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Annual Report of the United States Transuranium and Uranium Registries

April 1992 - September 1993

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FG 06-92EH89181

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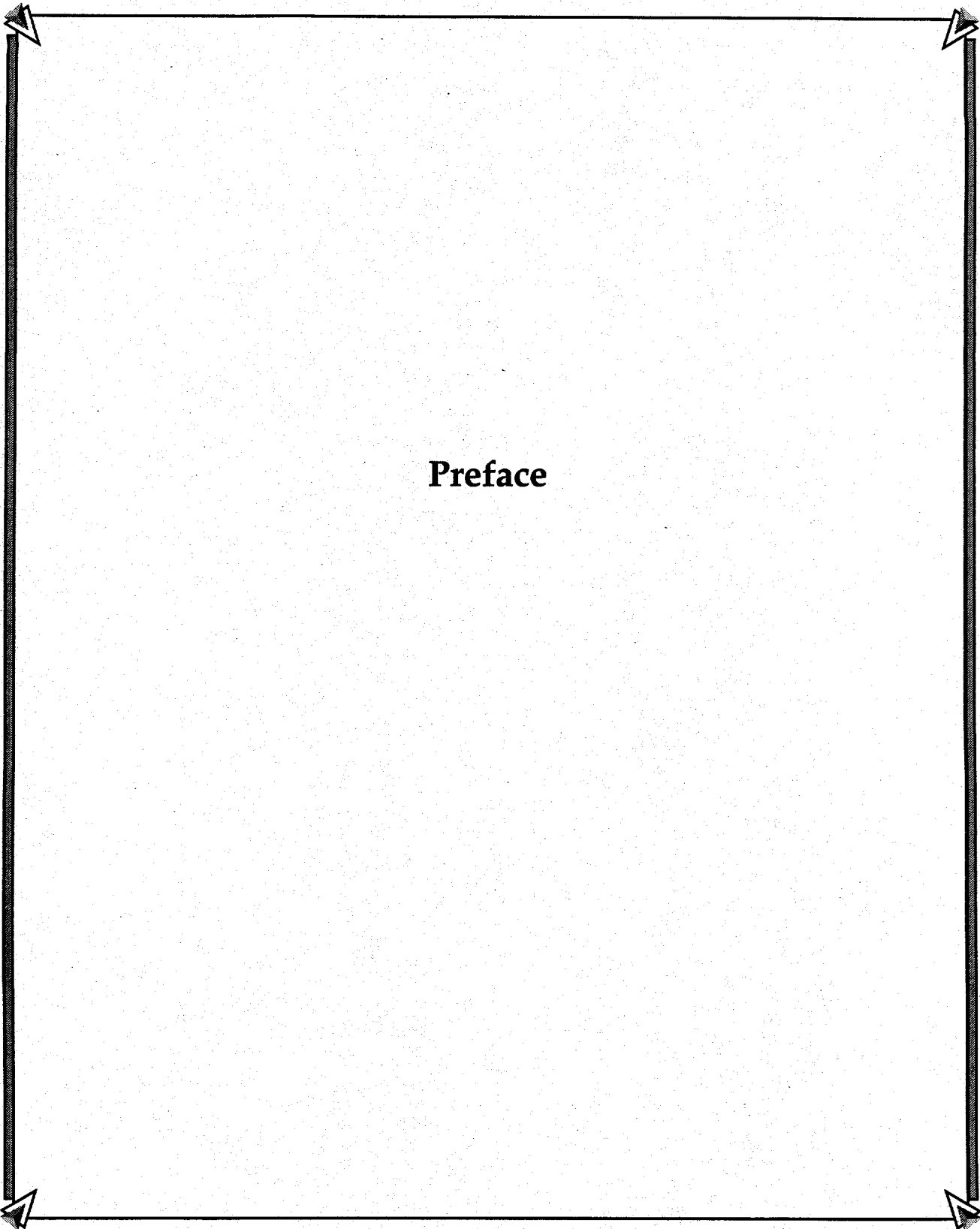
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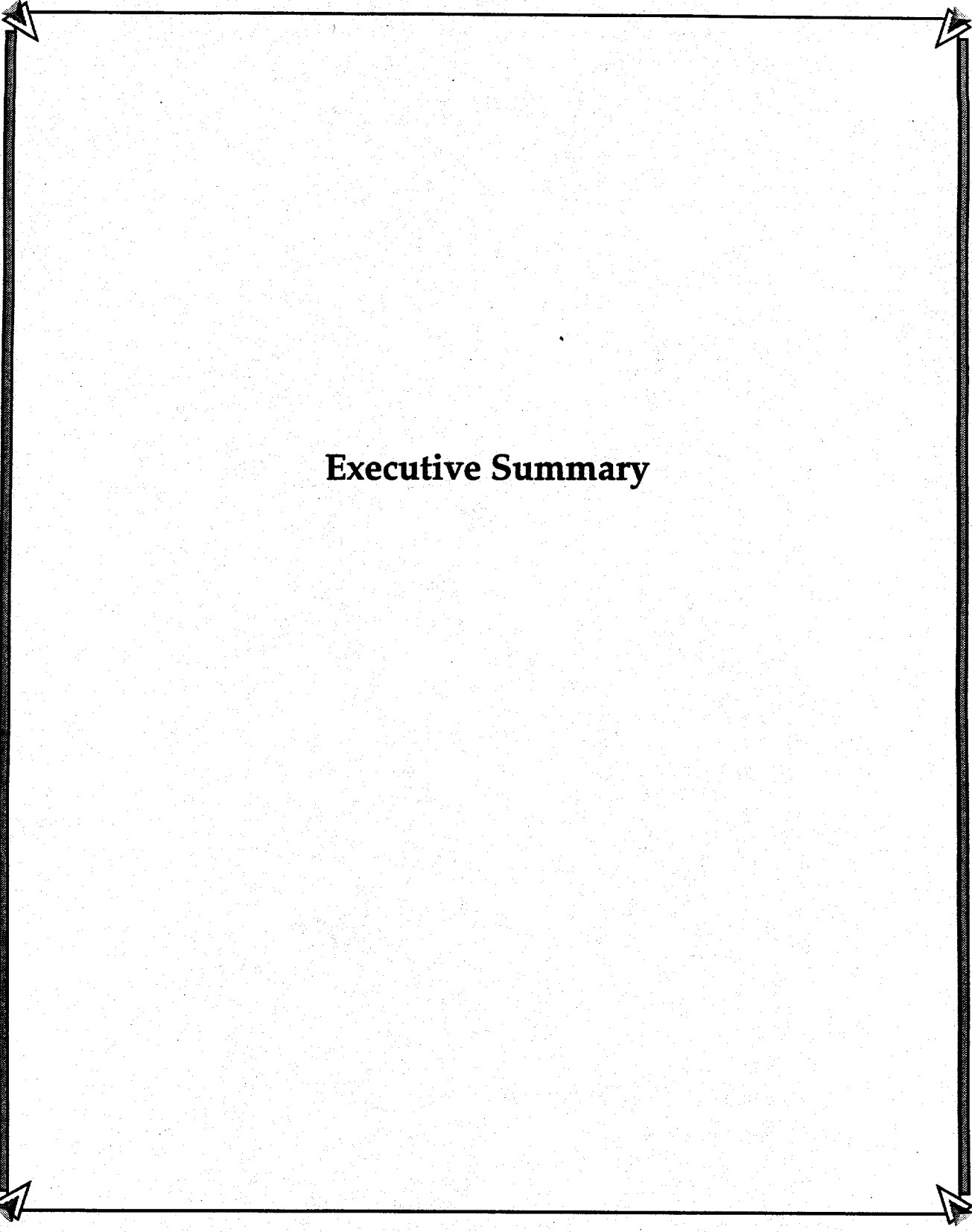
Preface

PROGRESS REPORT OF THE UNITED STATES TRANSURANIUM AND URANIUM REGISTRIES APRIL 1992-SEPTEMBER 1993

PREFACE

This is the second progress report issued since the transfer of the Registries from the Hanford Environmental Health Foundation (HEHF) to Washington State University (WSU) under provisions of a grant from the U S Department of Energy (DOE). It is particularly significant for the following two reasons: first, it covers the initial period that the management and operation of the Registries have been transferred from the administration of a DOE contractor to an independent university. Second, 1993 marks the twenty-fifth anniversary of the formation of the Registries, and this report is essentially a silver anniversary commemorative publication. Thus, it provides a brief history of the development of the Registries during their first 25 years, as well as the complete exposure histories and radioanalytical data for five whole body donations to the Registries, making these unique and important data available to researchers concerned with dosimetry and biokinetics of plutonium and americium.

Since the transition from contract to grant is now virtually complete, and the Registries fiscal year has been adjusted to coincide with the Federal fiscal year, the regular issuance of an annual report of activities will resume. Future progress reports will cover the period from October 1 through September 30. This report owes much to the able secretarial assistance of June Markel, USTUR Senior Secretary, to whom special thanks are due, and Susan Young whose efforts are also reorganized.



Executive Summary



EXECUTIVE SUMMARY

The Registries originated in 1968 as the National Plutonium Registry with the name changed to the United States Transuranium Registry the following year to reflect a broader concern with the heavier actinides as well. Initially, the scientific effort of the USTR was directed towards study of the distribution and dose of plutonium and americium in occupationally exposed persons, and to assessment of the effects of exposure to the transuranium elements on health. This latter role was reassessed during the 1970's when it was recognized that the biased cohort of the USTR was inappropriate for epidemiologic analysis. In 1978, the administratively separate but parallel United States Uranium Registry was created to carry out similar work among persons exposed to uranium and its decay products. A seven member scientific advisory committee provided guidance and scientific oversight. In 1992, the two Registries were administratively combined and transferred from the purview of a Department of Energy contractor to Washington State University under the provisions of a grant, thereby gaining the advantage of the independence and other benefits associated with the academic setting. The Advisory Committee was reconstituted at the time of the transfer to include a public member and a member of the academic community, as well as four scientific members.

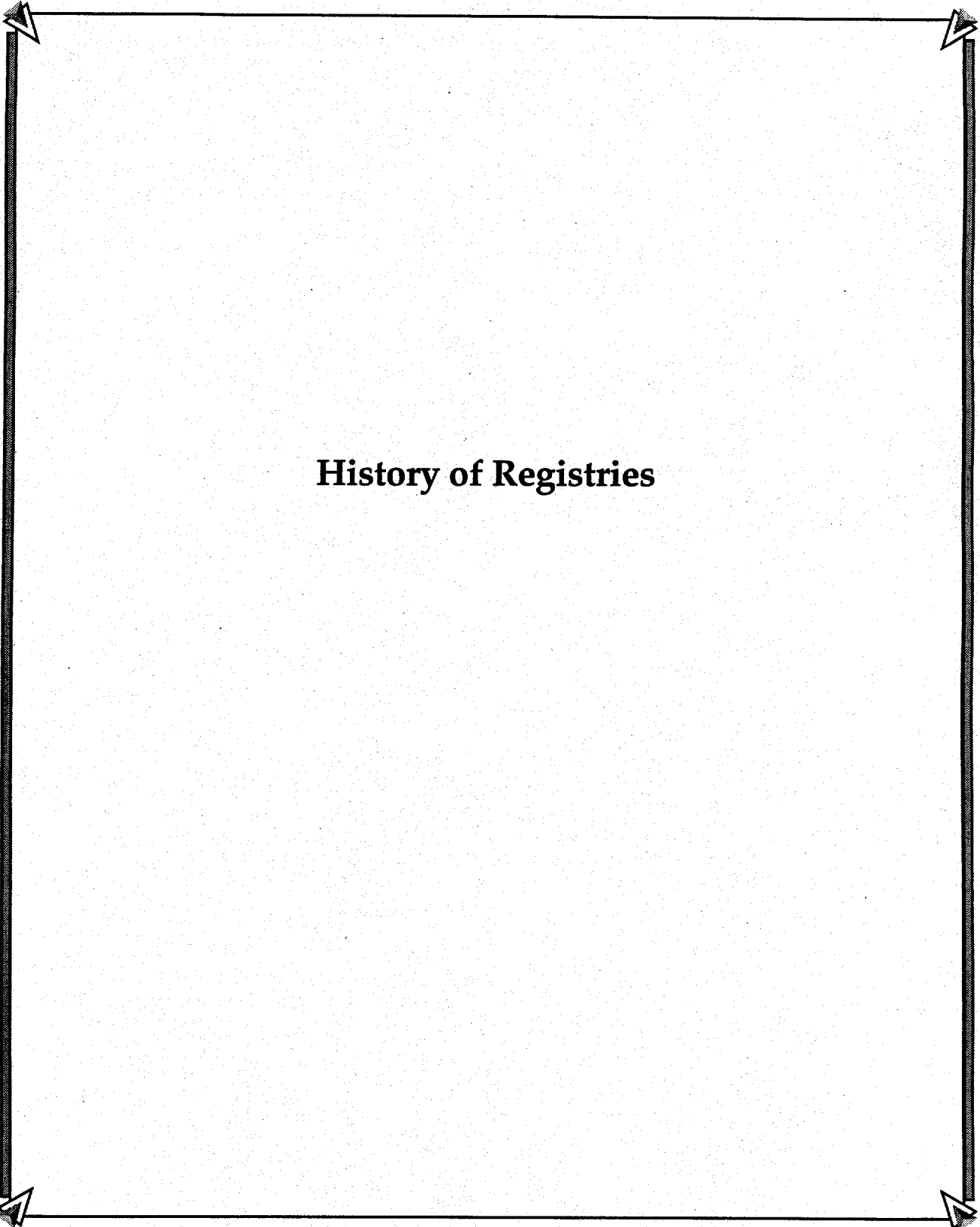
Scientific results for the first twenty-five years of the Registries are summarized, including the 1985 publication of the analysis of the first whole body donor. This was a chemist who had suffered a wound contaminated with ^{241}Am early in his career. On the basis of the analysis of this case, new biokinetic parameters for ^{241}Am were proposed, including a much shorter residence half-time in the liver.

Current scientific work in progress is summarized along with administrative activities for the period. Preliminary postmortem analysis of USTUR Case 0246, an individual who died 11 y following a massive acute exposure to ^{241}Am from a glove box explosion revealed an estimated deposition of 540 kBq, of which 90% was in the skeleton. Peritrabecular fibrosis and blood count changes are possible deterministic effects from this exposure, but radiation exposure was ruled out as a cause of the cataract suffered by this case. Other scientific progress discussed includes consideration of risk coefficients for alpha radiation based on evaluation of a whole body donor who had received an injection of Thorotrast some 36 y prior to death. Risk coefficients determined for liver cancer were in good agreement with those published in the BEIR IV report; those for leukemia and osteosarcoma were somewhat greater and lower, respectively. Other work in progress discussed includes a uranium kidney histopathology study, evaluation of actinide concentrations, and the preliminary results of the evaluation of a second whole body donor who had been administered Thorotrast.

A major accomplishment was establishment of the National Human Radiobiology Tissue Repository, located in a facility adjacent to the Sacred Heart Medical Center in Spokane. The Repository stores and makes available upon request its collection of unique tissue materials from persons with known intakes of long lived radioactivity for use by scientists for radiobiological and other studies. In addition to histopathology slides, tissue materials, and extracts from analytical solutions from USTUR registrants, the Repository includes the complete collection of frozen and other tissue specimens and materials from the radium dial painter study formerly carried out by Argonne National Laboratory.

