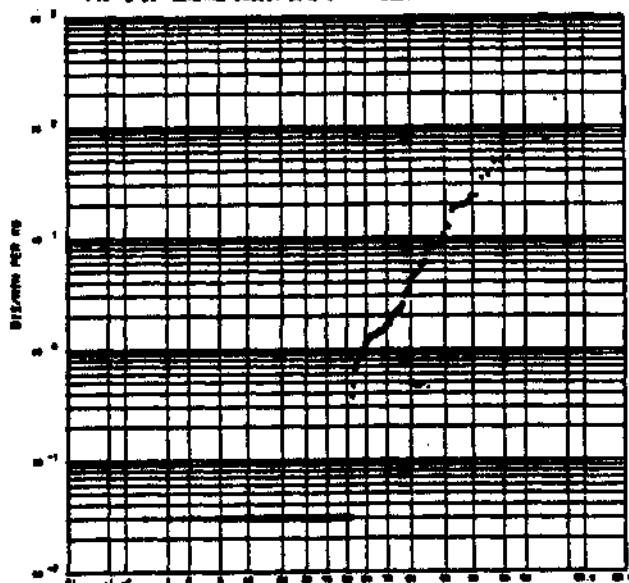
LOG-PROBABILITY PLOT OF P_u IN BONE TISSUE CONCENTRATION PER KG
NO. OF CASES = 26 MEDIAN = 0.2 5TH AND 95 PERCENTILE = 0.01-30.0

FIG. B-32 LANL HIGH POTENTIAL CASES. BONE DATA TABLE A-V



LOG-PROBABILITY PLOT OF P_u IN BONE TISSUE CONCENTRATION PER KG
NO. OF CASES = 11 MEDIAN = 50.0 5TH AND 95 PERCENTILE = 0.1-22-64

FIG. B-33 GENERAL CASES. BONE DATA TABLES A-I, A-II, A-III, A-IV, A-V, A-VI, A-VII

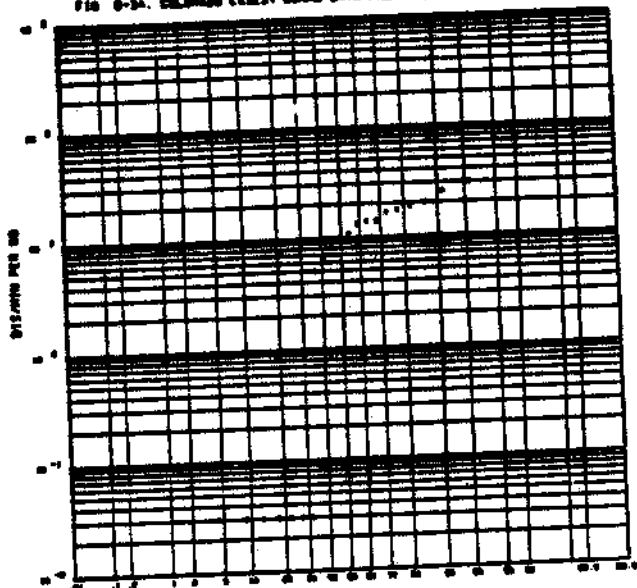


LOG-PROBABILITY PLOT OF P_u IN BONE TISSUE CONCENTRATION PER KG
NO. OF CASES = 166 MEDIAN = 0.6 5TH AND 95 PERCENTILE = 0.02-20.0