The report includes cases summaries, in-vivo monitoring and dosimetry data, and detailed tabulations of the results of postmortem radiochemical of the tissues of five whole body donors with occupational exposure to plutonium or americium. Tissue concentrations are presented for each individual tissue and bone sample analyzed for ^{238}Pu , $^{239+240}\text{Pu}$, and ^{241}Am .

Administrative progress during the period is summarized, and includes publication of a formal policies and procedures manual, a physical audit of the registrant files, acquisition of laboratory and office space, and publication of brochures for general public distribution.



History of Registries

HISTORY OF THE REGISTRIES

Protohistory

In 1949, what was described as "... a modest program of postmortem tissue sampling at autopsy ..." was begun at the Hanford site of the United States Atomic Energy Commission (AEC) (Nelson et al. 1972; Newton et al. 1966; Newton et al. 1968). This early human tissue research program, which was in a sense the progenitor of the USTUR, had two basic objectives: 1) to provide information regarding plutonium concentrations and doses within the body to hospital pathologists, thereby enabling them to evaluate the possible contribution of plutonium deposition to various disease states; and 2) provide a basis for assessing the effectiveness of occupational and environmental protection measures at the Hanford plutonium production site (Bruner 1968).

The program called for the collection of samples of bone, lung, liver, and occasionally other tissues at autopsy from both Hanford workers and other residents of Richland, Washington, where most of the Hanford site workers resided. The collected samples were then radiochemically analyzed for plutonium, with the goal being to evaluate sites of preferential deposition of plutonium within the body, and to compare what was observed in the tissues postmortem with what was predicted based on the application of biokinetic models to excretion data. A similar study of plutonium in the general population was begun at the Los Alamos Scientific (now National) Laboratory (LANL) in 1959 (Campbell et al. 1972), and in the early 1960's by the U.S. Public Health Service (Magno et al. 1969). In addition, limited postmortem sampling of occupationally exposed individuals was carried out at the AEC Rocky Flats Facility (RFF) (Lagerquist et al. 1969).

The first formal presentation of the results of the Hanford autopsy study was made at the Seventh Annual Hanford Symposium on Biology held in May of 1967 in Richland, nearly twenty years after the study had begun (Newton et al. 1968). Predictably measurable, albeit very low, levels of plutonium were found in the tissues of the local residents and Hanford site workers. Most of the plutonium in the tissues was attributable to fallout from nuclear weapons tests rather than occupational exposures or environmental releases from the Hanford site, although the highest individual tissue concentrations of plutonium were observed in

the pulmonary lymph nodes of a worker with a history of occupational exposure. Among the study group however, liver depositions were greater than those in the lung. Data for the bone samples collected were equivocal, and this concluded with a plea for further investigation and collaboration with other plutonium handling facilities.

Coincidentally, the concluding paper at that same meeting was given by H. D. Bruner of the AEC Division of Biology and Medicine. Graciously noting that the idea was not his or that of one person, but rather "... occurred to many men about the same time", Bruner proposed formation of a national Plutonium Registry and described progress towards that goal within the AEC. As outlined by Bruner, the primary purpose of such a Registry would be to correlate data from accidental intake of plutonium with the subsequent health record of the worker. In addition to sketching the basic information and operating requirements for such a registry, he also listed seven additional purposes, presciently noting among these that the Plutonium Registry should not be limited to plutonium but should also consider other transuranium elements as well.

Origins and Early Operations: The U.S. Transuranium Registry

The USTUR thus grew out of a desire to better understand the potential health effects from plutonium incorporated into the human body, gaining not only improved understanding of the health effects of plutonium, but also of the efficacy of control measures based on actual human experience. The progenitor of what is now the USTUR was formally established in August 1968 as the National Plutonium Registry by HEHF under contract to the United States Atomic Energy Commission (AEC). In its original request for funds, the primary purpose of the Registry was stated as the protection of the interest of the workers, employees and public by serving as a national focus for acquisition and dissemination of the newest and best information relative to the effects of the transuranium elements on people.

W. Daggett Norwood, a physician whose undergraduate education was in electrical engineering, and who had figured prominently in the establishment of the medical program at the Hanford site, was appointed the founding director. He was ably assisted by Carlos E. Newton, Jr., a Battelle Pacific Northwest Laboratories staff member, board certified health physicist who carried the title of consultant, and directed



the health physics aspects of the program. Rounding out the staff was Dorothy Potter, who served as secretary and general administrative assistant.

Even before the contract award had been finalized, Philip A. Fuqua, then medical director of HEHF, invited a number of recognized scientists to serve as members of a blue ribbon Advisory Committee to help guide the fledgling Registry. The six initial Committee members included three physicians: Clarence C. Lushbaugh, Oak Ridge Associated Universities; Thomas F. Mancuso, retired head of the Pennsylvania State Occupational Health program and University of Pittsburgh faculty member; and J. H. Sterner, a faculty member at the University of Texas medical school; two physicists, Robley D. Evans, the MIT physics professor noted for his studies of the radium dial painters and the prominent medical and health physicist Herbert M. Parker, Battelle; and toxicologist Lloyd M. Joshel manager of the AEC (now DOE) Rocky Flats Facility operated by the Dow Chemical Company. Wright Langham, the LANL biophysicist who many acknowledged as "Mr. Plutonium" was added the following year.

The Advisory Committee met for the first time on October 30 and 31 in Richland. Drs. Joshel and Lushbaugh were unable to attend, but the other four members were joined by Dr. Bruner of the AEC, Dr. Fuqua of HEHF, and the Registry staff. After electing J. H. Sterner and R. D. Evans as Chairman and Vice-Chairman, respectively, the Committee proceeded with a thorough and detailed discussion of the scope and planned activities of the fledgling Registry. By the end of its first year, the Registry had established its basic operating methodology and had begun recruitment of registrants, signing up three volunteers that year. Forty-five facilities, largely AEC contractors, utilizing transuranic elements were identified, and cooperative working arrangements were solicited with these facilities. Forms for collection of health physics and medical data were developed, and active recruitment was carried out at the Hanford site.

In 1970, the second year of the Registry, the name was changed to the United States Transuranium Registry (USTR), thereby reflecting the broader programmatic concern with the other transuranic elements as had been put forth in the original funding request from HEHF to DOE, as well as suggested by Bruner a few years previously. The name change did not affect the basic mission of the Registry, and operations continued much as they had begun. Emphasis was on identification of suitable populations and with the estab-

lishment of working arrangements or agreements with the sites having such populations. The stated purpose of the Registry, as given in its 1974 Annual Report, included following these workers both clinically and epidemiologically to ascertain if there might be any adverse health effects associated with their exposure to plutonium. By June 1974, some 5843 transuranium workers had been identified, of whom 3880 had signed medical and health physics records releases and 819 had given authority for autopsy. A total of 45 autopsies had been carried out, two-thirds of which were on Rocky Flats workers.

Scientific Beginnings

Scientific activities in the first years of the USTR's operation were limited by the lack of both autopsy material and staff, and the need to establish procedures and organizational agreements for what was in some respects, a rather bold new type of research program. It was quickly realized that a major aspect of the work would be the study of the distribution of plutonium in the various tissues, and that the analysis of the tissues of whole bodies would be needed to avoid errors that were likely to occur if only samples of tissue were obtained at autopsy. Predictably, the greatest concentrations of plutonium were found in the tracheobronchial lymph nodes, lungs and liver. Specific studies were initiated early on, including comparisons of systemic plutonium depositions from the first 30 autopsy cases with the estimates made during life from urinalysis, a study of fundamental importance to assessing the adequacy of biokinetic models used for operational assessment of plutonium depositions and hence vital to operational health physics programs. An examination was also made of the causes of death in the first 30 cases, leading to a conclusion that "... the usual causes of death were encountered."

Radiochemical data were essential to this purpose and with the exception of cases originating at Rocky Flats, tissues collected at autopsy were initially sent to Battelle, Pacific Northwest Laboratories for analysis. Cases from Rocky Flats were recruited by that organization, acting as an agent of the USTR, and Rocky Flats arranged for the autopsies and performed the radiochemical analysis on their own cases. Subsequently, in 1971, LANL was added to list of "approved" laboratories. An unusual aspect of the laboratory arrangements was that both Battelle and LANL were funded independent of the Registry for analysis of the Registry samples, and thus submitted their own research proposals in this regard. Rocky Flats provided the

analyses on its cases from its general operating budget. This trichotomy of laboratories, more or less independent of the fundamental Registry program and with membership on the Advisory Committee, which served in many respects as a Board of Directors, played a significant role in shaping the future direction of the Registry.

A second major aspect of the work was related to the stated purpose of assessing the effects of exposure to the transuranium elements on health. Accordingly, effort was directed towards the development of a suitable epidemiologic study. By 1974, a preliminary study design had been developed for the Registry. Coeval with the activities of the Registry in this area were much broader studies of the radiation workforce at Hanford and LANL, sponsored independently of the Registry by the AEC and its successors. One such study of which Registry Director Norwood was the principal author, was presented in 1975 at a workshop on the bioeffects of plutonium and radium and looked at the health of Hanford plutonium workers. This study and the role of the Registry, with respect to epidemiologic investigation, were important discussion topics at a USTR workshop held February 27, 1975, in Denver, Colorado. It was noted that a carefully constructed epidemiologic study was planned and would likely be carried out autonomously by LANL under the coordination of the Registry.

Also in that same year, controversy erupted regarding the published results of the first 30 autopsies performed by the Registry which were detailed in a paper in the open peer reviewed scientific literature (Norwood and Newton 1975). The causes of death of these cases were evaluated by Sidney Wolfe of the Ralph Nader Health Research Group, who concluded in an article in the September 1976 *Bulletin of the Atomic Scientists* that the cancer death rate among plutonium workers was twice the cancer death rate for white males in general. This conclusion was refuted by Director Norwood and others who noted that the Registry population was a biased one, and as such not amenable to such analysis.

Administrative Developments

A number of significant administrative changes took place during the early years of operation of the USTR. Carlos Newton, the Battelle health physicist who provided halftime scientific support to the USTR, was given the title of Associate Director in 1970, in observance of the importance of the health physics aspects of the program. In 1972, founding director W.

D. Norwood retired from the directorship and was replaced by a retired U.S. Army physician, John A. Norcross. After little more than a year, however, Norcross was forced by illness to give up the directorship and Norwood reassumed the directorship on an interim basis while a search was initiated for a replacement. On July 1, 1976 Bryce D. Breitenstein, Jr. became the director of the USTR on a halftime basis; Norwood remained on as a consultant. Breitenstein was an excellent choice. An internist with considerable experience in private practice, he had recently acquired a master's degree in public health; possessed a strong clinical background; and had a keen interest and research skills.

There were changes on the Advisory Committee as well. L. M. Joshel was replaced temporarily by Emil Putzier (1974) and then by J. H. Hanes (1975), who had succeeded Joshel as manager of Rocky Flats. Louis H. Hemplemann, a physician at LANL, was added to the Committee in 1973 to replace Wright H. Langham, who had died in a tragic airplane crash in Albuquerque the previous year. In 1977 the Advisory Committee was restructured in consonance with the need for expansion and development of new areas.

The "new" committee included two physicians and physicists as holdovers: physician J. H. Sterner and physicist R. D. Evans, who continued as Chairman and Vice-Chairman, respectively, and physician C. C. Lushbaugh and physicist H. M. Parker. Four new committee members were added: G. L. Voelz, an occupational physician who headed the plutonium worker epidemiology study at LANL; health physicists Charles W. Mays, University of Utah and John W. Poston, initially of Oak Ridge National Laboratory, and then the Georgia Institute of Technology; and biostatistician Donovan J. Thompson of the University of Washington. Thompson was to serve less than a year before resigning; he was replaced by Patricia W. Durbin, Lawrence Berkeley Laboratory, University of California, a leading research figure on the biological aspects of the actinide elements.

The new Committee made a number of important recommendations at its June 1977 meeting. Perhaps most significant was its observation that both the USTR and LANL appeared to have overlapping and perhaps even conflicting responsibilities with respect to the conduct of epidemiologic studies of transuranium element workers. The Committee recommended that Drs. Breitenstein and Voelz pursue resolution of the epidemiologic study matter and report their findings and conclusions back to the Committee. Accord-



ingly, Breitenstein and Voelz met with Walter W. Weyzen to discuss the relationships and responsibilities of the USTR and LANL, concluding that it was best to leave the matter unresolved pending better definition of the overall DOE Occupational Worker Epidemiology Study. Within a matter of months, however, the USTR was out of the epidemiology research area. The next Annual Report of the Registry reflected a major change in direction, with greater emphasis on biokinetics and health physics; epidemiologic study was no longer a stated purpose of the Registry, nor was there any mention of the topic in the Annual Report.

1978: A Watershed Year

As the first decade of the Registry drew to a close in mid-1978, progress had been made along several lines. The purpose and research role of the USTR had been better and more clearly defined, as well becoming more circumscribed. A population of more than 15,000 transuranium element workers had been identified, of whom nearly half were at the Hanford site, with most of the remainder at Rocky Flats, LANL, and the Savannah River Plant. The group also included more than 100 individuals at private, non-government facilities. With recruitment procedures and forms developed and refined, authorizations for autopsy had been obtained from more than 1000 workers. A total of 93 autopsies had been performed, fourteen of which were provided by British collaborators, and findings from these cases were published. In addition to annual reports, a total of seven papers funded or otherwise sponsored by the USTR, were published in the open peer reviewed literature with four being authored by USTR staff dealing with the operations and findings of the Registry.

Battelle, which along with Rocky Flats and LANL, had been performing radiochemical analysis of tissues collected at autopsy since the beginning of the Registry, ceased tissue analysis activities September 30, 1978, coincident with the end of the Federal fiscal year. Work in progress at Battelle was transferred to LANL under the provisions of a separately funded and administered program under the direction of radiochemist James F. McInroy. LANL then assumed responsibility for all of the tissue radiochemical analysis except for those cases originating at the Rocky Flats Facility, which continued to carry out its own radiochemistry analyses.

The end of the first decade also presaged the start of considerable change in the USTR operation. In April 1978, J. H. Sterner, who had chaired the Advi-

sory Committee since its inception, resigned as chair and was replaced by physicist Charles W. Mays. Under Mays' leadership, the Advisory Committee, in addition to providing general policy and technical guidance, took a more active role in the detailed scientific aspects of the work. This was largely accomplished through the appointment of a Dosimetry Subcommittee which initially consisted of Advisory Committee member John W. Poston, who served as chairman, and the new Advisory Committee chairman Charles W. Mays. Advisory Committee member Patricia W. Durbin was soon added as the third member.

The Technical Subcommittee operated in an informal collegial manner, in lengthy and intense meetings in which the scientific work of the USTR was performed. It included in its meetings and deliberations Dr. McInroy, who now headed the radiochemistry operations, Carlos E. Newton, Jr., who provided health physics support, and Kenneth R. Heid, another health physicist from Battelle who would replace the soon to retire Newton. The subcommittee considered all sorts of scientific detail including, what samples should be collected; sample sizes; effects of dehydration, and in addition performed the primary evaluation of the data. It also considered and recommended through its parent Advisory Committee the basic scientific policy and research direction of the USTR. Thus, it effectively augmented the woefully small scientific staff of the USTR, whose entire cadre of personnel consisted of halftime physician-director Bryce D. Breitenstein, and halftime health physicist Carlos E. Newton, Jr., of Battelle Pacific Northwest Laboratories, and a full time secretary, Dorothy Potter. The Technical Subcommittee in large measure, really carried out the scientific mission of the USTR.

Additional assistance for the program was obtained from three prosectors — Gerald R. Dagle, Battelle; Robert V. Bistline, RRF; and James F. McInroy, LANL, who had been appointed the previous year to assist with the procurement of tissue samples at autopsy. In addition, Dr. Bistline played a seminal role in developing a program at RRF and Dr. McInroy oversaw the radiochemistry operations at LANL.

The Uranium Registry

Although uranium had been known to and used by man for more than two centuries, there was still a great deal to be uncovered regarding the behavior and effects in humans of this heaviest naturally occurring metal. Accordingly in 1978, the DOE funded the HEHF to establish the United States Uranium Reg-

istry (USUR). The USUR was a parallel, but administratively separate, program whose major goals were initially stated as 1) characterization of the occupational health aspects of the uranium fuel cycle; 2) measurement of the concentration and distribution of uranium and the uranium decay chain in the tissues of exposed workers; and 3) to identify populations suitable for health related studies. Robert H. Moore, an occupational physician with some pathology training early in his career, was appointed as halftime director and the USUR shared health physics and clerical staff with the USTR.

With the exception of the director, the USUR utilized the same staff as its sister USTR and adopted a similar operational strategy, including the maintenance of their own files and autopsy and medical records release forms specific to the USUR. Although a strategy of recruiting registrants similar to that of the USTR was adopted by the Uranium Registry, the USUR relied heavily on individual personal contacts. Nonetheless, the USUR was not nearly so successful and by October 1, 1991 had only 32 living registrants. The USUR had received tissues from one surgical case and 12 post-mortem donors, with one being a whole body donor.

With technical support from Battelle, the USUR initiated a series of studies designed to characterize the uranium industry and its hazards within the United States. These led to four technical reports. The first, published in 1981, was an overview of occupational exposure to uranium. Two reports published the following year dealt more specifically with the radiological health aspects of uranium milling and commercial uranium conversion, enrichment and fuel fabrication. The fourth report, also published in 1982, was a comprehensive evaluation of the epidemiologic aspects of lung cancer in hard rock uranium miners and found in its conclusions that histologic study of this group was warranted. In 1984, the USUR also sponsored a successful colloquium on the biokinetics and analysis of uranium in man and in conjunction with the Battelle, edited and published the proceedings of workshops on uranium nephrotoxicity and ultrasensitive analytical techniques.

The Second Decade: The Emerging Scientific Renaissance

In March 1979, a research chemist who had worked with transuranium elements since his graduate student days contacted the USTR a few weeks before his death with the unexpected offer of a whole body donation. This proved to be highly fortuitous, as this

individual had a long standing deposition of americium from a wound incurred during his graduate student days, but also posed significant problems due to the small staff and limited capabilities of the USTR. The Dosimetry Subcommittee of the Advisory Committee took a leading role and based on their recommendations, arrangements were made with a number of collaborating scientists to assist with the case. In addition, they developed the methodology and techniques not only for evaluating this case, designated USTR Case 0102, but also for those of future whole body donations.

The report on USTR Case 0102 was published as a series of five papers comprising the entire October 1985 issue of the peer reviewed journal, *Health Physics* and represented a significant contribution to the understanding of americium biokinetics in man. It permitted comparison with deposition estimates made during life and indicated refinements to in vivo counting procedures. More significantly, it provided a detailed report of the distribution of americium in a human body and as a result of the biokinetics analysis, proposed a two compartment biokinetic model for americium with significantly different parameters than existing models: a residence half-life of only 2y in the liver and 90 y in the skeleton, along with initial uptake fractions of 0.115 and 0.835 for these two organs, respectively.

About three fourths of the more than 100 published pages were devoted to two papers, one a detailed presentation of the preparation and results of the radiochemical analysis of the body prepared by James F. McInroy and his coworkers at LANL, and the other an extensive analysis of the biokinetics of the case co-authored by Advisory Committee member Patricia W. Durbin and her coworker Charles T. Schmidt at Lawrence Berkeley Laboratory. The other papers were devoted to external gamma ray measurements and estimates of initial systemic burden by staff members of Battelle and a case overview and description by the two USTR staff members in collaboration with H. Thomas Norris of the University of Washington.

Important administrative and personnel changes also occurred. In May 1980, Margery J. Swint assumed responsibility for medical support to the USTR and was named Associate Director along with Battelle health physicist Kenneth R. Heid, who replaced the retiring Carlos E. Newton the following year under the same halftime work order arrangement with Battelle. Swint became director of the USTR in 1982 and Norwood continued as a consultant until 1984. In



1981, the Advisory Committee recommended that the Transuranium and Uranium Registries be combined into a single entity, observing that there were no disadvantages but many scientific and administrative advantages that would accrue from combining the two programs. Although this recommendation was not acted upon, (the Registries were not combined into a single entity until 1992, when they were placed under the purview of WSU) a combined USTR and USUR Advisory Committee was created and the Committee membership was expanded to eight by the addition of two new members with expertise in uranium. These were eminent biophysicist J. Newell Stannard, former associate dean of the University of Rochester School of Medicine, and Langan W. Swint, an occupational safety and health expert, and retired vice-president of Homestake Mining Corporation.

The 1983 Advisory Committee meeting was an open meeting attended by 28 persons in addition to the Registries staff and the Committee. Included in this number was an observer from the United Kingdom Ministry of Defense as well as scientists from several DOE laboratories. The evaluation of a second whole body case to be carried out under the lead of Advisory Committee member George Voelz and James McInroy was one important area of discussion. So too was the Uranium Registry, whose director, Robert Moore, was singled out for his tenacious dedication to the program. However, in a particularly telling recommendation, the Committee observed that the staff of both Registries needed to increase their understanding of uranium biokinetics and analysis.

As 1983 drew to a close, Ronald L. Kathren, a board certified health physicist and senior scientist at Battelle, was added as a two-hour per week consultant to strengthen the scientific capabilities of the Registries and assist Associate Director Heid, who was contemplating retirement. Within a few months, Kathren replaced Heid as scientific support, although not as Associate Director, and devoted his halftime effort largely to the analysis of the data accumulated by the Registries, with an eye towards publication of papers in the peer reviewed scientific literature.

The following years led to a burgeoning number of publications by Registries staff and collaborators in peer reviewed scientific journals. Only 13 publications by Registries staff or based on Registries data were published in the peer reviewed literature prior to 1984, as compared with 47 publications during the period 1984-92, plus a number of miscellaneous and ancillary publications. These included not only the five

USTUR Case 0102 papers previously mentioned, but also publications relating to the distribution of actinide in the skeleton: partitioning of plutonium and americium between liver and skeleton; comparison of whole body depositions determined at autopsy with those made during life; and an evaluation of various biokinetic models for plutonium based on postmortem findings in several whole body donations.

As the Registries moved into their third decade, a series of important administrative changes began. By 1987, Kathren was working full time at the Registries and in that year transferred from Battelle to HEHF. In the spring of 1989, Robert H. Moore, the founding director of the Uranium Registry retired and Margery Swint briefly assumed the directorship of both registries. Upon her promotion to Manager of Occupational Medicine and Medical Director of HEHF at the end of 1989, Swint was replaced by Kathren, the first person who was not a physician to head the programs. The following year, Ronald E. Filipy, a radiobiologist with specific expertise in animal studies with plutonium, was added to the staff, effectively doubling the in-house scientific capability.

Although the two Registries remained administratively separate, Kathren and Swint, along with S. E. Dietert, published the first combined Annual Report for the Registries in 1990. This was notable as it was the first annual report for the USUR, which heretofore had not published progress or annual reports. Advisory Committee Chairman Poston retired and was replaced as Chairman by George Voelz. The vacancy left on the Committee by Poston's departure was filled with radiochemist Kenneth Inn, National Institute of Standards and Technology. Appointment of two other new members was necessitated by the death of Herbert Parker and the retirement of Robley Evans. Replacements were made with noted health physicist Paul L. Ziemer, Purdue University, and the prominent radiobiologist Roy C. Thompson, who was recently retired from Battelle. Ziemer was to serve only a year before being appointed Assistant Secretary of Energy for Health Safety and Environment, voluntarily stepping down to avoid any potential conflict of interest. He was replaced by Keith J. Schiager, Director of the Office of Radiation Safety at the University of Utah, a well known expert in uranium health physics.

1992: A Year of Change

In February 1992, the US DOE awarded a three year grant for \$3.76 million to WSU for management and operation of the Registries. This was an important

step in the continuing evolution of the Registries and brought with it significant changes in operations and research accomplishments, which are described elsewhere in this commemorative Annual Report. The grant called for management and operation of the Registries as a single entity rather than as parallel but administratively separate research programs, and included a plan to transfer the radiochemistry operations to WSU within three years, that had been previously provided by LANL under separate contract to the DOE. Combined management and operation of the Registries and the radiochemistry operations at LANL would not only provide for better integration and centralized control of the programs, but would also reduce overheads and direct operating costs. One obvious benefit is the elimination of redundant efforts and duplications arising from the existence of two separate registries.

The many significant advantages of the grammatical transfer to WSU, include enhanced opportunities for collaboration with a broad spectrum of faculty which are available at a major research university. Perhaps the most potentially advantageous aspect of the transfer is the integration of the Registries into the academic programs of the University, thereby providing a mechanism for training students in health physics and radiobiology, two disciplines historically in short supply. Conventionally, students in health physics have been supported directly through grants or fellowships, with an equal amount provided to the institution. The U.S. DOE fellowship program is by far the largest and supports about two dozen graduate students annually. Each student receives \$15,000 per year for support, with the institution receiving a similar amount. Typically, only one or two fellowship students attend any given institution and the institutional portion, although generous on a per student basis, is insufficient to support a single faculty member let alone an entire program.

By providing direct faculty research support through grants such as the Registries, a greater number of faculty can be readily supported and the opportunity for student thesis research expanded. Hence, students can be more readily informed of and attracted to these disciplines. In addition, the grant provides support and tuition for two halftime student research assistants, with the annual outlay for each of these students being only about \$15 thousand, or about half the cost of a conventional fellowship. As a further benefit, these students can provide invaluable assistance in furthering the research carried out by the Registries.

Location at a major research university makes

available to the Registries a variety of scientists and other research professionals who can provide support or collaboration on an ad hoc basis. Of particular note is the administrative location of the Registries within the College of Pharmacy, which further enhances the availability of pharmacokineticists and pathologists on the faculty. Most significant has been the availability of a proper dissection laboratory for whole body and other tissue donations, which prior to moving to the University had been unavailable to the program.

A final benefit attributable to the location of the program at a major university is enhanced credibility and academic freedom. In recent years, government and government funded programs have been subjected to increasing scrutiny from their peers as well as the public. This is not surprising, considering the nature of the research which involves postmortem collection and analysis of tissues from workers known to have had intakes of plutonium or other actinides. The Registries have not been immune to such scrutiny and inquiries by the media therefore, it is essential to ensure that the scientists performing the work are unfettered by the funding agency in the scientific conduct of the program, and that the research is carried out in an open and ethical fashion. As the U.S. DOE has recognized, this is best accomplished through a grant to an independent and recognized research university.

Administratively, the Registries are centered on the Tri-Cities campus of WSU. The grant called for voluntary removal of the HEHF based Registries staff, consisting of the health physicist director, a radiobiologist, a physician, and a secretary. Accordingly, Registries Director Ronald L. Kathren and radiobiologist Ronald E. Filipy were appointed as Professors in the College of Pharmacy; together, they began to build a program at WSU. Initial efforts were directed towards effecting the transfer of the program and to updating and rectifying files and records. A major task was development of a manual of Registries policies and procedures, which previously had not been formalized. For the first year at the University, medical support was provided by C. Harold Meilke, a noted hematologist who served as director of the WSU Health Research and Education Center, and by Robert Cihak, a pathologist on the College of Pharmacy faculty. Subsequently, Scott E. Dietert, a board certified pathologist who had previously worked with the Registries at HEHF, opted to rejoin the program and was appointed on a halftime basis as resident medical consultant and a Professor in the College of Pharmacy.

The transfer of the program to WSU also re-



sulted in changes in the composition and operation of the Advisory Committee. Within a matter of weeks after the transfer, a formal policy relating to the Advisory Committee was developed. This policy requires that the majority of members of the Committee have no affiliation with the DOE or its prime contractors, and that the Committee -- no more than seven in number -- include a representative of the academic community and the general public, in addition to the scientific members. It also provided for the appointment of a representative of organized labor. Accordingly, a newly reconstituted Committee was appointed, and included four scientific members as holdovers, physician George Voelz, who was elected Chairman; health physicist Keith J. Schiager, elected Vice-Chairman; radiochemist Kenneth G. W. Inn; and radiobiologist Roy C. Thompson. Borje K. Gustafsson, Dean of the College of Veterinary Medicine at WSU and MaryBelle Thompson of Spokane were added as the academic and public members, respectively, and a search was begun for a suitable representative from organized labor to round out the Committee.

In July 1992, the program was expanded through the creation of the National Human Tissue Repository (NHRTR) for radiological specimens, under the direction of radiobiologist John J. Russell who was also appointed to the College of Pharmacy faculty. In addition to extracts of solutions of tissues, histopathology slides and blocks, and remaining analyzed tissues from USTUR cases, the NHRTR contains tissues collected by Argonne National Laboratory (ANL) for their comprehensive Radium Dial Painter Study, which was in its final phase. This unique collection of human tissue materials, plus other donated tissues collected from persons with a history of radioactivity intake, will be made available to scientists studying the effects of radioactivity in man. Russell supervised the removal of the dial painter materials from ANL to the 3000 square foot leased facilities of the NHRTR, adjacent to the Sacred Heart Medical Center in Spokane. In addition to a freezer room and storage for tissue extracts, the NHRTR facilities include a dedicated dissection room and ancillary laboratory space.

Beyond 1992: Goals and Objectives

Although a history deals with the past, it is perhaps appropriate to conclude this section with a brief mention of the more immediate specific goals and objectives of the Registries. Much still remains to be done in the area of records management, including a complete and full physical audit of each individual

registrant file to determine the status all registrant files and to verify that appropriate permissions and documentation is included. Once this audit has been completed, and an attempt made to secure any missing documentation, the records will be microfilmed to provide a backup copy in the event of accidental destruction of the originals. A second major records management task involves evaluation and entry into the computerized TUR data base of health physics and other exposure and medical history data for all registrants. This task is expected to take two to three calendar years to complete. It is planned to add the Registries data base to the Comprehensive Epidemiologic Data Resource (CEDR) holdings.

Another short term goal is assumption of the responsibility for the radiochemical analysis of donated tissues. The plan calls for this work, now being carried out by Los Alamos National Laboratory, to be assumed by WSU and carried out at an accelerated rate to eliminate the serious backlog of unanalyzed tissues that have accumulated. Given the aging registrant population, it is estimated that two to three calendar years will be needed to significantly reduce the laboratory backlog.

A number of scientific studies now in progress will be completed in the near term. These include the initial study of kidney toxicity of uranium in humans and an animal study of the effect of enrichment on the biokinetics uranium. Studies of the distribution and dose distribution of the higher actinides, i.e. Pu and Am, will be continued. Longer term scientific studies include evaluation of the distribution, dosimetry and pathology in a second whole body donor who had been injected with Thorotrast; comparative modelling of the 238 and 239 isotopes of plutonium; and distribution of endogenous environmental uranium in the tissues of two whole body donors.