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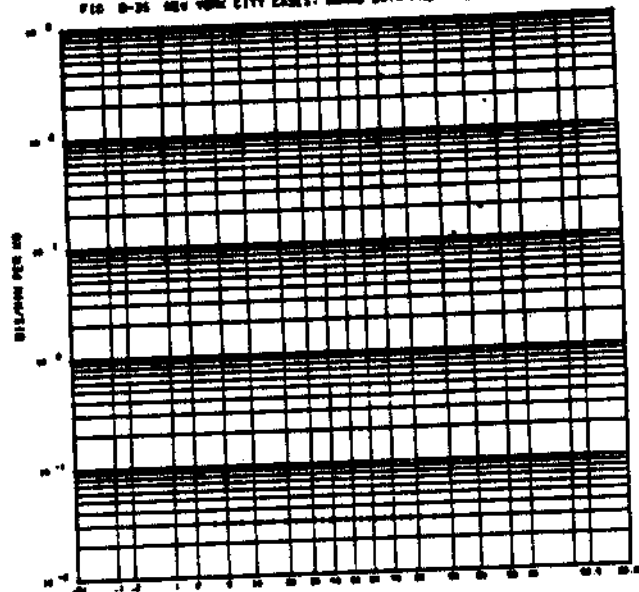
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FIG. D-24. COLORADO CASES. DONAD DATA FROM TABLE A-111



LOG-PROBABILITY PLOT OF PU IN DONAD TISSUE. CONCENTRATION PER MG
 NO. OF CASES = 23 MEDIAN = 10.0 5TH AND 95 PERCENTILE = 2.0, 30.0

FIG. D-25. NEW YORK CITY CASES. DONAD DATA FROM TABLE A-111



LOG-PROBABILITY PLOT OF PU IN DONAD TISSUE. CONCENTRATION PER MG
 NO. OF CASES = 25 MEDIAN = 1.0 5TH AND 95 PERCENTILE = 0.07, 10.0

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APPENDIX C
SUMMARY TABLES

TABLE C-I
50TH PERCENTILE DISTRIBUTION OF PLUTONIUM IN HUMAN TISSUE

Nonoccupationally Exposed	Plutonium Disintegrations per Minute per Kilogram					
	Lung	Liver	Lymph Node	Kidney	Bone	Gonad
Los Alamos	1.3(57) ^a	1.1(58)	5.0(52)	0.1(54)	0.4(35)	b
New Mexico & U. S.	1.0(76)	0.9(73)	4.0(66)	0.2(66)	0.5(41)	b
Colorado	0.5(66)	1.7(60)	2.0(46)	1.4(45)	0.9(65)	10.0(23)
New York	0.4(26)	1.7(26)	b	b	2.0(25)	1.0(26)
All Populations	0.8(217)	1.4(217)	3.0(164)	0.6(163)	0.6(166)	b
Occupationally Exposed^c						
Potential	4.0(44)	1.0(41)	15.0(42)	0.1(42)	0.3(25)	b
High Potential	100.0(15)	100.0(15)	700.0(14)	10.0(13)	50.0(11)	b

^a(n) number of samples.

^bSamples not requested.

^cData cannot be compared as a group because of differences in type and duration of exposure.

TABLE C-II
SUMMARY OF PLUTONIUM IN HUMAN TISSUE
ESTIMATED FROM LOG-PROBABILITY PLOTS OF
CONCENTRATION PER kg OF TISSUE

Population	Tissue	Median (dis/min/kg)	5th to 95th Percentile of Results (dis/min/kg)
General	Lung	0.8	0.1 to 8.0
Low-Potential		4.0	0.1 to 80.0
High-Potential		100.0	1.0 to 1x10 ⁴
General	Liver	1.4	0.3 to 5.0
Low-Potential		1.0	0.1 to 10.0
High-Potential		100.0	0.1 to 1x10 ⁴
General	Lymph Node	1.0	0.1 to 200.0
Low-Potential		15.0	0.6 to 400.0
High-Potential		700.0	0.1 to 1x10 ⁴
General	Kidney	0.6	0.05 to 6.0
Low-Potential		0.1	0.01 to 20.0
High-Potential		1.0	0.01 to 100.0
General	Bone	0.6	0.02 to 20.0
Low-Potential		0.2	0.03 to 30.0
High-Potential		30.0	0.6 to 1x10 ⁴

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KT:1162(940)