Also in the short term, and in keeping with the mission of the Registries as originally defined, histopathology studies using the collection of histopathological slides and other materials and medical information obtained for registrants will be initiated. Of necessity, these will be limited by the amount of available materials, but should serve as the starting point for expanded future studies in this area as more materials are obtained and after the medical and autopsy history data base is computerized. In both the near and longer term, the Registries will endeavor to utilize the unique tissue materials and related information in the NHRTR for collaborative research in areas related to the mission of the Registries. Accord-

ingly, joint research will be sought with other institutions and investigators in areas related to the primary mission of the Registries. In addition, the NHRTR will be publicized within the scientific community to encourage collaborative or individual use of these unique materials, especially for the study of oncogenes and biomarkers.

In the longer term, the Registries will play an increasing role in studying the possible bioeffects of exposure through pathology and related studies. Moreover, the activities of the Registries should naturally evolve into support of the major program of waste cleanup and assessment now being carried on at DOE and other sites, helping to ensure the adequacy of protection standards for mixed chemical and radioactive exposures as well as specific chemical exposures associated with the clean up effort through postmortem assessment of exposures and bioeffects. In addition, the Registries can greatly enhance and assist with validation of epidemiologic findings by providing more accurate and precise assessment of the radiation exposure and doses incurred during life, along with autopsy findings to verify cause of death. In these ways, the basic mission of the Registries will be expanded and applied to other occupational hazards, with the same basic goal of ensuring adequate protection of workers and the general public from hazardous substances, both chemical and radioactive -- in the workplace and in the environment.

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ADVISORY COMMITTEES



1992 USTUR Advisory Committee Meeting
Left to Right: Borje Gustaffson, George Voelz, Kenneth Inn, Keith Schiager, MaryBelle Thompson. Not photographed: Roy C. Thompson



1984 USTUR Advisory Committee
Left to Right: Langan Swint, Herbert Parker, Pat Durbin, John Poston, Sr., Charles Mays, Robley Evans, George Voelz, Newell Stannard

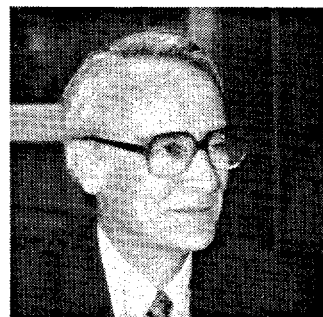


1968 National Plutonium Registry Advisory Committee
Standing Left to Right: Carlos E. Newton, Jr., W. Daggett Norwood, H.D. Bruner, Philip A. Fuqua
Seated Left to Right: Thomas F. Mancuso, J.H. Sterner, Robley D. Evans, Herbert M. Parker
Not photographed: Clarence C. Lushbaugh, Lloyd M. Joshel

DIRECTORS OF THE UNITED STATES TRANSURANIUM
AND URANIUM REGISTRIES

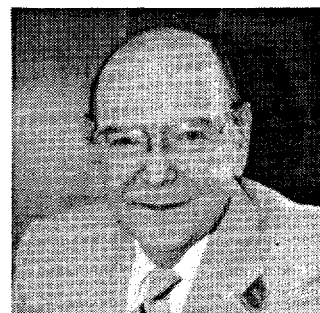


W. Daggett Norwood
NPR 1968-1969
USTR 1969-1972, 1973-1976



Bryce D. Breitenstein
USTR 1976-1982

John A. Norcross
USTR 1972-1973
(picture not available)



Robert H. Moore
USUR 1978-1989



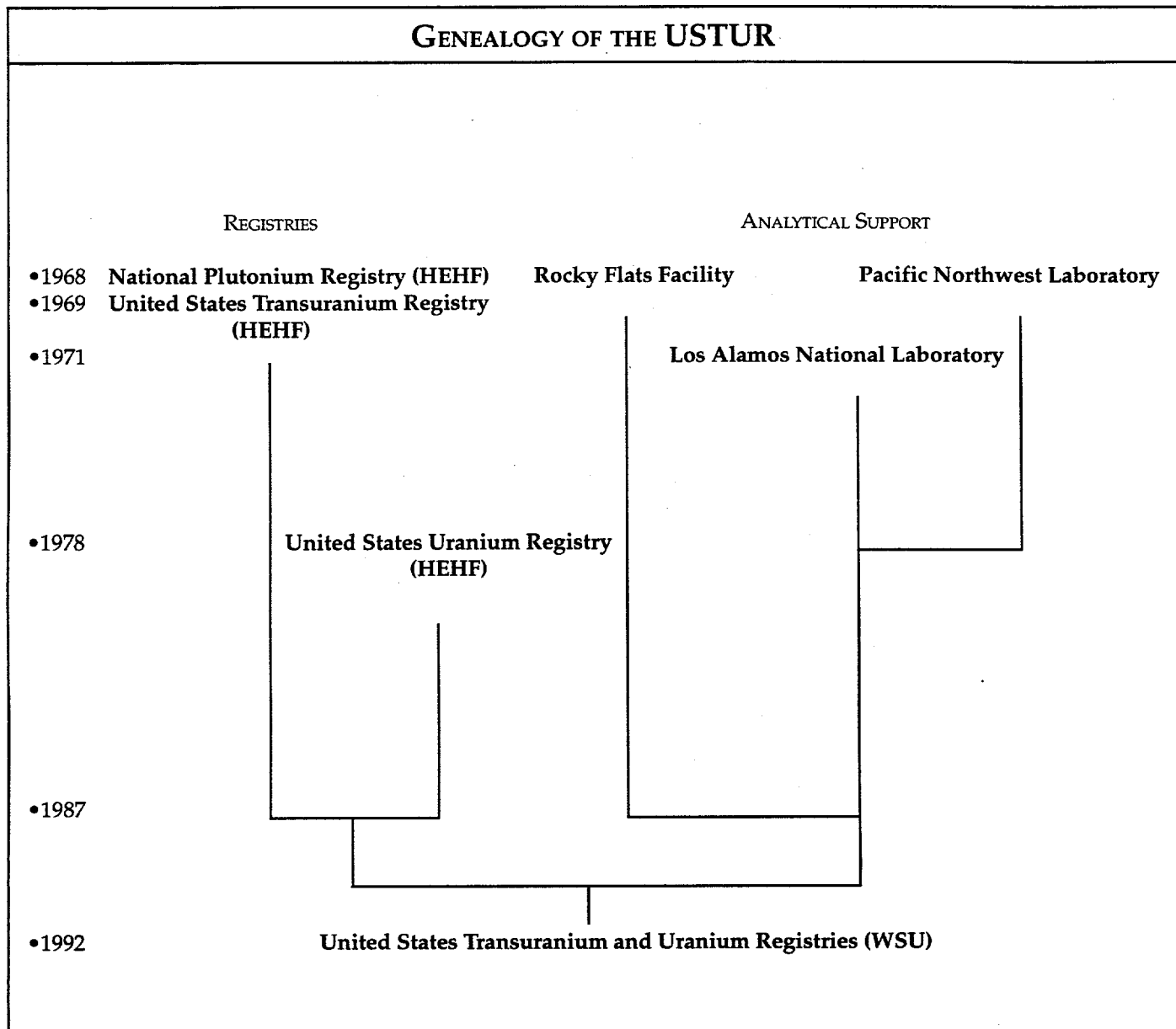
Margery J. Swint
USTR 1982-1989
USUR 1989-1989



Ronald L. Kathren
USTR 1989-1992
USUR 1989-1992
USTUR 1992-



GENEALOGY OF THE USTUR



**Administrative Progress
and Accomplishments**

ADMINISTRATIVE PROGRESS AND ACCOMPLISHMENTS

Policy and Procedures Manual

Since their relocation to WSU, and for the first time in the program's history, the USTUR have documented their operations in a formal Policies and Procedures Manual (PPM). The PPM contains three types of information: policies, procedures, and forms, which are assigned a three-digit number prefaced by a capital letter and sometimes followed by a lower case letter. Policies are statements describing the conduct of operations and are prefaced by the letter P. Procedures, prefaced by the letter R, are detailed statements which detail the accomplishment of a particular task. Forms, used for collection or distribution of specific information, are included in this manual and prefaced with the letter F.

The PPM was prepared by various staff and stresses compliance with university, state, and federal regulations as well as bioethical considerations; all items within the PPM are reviewed for revision on an annual basis. The PPM is a controlled circulation document with numbered documents assigned to specific individuals. Assignees are responsible for updating their respective manuals and must return them to the Registries upon request. (See attachment A)

Physical Facilities

The Registries building, a 2500 square-foot modular office structure on the WSU Tri-Cities campus, was completed and occupied in August. The facility includes an open reception area, eleven offices, a small conference room, a secured file room for registrant and other records requiring protection in accordance with the Privacy Act, and a small dry laboratory which is used for histopathology and dosimetry. In addition, the Registries lease 3,000 square feet from Sacred Heart Medical Center in Spokane, which houses the tissue material collection of the National Human Radiobiology Tissue Repository and the dissection laboratory.

Staffing and Organization

Since the last annual report, there have been significant changes to the administrative structure of the program and several staff additions. Effective August 1992, the Registries are no longer a part of the Health Research and Education Center, but rather part of a newly developed program titled Health Physics

and Radiation Biology within the College of Pharmacy at WSU, now reporting directly to the Dean of Pharmacy. (See attachment B)

Public Information

Brochures describing the USTUR and the NHRTR were printed and distributed. These are distributed by the scientific staff during site visits and public presentations and serve not only to provide general information about the Registries, but also as informative tools for recruiting and collaborative efforts. The Registries brochure includes a postpaid business reply card which can be used to obtain further information on the program. In response to the large number of inquiries received from the public and the media, the Registries prepared a seven page information packet, organized in a question and answer format, to give the lay person background on the Registries in addition to answering some of the most commonly asked questions.

The Registries are now registered with the Office of Scientific and Technical Information (OSTI) and are thus, included as a part of the Federal technical information network. Registries publications are assigned the letter designation USTUR followed by a unique four digit number, plus two digits identifying the year of publication (e.g. USTUR-0123-94). Manuscripts and reports which are not submitted to scientific journals for publication are sent to OSTI and thus, made available to interested persons on request.

Registrant File Audit

A four-part file audit was completed on all existing USTUR registrant files. The first part of the audit involved an ad hoc committee of Registries' personnel that was formed to assess what the audit should accomplish and design a preliminary, yet comprehensive, form to record the information. Second, the physical audit was performed on all registrant files and the information checked for accuracy. Third, a computerized database form was designed and the audit findings were entered into a table within the USTUR database for reporting and historical purposes. As a final phase of the audit, data missing from the registrant files will be requested and relevant information will be updated. The audit was crucial in that over the years the Registries have requested and accumulated many records without having the staffing to track these exchanges properly and the only other record of a file audit was incomplete and did not follow through with replacing the information which was identified as miss-

ing. Additionally, the audit identified requests which had not been fulfilled; to consistently organize those records which had been received; and to make design adjustments to the TUR database in order to accommodate all pertinent registrant information.

The results of the audit uncovered approximately 50 registrant files which for various reasons and by current standards, lacked adequate release documentation. Each registrant's file was examined on an individual basis and the necessary paperwork was retrieved from the appropriate DOE site, or registrant/registrant's next-of kin. In each case, the file was made complete and in accordance with USTUR policy.

Registrant Renewals

Currently, as documented in USTUR Procedure R500, registrants are renewed at five-year intervals depending on their renewal date, which is the day on which their authorizations are signed and returned to the Registries. During 1994, the Registries will begin a comprehensive renewal of all Registrants who had not been renewed following the USTUR move to WSU. All registrants will then be renewed simultaneously every five-years. This has long been a goal of the administrative office and will enable more time to be spent com-

municating with Registrants, keeping records current and ensuring file integrity, as well as providing more efficient operation.

Microfilming of Registrant Records

Microfilming the registrant files is a high priority, planned project. This will provide the Registries' with two copies of each Registrant file which can be updated with relative ease and at minimal cost. One copy of the microfilm will be a working copy stored in the Registries' secured file room and used for research purposes. The other copy will serve as a backup and be stored in the Max E. Benitz Memorial Library on the WSU Tri-Cities campus.

Advisory Committee

The annual USTUR Advisory Committee Meeting was held October 5-6, 1993 in the Max E. Benitz Memorial Library conference room on the WSU Tri-Cities campus. The meeting was attended by all Committee members and USTUR staff as well as other guests associated with the program. (See attachment C)

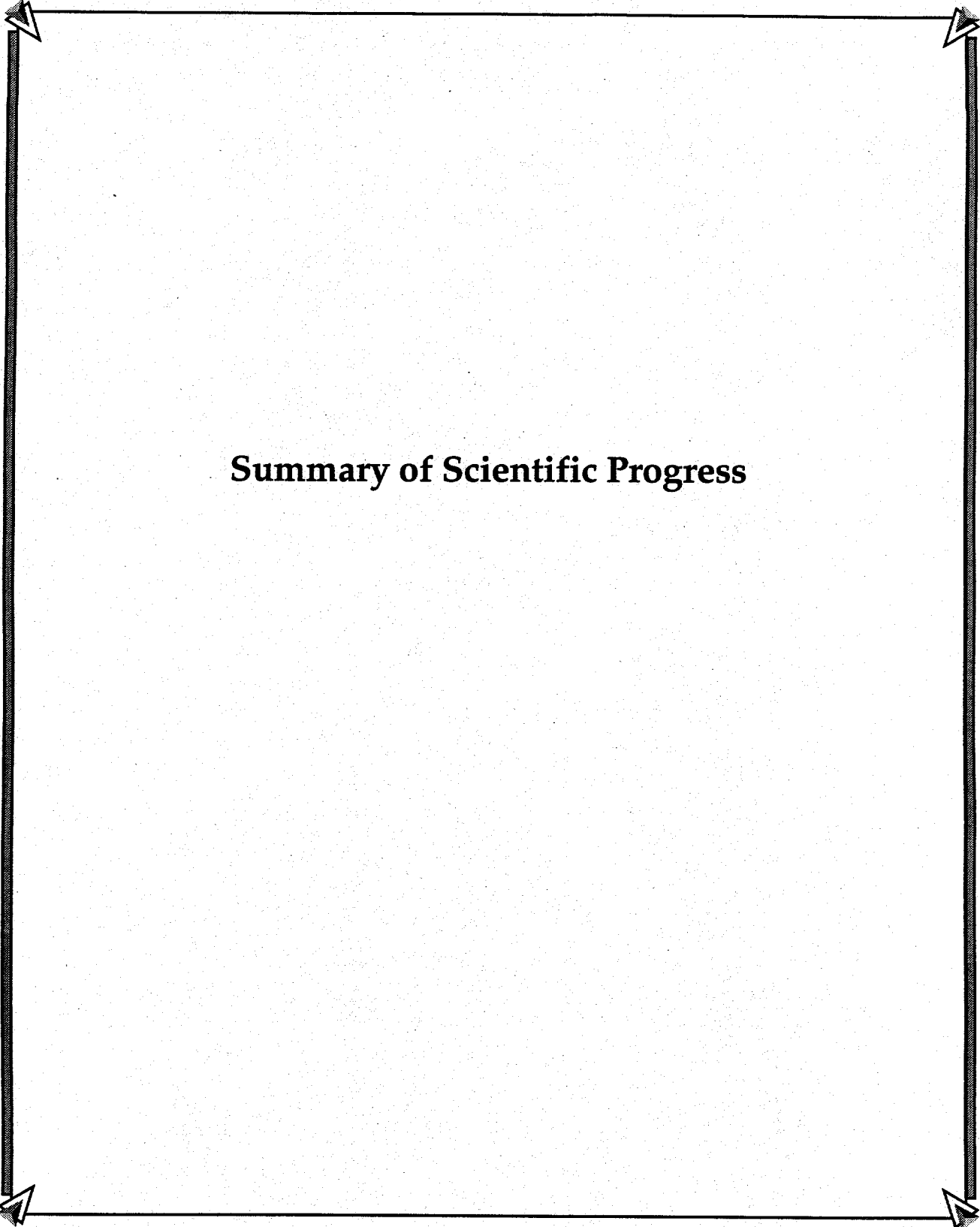
Publications

(See attachment D)

REGISTRANT STATISTICS

September 30, 1993

Living Registrants By Birth Decade	Total	Hanford	Rocky Flats	Los Alamos	Savannah River	Other
1900-1910	15	8	4	2	0	1
1911-1920	101	41	26	12	14	8
1921-1930	192	49	46	26	58	13
1931-1940	72	14	14	6	28	10
1941-	34	5	3	2	20	4
Not available	33	2	15	1	3	12
Total	447	119	108	49	123	48
Deceased, by Site:	330	86	92	57	17	78



Summary of Scientific Progress

SUMMARY OF SCIENTIFIC PROGRESS

Despite the disruption caused by the move of the Registries from HEHF to WSU, the Registries have nonetheless made considerable scientific progress. This section summarizes the progress of major research projects. Postmortem data on USTUR Case 246 have been analyzed and prepared for publication; a study of the relative distributions of ^{238}Pu , ^{239}Pu , ^{240}Pu and ^{241}Am in tissue has been completed and submitted for publication; the analysis of a whole-body donation of a Thorotrast case has been completed and published, and the results have been used to revise risk coefficients for cancer induction by Thorotrast; a study of the kidney toxicity of low-level uranium deposition has been nearly completed; and significant progress has been made on upgrading the USTUR database.

USTUR Case 246: Analyses of Post Mortem Data

There can be little doubt that USTUR Case 0246, the victim of the 1976 Hanford ^{241}Am accident, is the most "famous" case in the Registries, in terms of both scientific and public interest. Not only did this individual receive the largest internal deposition of a transuranic nuclide ever recorded, but he also became the longest-term case to undergo chelation therapy. The details of this case's exposure and the immediate sequelae are well known (Thompson 1983) and need not be repeated here. Following the subject's demise from the complications of pre-existing coronary artery disease in 1985, extensive autopsy samples were donated to the Registries for detailed study. In addition to the usual radiochemical analyses performed to determine the activity concentrations in the samples, more sophisticated measurements were possible, due to the large amounts of residual activity, to investigate the microdistribution and effects of activity in various tissues.

Consequently, Registries personnel instituted scientific collaborations with colleagues at other research institutions with specialized expertise; these investigations have now been completed and the resulting scientific papers are currently undergoing internal review prior to submission to journals. Some of the highlights of these research projects include the observation by both bone-surface alpha spectrometry and autoradiography that ^{241}Am initially deposited on bone surfaces was, in general, not buried by apposition of new bone. This may be due to the suppression of bone

remodelling by radiation, but it may also have been influenced by the subject's advanced age at the time of exposure and sedentary life-style, so that minimal bone remodeling occurred during his remaining life. The histopathology examination revealed extensive peritrabecular fibrosis of bone marrow, along with decreased cellularity in most samples. Only a few percent of the total ^{241}Am in bone was found in the marrow. In soft tissues, autoradiography revealed that almost all ^{241}Am was deposited in an ionic form, i.e. as single atoms. Only two alpha stars were observed, indicative of very small ^{241}Am particles, both in lung sections. The general order of alpha track concentrations seen in soft tissues, arranged in decreasing value, was liver, lung, kidney, thyroid, lymph node, and muscle. This pattern is certainly consistent with what would be expected from consideration of the exposure conditions, but may well have been affected by the prolonged chelation therapy undergone by the subject.

Despite the chelation therapy, the subject still received radiation doses in the range of several Gy to some tissues, leading to the possibility of both stochastic and deterministic effects. With a radiation weighting factor of 20 for alpha particles, cumulative equivalent doses to the bone, bone surface, liver and lung were 0.36, 10.4, 0.16, and 0.32 kSv, respectively. By application of currently accepted risk factors (NAS 1988), those equivalent doses resulted in probabilities of cancer induction of 18, 62, 24, and 27%, respectively. However, those probabilities must be regarded as extreme upper limits for three reasons: first, the doses were protracted; second, the subject survived only one year beyond the average 10 year latent period recommended by ICRP; and third, the risk coefficients are averaged over a population aged 0 to 90 years. The probability of not observing a fatal cancer in this case was the product of the quantities $(1 - f_i)$, where f_i represents each individual risk factor given above. This computed probability was 17%, so the lack of carcinogenesis in this case was not surprising.

Deterministic effects were clearly observed in various hematologic parameters. For the first five years after exposure, there was statistically significant neutropenia, lymphopenia, and thrombocytopenia. Although there was some recovery in these counts, they never returned to pre-exposure levels. Nevertheless, except for a significant thrombocytopenia immediately prior to death, the counts of the various blood cells near the end of his life could simply have reflected a natural decrease with age. Cataracts developed bilaterally and were removed at 547 and 1030 days post exposure from

the left and right eyes, respectively. However, estimated radiation doses to the lenses were below the cataractogenic range, and the attending ophthalmologist indicated that the cataracts were trauma-induced.

The total body content of ^{241}Am post mortem was estimated to be 540 kBq, of which 90% was in the skeleton, 5% in the liver, and 4% in muscle and fat. The distribution of activity is not well described by ICRP models, but appears to be reasonably well described by a later model based on animal data and a previous Registry ^{241}Am case.

Soft Tissue Concentrations of ^{238}Pu , $^{239+240}\text{Pu}$, and ^{241}Am in Occupationally Exposed Persons.

Under the routine autopsy program of the Registries, selected tissues are collected from volunteer donors with a history of occupational exposure to transuranic radionuclides. The tissue samples are analyzed for radionuclide content by chemical separation and alpha spectrometry; and results are available for ^{238}Pu , $^{239+240}\text{Pu}$ and ^{241}Am . Concentrations of these three radionuclides in soft tissues (testes, thyroid, spleen, kidney, heart, and skeletal muscle) of 82 cases were compared to their concentrations in the livers of each individual subject. Most of the subjects had never been involved in a specific incident that led to internal deposition, but rather had long-term, low-level chronic exposure by inhalation. The average age at death of these subjects was 65.5 ± 7.5 years, and the exposures are thought to have largely occurred two or more decades prior to death.

For any given tissue, the ratio of actinide concentration in that tissue to that in the liver proved to be essentially constant over a wide range of liver concentrations. The spleen had consistently high actinide concentrations relative to the liver; however, the heart had the highest concentration ratio for ^{241}Am . Testes exhibited relatively high concentration ratios for the plutonium nuclides, but low concentration ratios for ^{241}Am ; conversely, striated muscle had low concentrations of plutonium relative to liver, but high concentrations of ^{241}Am . In general, for the tissues studied, the concentration ratios of ^{241}Am were greater than those of the plutonium nuclides, most probably because of more rapid loss of ^{241}Am than plutonium from the liver. These results are consistent with a revised metabolic model for ^{241}Am that includes a relatively short (2-3 y) half-time in the liver. The following paper describing these results has been submitted to the journal *Health Physics*: Filipy, R. E.; Kathren, R. L.; McInroy, J. F.; Short, R.

A. Soft Tissue Concentrations of Plutonium and Americium in Occupationally-Exposed Humans.

Risk Coefficients for Alpha Particles

One major accomplishment of the Registries during the transition period from HEHF to WSU was the publication of ten papers relating to the analysis of a whole-body donation, case 1001, who had been administered an injection of approximately 25 mL of Thorotrast some 36 years prior to death (*Health Physics* 63, 10-100, 1992). The radiochemical analysis of tissues from this case established a basis for the calculation of radiation doses from ^{232}Th and its progeny to the various tissues and organs of this subject (Kathren and Hill 1992). Although extensive epidemiological studies of Thorotrast cases have been conducted in Germany (van Kaick et al. 1988), Portugal, and Japan (Mori et al. 1989; Ishiwaki, Kato and Hatekayama 1989), as well as elsewhere, the dosimetric bases of these studies are somewhat limited, being generally confined to external body radioactivity measurements (whole-body counts) or analyses of a few tissue samples.

The data from USTUR Case 1001 were used to determine the alpha-particle dose rates to various tissues as a function of the amount of Thorotrast injected. Absorbed doses were computed by assuming latent periods of 20 years for liver cancer, 10 years for osteosarcomas, and 5 years for leukemias, as recommended in the BEIR IV report (NAS 1988). The injected amounts reported in the various epidemiological studies were then multiplied by these dose conversion factors to establish average radiation doses to the tissues at risk for tumor induction: liver, bone, and bone marrow (leukemia). The observed numbers of excess cancers in the study populations were then divided by the average doses to compute risk factors in terms of cancers per person-Gy. The results are compared with the published values from the German, Japanese, and Portuguese studies, and with the values given in the BEIR IV report (NAS 1988) in the table below:

Cancer	Reported values	BEIR IV value	USTUR risk factor
Liver tumors	0.013—0.059	0.026—0.030	0.018
Bone cancers	0.0012—0.0055	0.0055—0.012	0.0035
Leukemias	0.002—0.06	0.0050—0.0060	0.032

Although all three risk coefficients based on the USTUR data fall within the ranges of values reported in the epidemiological studies, the USTUR leukemia risk coefficient exceeds almost all other reported values. However, the absorbed dose rate in red marrow computed from the USTUR data agrees well with other published values (Kaul and Noffz 1978; Priest et al. 1992). Consequently, the assumption of a five-year latent period for leukemia induction may be an underestimate.

Obviously, the major weakness of this study is that it depends on the analyses of tissues from only one case, who may or may not have been typical of the Thorotrast-exposed population. The USTUR has received the willied body of a second Thorotrast patient, USTUR Case 1054, and radiochemical analyses are under way. The results will be combined with those from USTUR Case 1001 and the resulting risk coefficients re-evaluated.

Kidney Toxicity of Uranium

In 1985, Robert H. Moore, then Director of the USUR, initiated a pilot study, using light microscopy, to assess the histopathologic changes in the kidneys of seven registrants as compared with six reference cases of similar age and year of death. The study results were orally presented at two scientific meetings, but never refined into a manuscript suitable for submission to a peer-reviewed journal. In the meantime, radiochemical analyses data from the kidney tissue of the registrants has become available.

Comparisons are now possible between 1) the in-vivo and in-vitro bioassay data on the registrants versus the actual tissue contents determined postmortem, and 2) the presence or absence of kidney histopathologic alterations in registrant versus non-registrant cases. Thirteen sets of kidney tissue slides were submitted to an independent consulting pathologist at a major American university without identifying the registrant status of each set. Preliminary review of the consultant's final evaluation shows similar mild to moderate arterionephrosclerosis in both groups; the consultant was unable to distinguish between uranium registrants and reference cases on the basis of kidney histopathologic findings. The data are being further evaluated and a manuscript describing this project is now in preparation.

USTUR Database

A long-term goal of the Registries is to establish a comprehensive, automated database that would

not only contain all available data on registrants, but also facilitate collation, mathematical, and statistical analyses of the data. The format would also permit incorporation into the DOE Comprehensive Epidemiologic Data Repository (CEDR). In the past, two separate databases were maintained, one by the Registries containing administrative data, primarily for the purpose of communicating with registrants, and the other by LANL containing the radiochemical analyses data. Unfortunately, the two databases could not communicate. Other important data, including medical and radiation exposure records, were not computerized.

Selection of a commercial software package rested upon several criteria, including write-protection, data security, statistical analyses and graphics, and easily accessible query and table generation. PARADOX was selected as the system best meeting these requirements. Data tables were created for administrative, radiochemical, and medical/health physics data. The administrative table contains registrants' names, addresses, work site identification, and various status indicators. The radiochemical table contains the results of all analyses provided by LANL on tissue samples collected by the Registries. Samples are identified by registrant case number, so that the data can be made accessible to anyone with a legitimate interest without regard to privacy considerations. The health physics table contains exposure and bioassay data, and a medical table is being developed for both premortem and postmortem diagnoses using ICD-9 coding.

The database has recently been transferred to PARADOX for Windows on a local area network accessible only to Registries staff. The administrative data table is complete and has been audited. The radiochemical table is complete for analyses performed to date however, some minor discrepancies remain with the LANL data, due to reanalyses of samples or variation in sample weights used to compute radionuclide concentrations. These discrepancies are being resolved with the assistance of Los Alamos personnel. Data are currently being entered into the health physics table and data entry is about 5% complete. This is a time-consuming process as the data must be extracted by hand from the case files and frequently need extensive interpretation. Nevertheless, the data management capabilities of the Registries have significantly improved in the past few years, and the completion of the first phase, the computerized administrative database has yielded great efficiencies in daily operations.

National Human Radiobiology Tissue Repository

Activities of the NHRTR began on July 1, 1992 with the occupancy of a newly remodeled 3,000 square-foot laboratory and storage facility located in Spokane adjacent to the Sacred Heart Medical Center and receipt of a collection of frozen specimens and other human tissue materials from the recently concluded Radium Dial Painter Study at ANL. Eight 20 cubic-foot ultracold freezers containing tissue samples were installed and a 24-hour alarm service was added as a precautionary measure against mechanical failure and possible loss of these unique and valuable tissues. The radium dial painter tissue collection also includes numerous boxes of dried bone samples; formalin-fixed tissue specimens; and a number of radium artifacts and nostrums i.e. dial painter paint brushes, watch dials, revigators, radium tonic water, and radium tablets. In addition, approximately 1100 cardboard boxes containing an estimated 20,000 acid extracts of tissue solutions from Registries and other cases processed at LANL were received, unloaded, and stored for possible future studies.

The NHRTR assumed responsibility for redesigning and documenting routine and whole body autopsy protocols with an eye towards streamlining and improving the procedures; reducing the number of tissues collected; and archiving a portion of every tissue collected for future study and collaborative research. Past practice was to perform destructive analysis on the entire sample. In addition, a policy requiring that every new tissue donor be tested for HBV/HIV before the Registries will accept their tissues or organ samples was instituted; no HIV positive tissues are accepted.

A total of 16 routine or whole body autopsies was performed on USTUR registrants during the period from July 92 through September 93. Due to the newly established policies and procedures regarding the acceptance of donors or tissues therefrom, one of the whole body donors was rejected due to a positive test for hepatitis-B. Another new policy dictates that a portion of every tissue or bone sample collected be saved and frozen at -70°C to protect their biochemical integrity for future use in oncogene, biomarker, or immunocytochemistry studies. Thus, portions of every tissue and bone collected from each of the sixteen autopsies were saved and frozen, with the remaining tissue pieces used for radiochemistry. During this same time period, the backlog of whole body cases stored in the freezers awaiting dissection was reduced from five to three, however, this has only increased the number of samples awaiting radiochemical analysis at LANL.

USTUR Case 1054: Thorotrast Whole Body Donor

In late 1992, USTUR Case 1054 was obtained by the Registries. Thorotrast, a colloidal suspension of ^{232}Th dioxide was widely used as an x-ray contrast medium primarily for the visualization of the vascular system prior to about 1960. Epidemiologic studies of persons injected with Thorotrast have been carried out in several countries and have clearly demonstrated a large excess of liver tumors, leukemias, and other RES tumors and effects. Although thousands of people worldwide were administered Thorotrast, to date only a single whole body donation has been available for comprehensive radiochemical, biokinetic, pathological, and autoradiographic studies, and to verify the risk coefficients established by the epidemiologic studies. USTUR Case 1001 has been evaluated and the results published in the open literature.

In 1947, at the age of 15, USTUR Case 1054 had a brain abscess surgically removed following imaging by Thorotrast. On examination in 1971, there was no evidence of a thorotrastoma or remaining Thorium deposits in the neck region near the injection site. In 1991, a CT scan revealed a large tumor in the right hepatic lobe. The patient died of liver cancer approximately one year later. An autopsy team led by Yuichi Ishikawa and J. A. M. Humphreys, both of the Harwell Laboratories in Great Britain, performed the autopsy approximately one year following the patient's death. At autopsy, the liver was found to be almost completely occupied by a large tumor 7-9 cm in diameter. On dissection, the tumor grossly appeared to be a cholangiocarcinoma.

Great care was exercised in identifying and removing all of the lymphatic nodes of the neck region, and the abdominal and thoracic viscera. Following gross examination, each organ sample was weighed and weighed aliquots were removed for radiochemistry and histopathology; the remaining sample was packaged individually in plastic bags and frozen for future studies i. e. oncogenes, biomarkers etc. Selected tissue samples were also taken for the Harwell investigators and G. van Kaick of the German Cancer Research Center. An abstract describing the preliminary results of this study was submitted for presentation at the *International Seminar on Health Effects of Internally Deposited Radionuclides: Emphasis on Radium and Thorium* on April 18-24, 1994, in Heidelberg, Germany. When completed, the results from this case will be used to help elucidate the long-term

organ retention, pathology and risk coefficients of Thorotrast and its radioactive daughters in humans.

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**Postmortem Tissue Analysis for
Five Whole Body Donors**

POSTMORTEM TISSUE ANALYSIS, IN-VIVO BIOASSAY, AND EXPOSURE INFORMATION FOR FIVE WHOLE BODY DONORS

Introduction

This section presents the results of postmortem radiochemical analysis for five whole body donors to the USTUR along with brief cases summaries and dosimetry and bioassay data. Two other whole body donors to the Registries, USTUR Cases 0102 and 1001, not included here as these cases have previously been described in detail in the open literature (Roessler and Magura, 1985; Mays and Guilmette, 1992).

Description and Exposure History of USTUR Case 0193

The Caucasian male died at age 62 from respiratory failure associated with pneumonia. The clinical history of this case included a coronary occlusion in 1968 and a coronary insufficiency event in 1976; a history of hyperlipidemia; pneumonitis in 1974; and several surgical procedures. The donor had a clinical history of congestive heart failure that was consistent with the finding of left ventricular dilation observed at autopsy. Autopsy findings also revealed chronic lung congestion with changes typical of congestive heart failure and generalized moderate to severe atherosclerosis of the coronary arteries. There was multifocal fibrosis of the left ventricle, which was consistent with a clinical history of the two previous myocardial infarctions.

The subject was one of 26 males occupationally exposed to Pu and medically followed for 37 y as USTUR Case 0027 in that study carried out by LANL (Hempelmann et al. 1973; Voelz et al. 1979, 1985). Except for the period August 1946 to November 1949 when he was in college, the donor was continuously employed at LANL and involved in operations with potential for exposure to Pu from January 1945 until February 1982, approximately 10.5 months prior to his death. Exposure potential was judged to be greatest in the early years of employment by the operational health physics staff at the place of employment. This was especially probable in the first year and a half of his employment when he was engaged in making Pu fluoride by fluorination of PuO in a chemical hood. Subsequent work was done in glove boxes, which would be expected to afford a greater measure of protection. After 1970, exposure potential was markedly reduced

because of changes in job responsibilities that removed him from direct contact with Pu operations.

On at least four separate occasions, USTUR Case 0193 was involved in some manner in contamination incidents involving Pu. The dates of these incidents were: August 16, 1957; February 3, 1959; July 15, 1959; and October 21, 1964. The first two involved minor explosions that resulted in significant airborne Pu levels in the workroom; as indicated in Table 1, nasal contamination was detected in both instances. Fecal sampling following the first instance revealed a significant quantity of Pu, suggestive of inhalation or ingestion of insoluble material. These bioassay data are suggestive of a small intake of soluble Pu. The latter two incidents were apparently of minor significance, without recorded indication of intake.

Over the course of his working lifetime, the donor had been credited with a documented external exposure of 132 mSv (13.2 rem) to the skin of the whole body and 93 mSv (9.3 rem) from neutrons. Various bioassay measurements were made over the course of his employment including 178 radiourinalyses for Pu; in-vivo counting on 12 occasions subsequent to 1970; and nasal wipes on a routine basis during the early months of employment and following possible acute accidental inhalation exposure. The Pu urinalysis data from 1945-1977 have been reported elsewhere (Voelz et al. 1979) but are reproduced for convenience and completeness in Table 1, along with subsequent urine data and nasal wipe results as reported in 1991 by McNroy et al. The urinalysis data for 1945-1946 have high values and are considered indicative of valid intake of Pu during that time period and are consistent with the nasal wipes during the same time frame.

Not all available nasal wipe data are given in the table. Nasal wipes were taken from mid-February 1945 to mid-May 1946 somewhat routinely, and as frequently as several times daily, depending on the work. They are indicative of potential exposure to airborne Pu particularly during June to August 1945 when significant activity was noted on 11 different occasions. During these months, the typical nasal wipe count was also elevated by about an order of magnitude, running a few tens of counts per minute. Subsequently, the counts dropped back to a few counts per minute, and then to near zero shortly before the program was terminated. Air monitoring data for this period are not available.

A crude order of magnitude estimate of intake during this period, based on the limited data available and in accordance with operational health physics ex-

perience and practice, indicates that several hundred becquerels, and perhaps as much as 1 kBq, may have reached the T-B (tracheobronchial) and P (pulmonary) regions of the respiratory tract. For the purposes of this estimate, the counting efficiency was assumed to be 25%, and the particle-size distribution was such that 90% of the inhaled activity was deposited in the nose and subsequently removed by the nasal wipe. These assumptions may or may not be valid.

In-vivo counts were taken at irregular intervals on 12 occasions, the last being in January 1982. The first count, taken in April 1970, showed no detectable activity, but the state of the art at that time renders this result questionable in that the lower level of detection (LLD) was likely to be at least several tens and perhaps even more than 100 Bq. The next chest count, taken in August 1973, indicated 20 Bq (0.55 nCi) of ^{241}Am . Subsequent chest counting results were positive, indicating approximately 13-19 Bq (0.35-0.5 nCi) of ^{241}Am . The lower detection limit for ^{241}Am chest counting during this time was 13 Bq (0.34 nCi). The chest counts in recent years were made using twin 127-mm (5 inch) diameter phoswich detectors and a counting time of 2000 s. At the 95% confidence level, the lower level of detection for this system is approximately 1 kBq (26 nCi) for ^{238}Pu and 2 kBq (55 nCi) for ^{239}Pu . The LLD for ^{239}Pu is greater than the activity measured in the respiratory tract (130 Bq) by postmortem radiochemical analysis, and it is thus not surprising that this nuclide was not detected by chest counting. A count of the hands was made with this same detector system in 1981 and revealed no detectable ^{239}Pu activity [LLD=40 Bq (1 nCi)]. Other in-vivo counts were made with a hyperpure germanium detector and included a liver count, in which the detector was positioned over the organ. No activity above the LLD for ^{239}Pu of approximately 40 Bq (1 nCi) was detected.

Seven histopathology slides are available for USTUR Case 0193, for heart, lung, liver, spleen, gastrointestinal mucosa, kidney, adrenal, pancreas, prostate, and testicles.

USTUR Case 0208

This male Caucasian, age 69 y at the time of death in April 1984 from pulmonary embolus, was 1.78 m in height and weighed approximately 59 kg. He suffered a cerebral vascular accident (stroke) eight years prior to death and was physically inactive after that event. The donor had a clinical history of hypertension. No autopsy report was available.

He began work in 1946 as an operations fore-

man in a Pu reduction and dry chemistry operation and later was employed as an animal handler at the same site. He experienced a potential for inhalation exposure to Pu during the period from May 1946 through March 1947, showing on only one occasion, August 1946, positive nose wipes for plutonium. Various bioassay data include 51 urinalysis and numerous, almost daily, nasal wipes from June 1946 through February 1947. In July 1949, an accident involving 369 pounds of ^{238}U occurred when a vacuum pump on a large furnace failed, letting combustible gas explode and released uranium oxide into the room. The donor was listed as being involved in the accident, but there is no record of urinalysis or other bioassay for uranium.

Film badge readings in November 1955 indicated whole body exposure of 0.26 rep beta and 0.78 R gamma, which was an overexposure of 0.48 R gamma. In January 1956, badge readings indicated 0.78 R gamma with an overexposure of 0.10 r gamma. A lung count on April 17, 1970 indicated a less than detectable amount of ^{239}Pu . In vivo estimates based upon urinalysis results indicated retention of 574 Bq ^{239}Pu at the time of death (McInroy et al. 1989). There are 14 histopathology slides available on USTUR Case 0208.

USTUR Case 0212

This 56 year old male Caucasian plumber measuring 1.81 m and weighing 89 kg died in 1984 from acute left pneumothorax and associated complications of severe pulmonary emphysema. Autopsy also revealed moderate cardiac hypertrophy, chronic passive congestion of the liver, moderate fatty change of the liver, and nodular hyperplasia of the prostate gland. He had a history of smoking cigarettes for at least 35 years.

During his period of employment he was involved in two radiation incidents with the potential for acute internal deposition of plutonium. The first occurred on 17 August 1956 and resulted in an estimated deposition based on urinalysis data of approximately 0.8 Bq of ^{239}Pu . On 23 March 1967 the donor was attempting to cut a pipe which was located at the back of the solvent extraction hood. The end of the cut pipe struck his hand ensuing a wound to the back of the middle finger. The maximum level of contamination on his hand at the wound site was 167 Bq, which was decontaminated to 33 Bq. He was sent to a wound center for treatment and the initial deposition in the wound was estimated as 2220 Bq. Surgical excision reduced this to 370 Bq at the wound site. The donor was also treated by chelation with DTPA. A total of 26.5 g of

DTPA was administered in 47 treatments during the six month period following the injury.

External dosimetry summary for this case:

	Non-penetrating	Penetrating
1955- 1981	10690 mrem	7790 mrem

Evaluation of this case resulted in an estimated systemic deposition, based on urinalysis data, of 535 Bq of ^{239}Pu and 4.3 kBq ^{241}Pu (McInroy et al. 1989).

Histopathology slides are available from the autopsy of this case, for the following tissues: heart, lung, liver, kidney, prostate, testis, spleen, adrenal gland, thyroid, and brain.

USTUR Case 0213

This donor was a 68 year old male Caucasian who measured 1.72 m and weighed 64 kg when he died of lung carcinoma in 1984. He had a health history of skin cancers on his eyelid, one of which had been surgically removed and the other had been treated with radiation. He smoked approximately one pack of cigarettes daily for twenty years. No autopsy report was available.

He began working with Pu in July 1946 as a chemist and had potential airborne Pu exposures until his retirement in January 1979. Five potential acute inhalation accident events were recorded between 1946 and 1967, including three occasions in 1946 and 1947 when positive nasal wipes for plutonium were obtained. December 30, 1947 a contamination report indicated that the donor was present when a transfer tank developed a leak at a weld on the bottom of the tank. No other details were indicated about that incident. In March 1947 high nose counts were recorded, 82/76 counts per minute, left and right nostrils respectively, with a record note that the donor could not account for the high nose count in any way. While wearing a half mask particulate respirator in April 1955, the donor was exposed to an air concentration of 1245 counts per minute/ m^3 . Subsequent nose swipes were reported as 2 counts per minute; the efficiency was not given, nor was conversion to activity made.

In February 1957, the donor was working without a respirator in a room where a gas explosion occurred in which the airborne alpha count of 498 counts per minute/ m^3 was recorded for the room air filter adjacent to the drybox. In August 1967, an airborne alpha contamination occurred in the room in which the donor worked. ^{238}Pu contamination is believed to have

entered the room through an acid waste line in which the traps in the drain line had dried up, allowing contamination to enter into the room atmosphere. The automatic air sampler and alpha alarm were activated. Room personnel immediately left the room or donned full face masks. Exactly what action the donor took at that time was not recorded, but a nose wipe taken after that incident indicated no detectable activity. Urinalysis done after that date for ^{238}Pu did not indicate levels of ^{238}Pu above 0.02 mBq.

Seven in vivo chest measurements were made between 1970 and 1979. All were below the minimum detection levels for ^{239}Pu . Whole body deposition at the time of death, based on radiourinalysis data, was estimated at 585 Bq ^{239}Pu (McInroy et al. 1989). There are no histopathology slides available for this case.

USTUR Case 0242

This 78 year old Caucasian male was 1.80 m in height and weighed 85 kg in January 1987 at the time of death from left ventricular hypertrophy and coronary arteriosclerosis. In 1958, he had been clinically diagnosed with hypertensive vascular disease with hypertensive retinopathy, grade I plus, with no definite evidence of cardiac or renal involvement. Examination at autopsy also revealed moderate chronic obstructive lung disease, nodular hyperplasia of right adrenal cortex, inactive chronic interstitial nephritis and moderate generalized atherosclerosis.

He began working with Pu in 1946 as a plutonium chemical operator and had potential exposure to airborne plutonium until his retirement in June 1972, with the exception of a brief layoff from September to November of 1952. Six potential accidents were recorded during 1947-1948; all were exposures to airborne plutonium except an acid burn in 1947, having a recorded surface contamination level of >40,000 cpm (counting efficiency not stated). One additional exposure to airborne Pu was recorded in 1958.

The 1947 accident occurred when he was attempting to withdraw some solution of plutonium, an acid medium from a paroxidizer, and the line became plugged. When loosening the diaphragm valve, the pressure forced the solution out, splattering his face and neck. He immediately washed with soap and water, and was subsequently decontaminated. Decontamination procedure consisted of an application of ammonium citrate paste (4 grams of ammonium citrate in 100 cc distilled water mixed with koalin) which was applied to the contaminated parts and allowed to remain there for approximately 5 minutes, before re-

removal with water. Readings taken before and after decontamination with a Pee-Wee air proportional alpha survey meter showed a decrease from 45,000 to 26,000 counts per minute on his forehead and from 26,000 to 11,000 counts per minute on the left side of his neck. The efficiency of the instrument is unknown. Readings from twelve different locations on his face, neck, hands and upper body were noted.

An accident occurred in 1952 in which the donor was present in the room where an evaporator gasket was being replaced while still under pressure. Plutonium was released throughout the room contaminating the room and the donor to 20,000 counts per minute; neither efficiency nor conversion to activity is known. The donor was wearing full protective clothing and respirator at the time. In 1953 a filtered batch of plutonium was being loaded into a shipping container when a violent reaction occurred between the alcohol in the bomb and hot nitric acid in the dissolved plutonium solution, which forced a plutonium mist out of the air lock and into the room. Urinalyses for plutonium was done after these accidents, but nose wipes were not taken at those times.

In 1956 and 1957 minor accidents occurred in the laboratory where the donor was working in which air concentrations were reported as 1029, 2925, and 3360 counts per minute/m³ for the three events. He was wearing a full face mask during the two incidents that occurred in 1956, but was not wearing a respirator at the time of the accident in 1957. Nose wipes taken after those incidents indicated 6, 1, and 12(left), 20(right) counts per minute, respectively. Again, the conversion to activity is not known.

Early in 1958, the donor was wearing a half mask respirator with ultra filter when a leak in a vapor line gasket occurred. Measured room air activity was 3282 counts per minute/m³. Nasal swipes were not taken at that time. In yet another incident in 1958, the glass lining of a steam-jacket evaporator was broken and a solution of Pu in HCl blew out a hole in the steel liner, filling the room with acid fumes. The subject donned a full face respirator; turned off the steam; and cleaned up the solution on the floor. His booties, shoes, and coveralls were contaminated to 20,000 counts per minute. The highest room count was reported as 142,057 counts per minute/m³. Nasal wipes showed 8 counts per minute, but the conversion to activity is not known. Plutonium urinalyses were performed after all these potential accidental exposures.

Over his 26 year period of employment, data are available for only three in-vivo lung counts on Case

0242. These are summarized below:

Date	nCi ²³⁹ Pu	nCi ²⁴¹ Am
May 1970	4.00	0.16
Mar 1972	21.00	2.08
May 1972	non-detectable	2.07

A note in this file indicates that all in-vivo counting results prior to 1978 are of questionable value due to possible detector problems or statistical considerations. External exposure, as obtained by whole body film badges, was given as 1.91 R for the period December 1946 to August 1950.

At the time of his retirement in 1972, his plutonium deposition was estimated as 37 kBq and his external whole body dose given as 48.02 rem. There are a total of 16 histopathology slides available for USTUR Case 0242, including coronary arteries, thyroid, mediastinal lymph node, lung, spleen, liver, adrenal, kidney, and brain..

Interpretation of the Tabulated Radiourinalysis and Nose Wipe Data

The urinalysis data presented in tabular form are as reported by the employer for each specific case and need to be carefully considered and evaluated for relevancy and accuracy with respect to exposure potential. There are serious questions that can be raised with respect to the validity of the earlier measurements. In their history of the Pu bioassay program at Los Alamos from 1944 to 1972, Campbell and co-workers (1972) reported marked differences in the sensitivity and reliability of radiourinalyses performed in the early years when compared with those performed more recently. The specific urinalysis data for USTUR Case 0193 up through 1977, were examined by Lawrence and included as Appendix I in the paper by Voelz et al. (1979). Lawrence notes that prior to 1957, urine assay results were recorded in terms of counts per minute per 24-h sample, without correction for chemical recovery, chemical reagent background, or counting geometry (Lawrence 1978; Voelz et al. 1979). Blank and chemical recovery procedures were performed periodically, but not on a regular basis (Lawrence 1978). Conversion of the count per minute values to activity was made on the basis of statistical evaluation of the raw data recorded in laboratory notebooks (Lawrence 1978);

these are the data that appear in Table 1, along with data from the other cases.

In all cases, Urinalysis data prior to 1957 may be of questionable validity in that the detection limit at the 95% confidence level for ^{239}Pu in a 24-h urine sample was greater than about 7 mBq (0.1 pCi). After January 1957, the urine assay procedures were refined and the urinalysis results after that are considered satisfactory and achieved a detection limit of 1 mBq (0.03 pCi) per 24-h urine sample.

Nasal wipe data for all cases, as given in the table, are incomplete. Nasal wipes were taken somewhat routinely and as frequently as several times daily, depending on the work; the results were recorded in counts per minute. Typically, nasal wipe levels were on the order of a few — less than 10 — counts per minute, but in some instances significantly higher counts were recorded. Only those instances in which the levels for either nostril exceeded 100 counts per minute are included in Table 1. Exact interpretation of the nasal wipe results cannot be made, as counting techniques, geometries, efficiencies, background level, and other necessary data are lacking, including particle-size distributions, solubility, respirator usage, and whether the individual in question was a mouth breather. They are, however, indicative of potential exposure to airborne Pu during the donors working years.

Radioassay Data

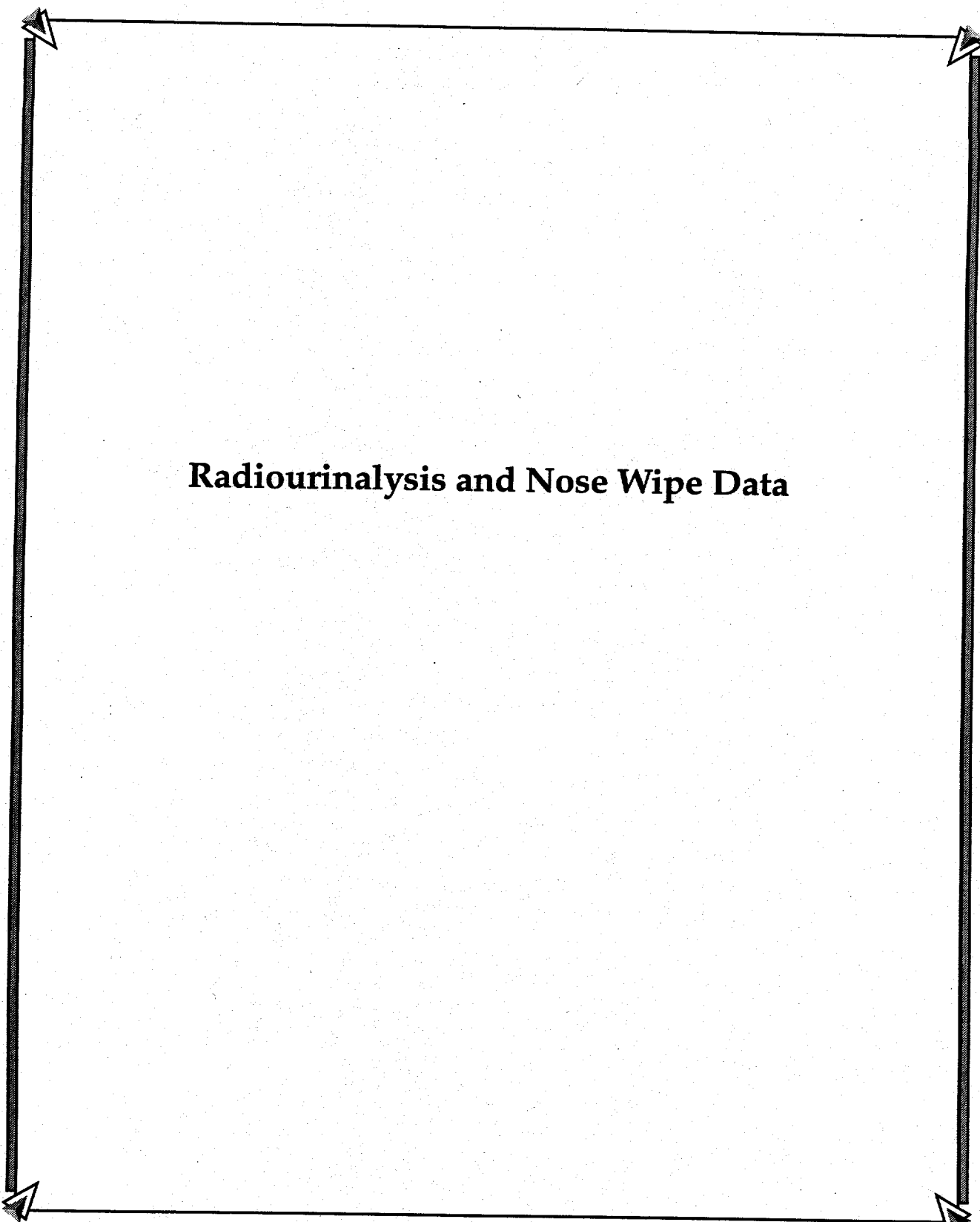
Tables of radioanalytical data are presented for the analysis of these five whole body cases. The radiochemical analysis procedures, as well as sample division protocol, have been described by McInroy et al. (1985). Data for USTUR Case 0193 were, in part, previously published (McInroy et al. 1991) and where these data have been reported again herein, weights have been rounded to three significant figures, where available. For soft tissues, concentrations reported are in units of Bq/kg of wet weight. For bone, reported concentrations are in Bq/kg of ash weight. In a few instances, minor revisions or corrections of previously published values or estimates of weights were made; these are noted in the tables.

ACKNOWLEDGEMENT

Radiochemical analyses were carried out by LANL under the direction of James F. McInroy, assisted by Edward Gonzales and other members of the staff.

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Radiourinalysis and Nose Wipe Data

Table 1. Radiourinalysis and nose wipe data.

	Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
		mBq/24h	p Ci/ 24 h	
Case 0193	27 Mar 1945			168/23
	20 Apr 1945	-3.7	-0.10	
	6 Jun 1945			306/187
	14 Jun 1945			225/40
	6 Jul 1945			800/616
	16 Jul 1945			186
	31 Jul 1945			168/146
	1 Aug 1945			156/50
	3 Aug 1945			153/26
	12 Aug 1945			1562/156
	20 Aug 1945			7696/4598
	28 Aug 1945			124/106
	30 Aug 1945			374/88
	6 Sept 1945	102	2.75	
	7 Feb 1946			224
	13 Feb 1946			169
	25 Mar 1946	102	2.75	
	12 Jun 1946	28.9	0.78	
	8 Aug 1946	93.6	2.53	
	26 Apr 1950	-7.8	-0.21	
	23 Sep 1951	-1.1	-0.03	
	5 Nov 1951	-1.9	-0.05	
	27 Jan 1952	-7.8	-0.21	
	29 Jan 1952	-4.8	-0.13	
	15 Mar 1952	-4.1	-0.11	
	30 Apr 1952	13.7	0.37	
	23 May 1952	-0.4	-0.01	
	29 Aug 1952	-1.1	-0.03	
	27 Oct 1952	-4.8	-0.13	
	9 Dec 1952	-6.3	-0.17	
	20 Jan 1953	4.8	0.13	
	3 Jun 1953	4.8	0.13	
	10 Aug 1953	5.2	0.14	
	11 Feb 1954	-6.3	-0.17	
	19 May 1954	5.2	0.14	
	22 Jul 1954	3.7	0.10	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0193 (cont'd)			
24 Aug 1954	3.3	0.09	
27 Sep 1954	-6.7	-0.18	
26 Oct 1954	5.6	0.15	
20 Nov 1954	-1.1	-0.03	
29 Dec 1954	1.1	0.03	
18 Feb 1955	6.7	0.18	
8 Mar 1955	-3.3	-0.09	
19 Apr 1955	4.8	0.13	
26 May 1955	12.2	0.33	
27 Jun 1955	-1.1	-0.03	
13 Jul 1955	3.3	0.09	
27 Jul 1955	-5.2	-0.14	
23 Aug 1955	-7.8	-0.21	
23 Sep 1955	-4.1	-0.11	
20 Oct 1955	3.3	0.09	
12 Nov 1955	4.1	0.11	
23 Dec 1955	-2.2	-0.06	
25 Jan 1956	-1.1	-0.03	
20 Feb 1956	-1.9	-0.05	
22 Mar 1956	-4.1	-0.11	
19 Apr 1956	2.2	0.06	
10 May 1956	4.1	0.11	
7 Jun 1956	-7.0	-0.19	
12 Jul 1956	10.7	0.29	
16 Aug 1956	-2.6	-0.07	
17 Sep 1956	-1.9	-0.05	
16 Oct 1956	-1.9	-0.05	
16 Nov 1956	-1.1	-0.03	
14 Dec 1956	-4.1	-0.11	
14 Jan 1957	-6.3	-0.17	
18 Feb 1957	3.0	0.08	
20 Mar 1957	3.0	0.08	
22 Apr 1957	3.7	0.10	
23 May 1957	1.9	0.05	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0193 (cont'd)			
20 Jun 1957	2.6	0.07	
22 Jul 1957	2.6	0.07	
16 Aug 1957	2.6	0.07	Involved in acute accidental exposure incident. Nasal wipe 413 cpm (7 Bq or 186 pCi)
17 Aug 1957	7.8	0.21	
18 Aug 1957	0.0	0.00	Fecal sample 15 Bq (400 pCi)
23 Sep 1957	5.6	0.15	
24 Oct 1957	4.8	0.13	
26 Nov 1957	1.9	0.05	
6 Jan 1958	4.4	0.12	
17 Feb 1958	4.1	0.11	
28 Mar 1958	0.0	0.00	
14 May 1958	3.7	0.10	
23 Jun 1958	3.7	0.10	
28 Jul 1958	5.2	0.14	
10 Sep 1958	1.9	0.05	
3 Nov 1958	4.4	0.12	
18 Dec 1958	2.6	0.07	
26 Jan 1959	5.2	0.14	
3 Feb 1959			Involved in acute inhalation exposure while wearing respirator; nasal wipe contained 18 cpm
9 Feb 1959	7.8	0.21	
24 Feb 1959	2.6	0.07	
8 Apr 1959	3.7	0.10	
21 May 1959	3.0	0.08	
29 Jun 1959	4.1	0.11	
15 Jul 1959			Involved in possible acute inhalation exposure; no record of nasal wipe(s).

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0193 (cont'd)			
20 Jul 1959	3.0	0.08	
11 Sep 1959	1.5	0.04	
19 Oct 1959	3.0	0.08	
30 Nov 1959	3.0	0.08	
25 Jan 1960	2.2	0.06	
2 Mar 1960	3.7	0.10	
15 Apr 1960	2.6	0.07	
26 May 1960	2.2	0.06	
12 Jul 1960	0.0	0.00	
26 Aug 1960	3.3	0.09	
6 Oct 1960	3.3	0.09	
16 Nov 1960	0.4	0.01	
17 Jan 1961	3.3	0.09	
27 Feb 1961	0.4	0.01	
13 Apr 1961	2.2	0.06	
29 May 1961	1.9	0.05	
17 Jul 1961	1.2	0.03	
5 Sep 1961	1.9	0.05	
19 Oct 1961	3.0	0.08	
7 Dec 1961	2.6	0.07	
26 Jan 1962	3.3	0.09	
15 Mar 1962	1.9	0.05	
24 Apr 1962	2.6	0.07	
13 Jun 1962	3.0	0.08	
16 Jul 1962	0.7	0.02	
31 Aug 1962	0.0	0.00	
17 Oct 1962	0.7	0.02	
23 Jan 1963	0.0	0.00	
13 Mar 1963	3.3	0.09	
26 Apr 1963	2.6	0.07	
18 Jun 1963	4.1	0.11	
2 Aug 1963	1.9	0.05	
23 Sep 1963	1.1	0.03	
21 Nov 1963	4.8	0.13	
13 Jan 1964	3.3	0.09	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Page 0193 (cont'd)			
5 Feb 1964	4.1	0.11	
1 Apr 1964	3.3	0.09	
25 May 1964	4.1	0.11	
6 Jul 1964	0.0	0.00	
31 Aug 1964	3.7	0.10	
24 Sep 1964	1.9	0.05	
26 Oct 1964	3.0	0.08	High room air count; possible acute inhalation exposure.
17 Dec 1964	1.9	0.05	
25 Jan 1965	2.2	0.06	
8 Mar 1965	3.3	0.09	
22 Apr 1965	3.3	0.09	
19 Jul 1965	2.2	0.06	
18 Oct 1965	1.1	0.03	
20 Jan 1966	0.4	0.01	
18 Apr 1966	4.4	0.12	
29 Nov 1966	4.4	0.12	
22 May 1967	3.3	0.09	
30 Nov 1967	3.3	0.09	
6 June 1968	3.3	0.09	
2 Dec 1968	6.7	0.18	
12 Jun 1969	0.0	0.00	
11 Dec 1969	5.6	0.15	
11 June 1970	8.9	0.24	
12 Nov 1970	3.7	0.10	
18 Jan 1971	1.9	0.05	
19 Jul 1971	5.9	0.16	
6 Jan 1972	5.2	0.14	
6 Jan 1972	4.4	0.12	
6 Jan 1972	4.8	0.13	
18 Jan 1972	4.4	0.12	
8 Jun 1973	4.8	0.13	
18 Jul 1973	4.1	0.11	
7 Jan 1974	3.3	0.09	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0193 cont'd)			
10 Jun 1974	3.3	0.09	
11 Sep 1974	1.5	0.04	
5 Dec 1974	5.6	0.15	
5 Mar 1975	5.2	0.14	
9 Jun 1975	4.8	0.13	
5 Aug 1975	1.5	0.04	
8 Dec 1975	3.3	0.09	
12 Mar 1976	3.7	0.10	
14 Jun 1976	4.1	0.11	
7 Sep 1976	1.9	0.05	
6 Dec 1976	1.5	0.04	
10 Mar 1977	1.9	0.05	
10 Jun 1977	2.2	0.06	
12 Sep 1977	3.0	0.08	
13 Jul 1978	3.0	0.08	
12 Oct 1978	2.2	0.06	
8 Dec 1978	1.1	0.03	
14 Mar 1979	4.1	0.11	
8 Jun 1979	2.2	0.06	
18 Sep 1979	1.9	0.05	
12 Dec 1979	1.5	0.04	
19 Mar 1980	3.3	0.09	
11 Jun 1980	4.4	0.12	
10 Sep 1980	1.1	0.03	
5 Jan 1981	2.2	0.06	
8 Mar 1981	1.9	0.05	
12 Jun 1981	3.0	0.08	
2 Sep 1981	4.1	0.11	
7 Dec 1981	2.2	0.06	
13 Jan 1982	2.2	0.06	
Case 0208			
9 July 1946	-20.0	-0.54	
9 Aug 1946			248/69
30 Aug 1946	12.6	0.34	
9 Oct 1946	28.9	0.78	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0208 (cont'd)			
4 Dec 1946	37.0	1.00	
4 Oct 1955	0.4	0.01	
24 Oct 1955	-0.7	-0.02	
25 Nov 1955	3.3	0.09	
9 Jul 1956	1.9	0.05	
4 Jan 1957	2.6	0.07	
2 Jul 1957	10.8	0.29	
26 Aug 1957	6.8	0.18	
2 Feb 1958	3.2	0.09	
3 Feb 1958	3.2	0.09	
4 Feb 1958	4.5	0.12	
5 Feb 1958	3.7	0.10	
6 Feb 1958	4.5	0.12	
7 Feb 1958	5.6	0.15	
8 Feb 1958	4.7	0.13	
9 Feb 1958	5.6	0.15	
10 Feb 1958	2.8	0.08	
11 Feb 1958	2.8	0.08	
12 Feb 1958	4.1	0.11	
13 Feb 1958	4.7	0.13	
14Feb 1958	4.4	0.12	
15 Feb 1958	3.2	0.09	
16 Feb 1958	5.2	0.14	
29 Apr 1958	3.2	0.09	
30 Apr1958	4.1	0.11	
1 May1958	4.4	0.12	
7 Jul 1958	3.7	0.10	
8 Jul 1958	1.5	0.04	
9 Jul 1958	3.7	0.10	
7 Aug 1958	1.1	0.03	
24 Sep 1958	4.0	0.10	
25 Sep 1958	3.0	0.08	
26 Sep 1958	3.0	0.08	
1 May 1959	4.0	0.11	
5 Oct 1959	3.3	0.09	
6 Oct 1959	3.3	0.09	
7 Oct 1959	3.3	0.09	
30 Oct 1959	3.3	0.09	
2 May 1960	0.4	0.01	
20 Sep 1960	2.6	0.07	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0208 (cont'd)			
20 Sep 1960	2.6	0.07	
10 Nov 1960	7.7	0.21	
17 May 1961	3.2	0.09	
21 Nov 1961	8.0	0.22	
28 May 1962	6.3	0.17	
7 Jun 1962	8.0	0.22	
7 Jun 1962	4.8	0.13	
26 Jun 1962	5.2	0.14	
27 Jun 1962	4.8	0.13	
15 Sep 1962	4.0	0.11	
16 Sep 1962	5.8	0.16	
17 Sep 1962	5.5	0.15	
29 Mar 1963	2.5	0.07	
3 Oct 1963	10.2	0.27	
8 Jul 1964	4.5	0.12	
21 Jan 1965	0.0	0.00	
18 May 1965	4.5	0.12	
6 May 1966	0.0	0.00	
8 Nov 1966	2.5	0.07	
6 Feb 1967	2.5	0.07	
2 Aug 1967	3.5	0.09	
2 Feb 1968	2.0	0.05	
30 Jul 1968	2.5	0.07	
29 Jan 1969	2.5	0.07	
17 Jul 1969	4.5	0.12	
15 Jan 1970	3.3	0.09	
16 Jul 1970	4.7	0.13	
14 Jan 1971	4.2	0.11	
19 Jan 1971	4.2	0.11	
19 Jan 1971	5.0	0.14	
Case 0212	No nose wipe data.		
23 Mar 1967	73410.0	1982.0	
24 Mar 1967	35890.0	969.0	
25 Mar 1967	30220.0	815.9	
26 Mar 1967	24580.0	663.7	
27 Mar 1967	54500.0	1471.5	
28 Mar 1967	25430.0	686.6	
29 Mar 1967	50050.0	1351.4	
30 Mar 1967	20690.0	558.6	
31 Mar 1967	9973.0	269.3	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0212 (cont'd)			
1 Apr 1967	8527.0	230.2	
2 Apr 1967	6191.0	167.2	
3 Apr 1967	48200.0	1301.4	
4 Apr 1967	20320.0	548.6	
5 Apr 1967	9416.0	254.2	
6 Apr 1967	29620.0	799.7	
7 Apr 1967	10710.0	289.2	
8 Apr 1967	7747.0	209.2	
9 Apr 1967	5182.0	139.9	
10 Apr 1967	21540.0	581.6	
11 Apr 1967	6339.0	171.1	
12 Apr 1967	5042.0	136.1	
13 Apr 1967	16830.0	454.4	
14 Apr 1967	3966.0	107.1	
15 Apr 1967	12900.0	348.3	
16 Apr 1967	4337.0	117.1	
17 Apr 1967	3211.0	86.7	
18 Apr 1967	4704.0	127.0	
19 Apr 1967	3075.0	83.0	
20 Apr 1967	11410.0	308.1	
21 Apr 1967	4788.0	129.3	
22 Apr 1967	3105.0	83.8	
23 Apr 1967	2301.0	62.1	
24 Apr 1967	16450.0	444.0	
25 Apr 1967	5554.0	150.0	
26 Apr 1967	3562.0	96.2	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0212 (cont'd)			
27 Apr 1967	965.3	26.1	
28 Apr 1967	5165.0	139.5	
29 Apr 1967	3268.0	88.2	
30 Apr 1967	2530.0	68.3	
1 May 1967	15470.0	417.8	
2 May 1967	4514.0	121.9	
3 May 1967	2761.0	74.5	
4 May 1967	9314.0	251.5	
5 May 1967	4337.0	117.1	
6 May 1967	1248.0	33.7	
7 May 1967	1909.0	51.5	
8 May 1967	15130.0	408.4	
9 May 1967	4337.0	117.1	
10 May 1967	2811.0	75.9	
11 May 1967	13350.0	360.5	
12 May 1967	4300.0	116.1	
13 May 1967	2346.0	63.3	
14 May 1967	1769.0	47.8	
15 May 1967	11420.0	308.3	
16 May 1967	3893.0	105.1	
17 May 1967	2376.0	64.2	
18 May 1967	8935.0	241.2	
19 May 1967	3088.0	83.4	
20 May 1967	2276.0	61.5	
21 May 1967	1543.0	41.7	
22 May 1967	11900.0	321.3	
23 May 1967	3696.0	99.8	
24 May 1967	9751.0	263.3	
25 May 1967	7193.0	194.2	
26 May 1967	2877.0	77.7	
27 May 1967	1206.0	32.6	
29 May 1967	9527.0	257.2	
30 May 1967	2346.0	63.3	
31 May 1967	130.3	3.5	
1 Jun 1967	626.3	16.9	
2 Jun 1967	2280.0	61.6	
3 Jun 1967	1197.0	32.3	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0212 (cont'd)			
4 Jun 1967	474.3	12.8	
5 Jun 1967	6673.0	180.2	
6 Jun 1967	1875.0	50.6	
7 Jun 1967	2209.0	59.6	
8 Jun 1967	5449.0	147.1	
9 Jun 1967	1695.0	45.8	
10 Jun 1967	1328.0	35.9	
11 Jun 1967	1049.0	28.3	
12 Jun 1967	4040.0	109.1	
13 Jun 1967	160.3	4.3	
14 Jun 1967	55.1	1.5	
15 Jun 1967	7527.0	203.2	
16 Jun 1967	2246.0	60.6	
17 Jun 1967	881.8	23.8	
18 Jun 1967	1000.0	27.0	
19 Jun 1967	1604.0	43.3	
21 Jun 1967	7.5	0.2	
26 Jun 1967	203.7	5.5	
27 Jun 1967	267.2	7.2	
28 Jun 1967	185.4	5.0	
29 Jun 1967	678.0	183	
30 Jun 1967	148.6	4.0	
1 July 1967	46.8	1.3	
2 July 1967	78.5	2.1	
3 July 1967	452.6	12.2	
4 July 1967	325.7	8.8	
5 July 1967	444.2	12.0	
10 July 1967	6673.0	180.2	
11 July 1967	1942.0	52.4	
12 July 1967	890.1	24.0	
13 July 1967	4078.0	110.1	
15 July 1967	1565.0	42.3	
16 July 1967	1139.0	30.7	
17 July 1967	3930.0	106.1	
18 July 1967	1012.0	27.3	
19 July 1967	920.2	24.8	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0212 (cont'd)			
20 July 1967	4115.0	111.1	
21 July 1967	953.6	25.7	
22 July 1967	653.0	17.6	
23 July 1967	653.0	17.6	
24 July 1967	3133.0	84.6	
25 July 1967	1316.0	35.5	
23 July 1967	397.5	10.7	
27 July 1967	3333.0	90.0	
28 July 1967	562.8	15.2	
10 Aug 1967	131.9	3.6	
11 Aug 1967	83.5	2.3	
12 Aug 1967	93.5	2.5	
13 Aug 1967	81.8	2.2	
14 Aug 1967	113.6	3.1	
18 Aug 1967	1072.0	28.9	
Case 213			
19 Jul 1946	150.4	4.06	
25 Jul 1946			131/17
29 Jul 1946			667/42
14 Aug 1946	45.2	1.22	
23 Aug 1946			68/86
27 Sep 1946	12.6	0.34	
4 Oct 1946			62/44
13 Nov 1946	8.5	0.23	
21 Nov 1946			144/70
10 Dec 1946			55/152
20 Jan 1947			410/5
5 Feb 1947			616/4
4 Mar 1947			82/76
12 Mar 1947	33.0	0.89	
28 Apr 1947			205/1
16 May 1947	-7.8	-0.21	
23 May 1947			0/113
18 Jun 1947	12.6	0.34	
25 Jul 1947	16.7	0.45	
1 Aug 1947			896/0
29 Aug 1947	12.6	0.34	
24 Sep 1947	-15.9	-0.43	
24 Oct 1947	-7.8	-0.21	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 213 (cont'd)			
12 Nov 1947			230/42
28 Nov 1947	12.6	0.34	
23 Dec 1947			83/18
30 Dec 1947			Involved in contamination accident.
4 Feb 1948	0.4	0.01	
10 Mar 1948	-11.9	-0.32	
6 Apr 1948	-7.8	-0.21	
5 May 1948	-7.8	-0.21	
4 Oct 1948	-15.9	-0.43	
3 Nov 1948	4.4	0.12	
9 Dec 1948			53/0
10 Feb 1949	-15.9	-0.43	
15 Feb 1949			271/1
8 Mar 1949	-11.9	-0.32	
3 Jun 1949	-24.1	-0.65	
19 Sept 1949			117/2
6 Oct 1949	21.9	0.59	
18 Oct 1949			80/1
26 Jan 1950	-7.8	-0.21	
29 Mar 1951	-1.1	-0.03	
2 Nov 1951	-2.2	-0.06	
7 Dec 1951	-7.8	-0.21	
28 Dec 1951	13.0	0.35	
7 Mar 1952	16.7	0.45	
9 Apr 1952	31.9	0.86	
2 Jun 1952	18.0	0.49	
12 Sep 1952	-2.6	-0.07	
18 Sep 1952	-5.2	-0.14	
7 Nov 1952	15.4	0.41	
9 Dec 1952	-0.7	-0.02	
31 Dec 1952	-1.1	-0.03	
21 Jan 1953	-0.3	-0.01	
7 Jul 1953	7.0	0.19	
11 Aug 1953	76.7	2.07	
26 Aug 1953	-0.7	-0.02	
19 Oct 1953	-1.1	-0.03	
11 Jan 1954	-2.6	-0.07	
8 Mar 1954	2.2	0.06	
23 Jul 1954	0.7	0.02	
27 Aug 1954	-2.6	-0.07	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 213 (cont'd)			
4 Oct 1954	-3.7	-0.10	
19 Oct 1954	1.9	0.05	
4 Nov 1954	2.6	0.07	
6 Dec 1954	1.1	0.03	
10 Jan 1955	1.1	0.03	
11 Feb 1955	5.6	0.15	
11 Mar 1955	-4.8	-0.13	
12 Apr 1955	-1.1	-0.03	
28 Apr 1955	2.2	0.06	
9 May 1955	5.2	-0.14	
8 Jun 1955	2.2	0.06	
11 Aug 1955	1.9	0.05	
7 Sep 1955	-1.1	-0.03	
6 Oct 1955	0.7	0.02	
4 Nov 1955	7.8	0.21	
6 Dec 1955	1.9	0.05	
10 Jan 1956	-5.6	-0.15	
20 Feb 1956	1.1	0.03	
26 Mar 1956	3.7	0.10	
24 Apr 1956	2.2	0.06	
14 May 1956	2.2	0.06	
14 Jun 1956	12.6	0.34	
3 Aug 1956	2.2	0.06	
29 Aug 1956	7.3	0.19	
28 Sep 1956	5.2	0.14	
26 Oct 1956	12.2	0.33	
27 Nov 1956	1.9	0.05	
31 Dec 1956	19.6	0.53	
9 Jan 1957	5.6	0.15	
8 Feb 1957	4.1	0.11	
2 Feb 1957	3.8	0.10	
3 Mar 1957	9.7	0.26	
30 Apr 1957	8.2	0.22	
12 Jun 1957	5.6	0.15	
29 Jul 1957	3.5	0.09	
9 Sep 1957	5.4	0.15	
10 Oct 1957	2.6	0.07	
14 Nov 1957	7.5	0.20	
19 Dec 1957	10.1	0.27	
27 Jan 1958	6.5	0.17	
13 Mar 1958	3.4	0.09	
19 May 1958	3.3	0.09	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 213 (cont'd)			
4 Jun 1958	7.0	0.19	
11 Jul 1958	6.1	0.16	
18 Aug 1958	6.2	0.17	
3 Oct 1958	3.9	0.10	
12 Nov 1958	5.1	0.14	
12 Jan 1959	11.3	0.31	
12 Mar 1959	17.7	0.48	
17 Apr 1959	6.5	0.17	
16 Jun 1959	7.4	0.20	
9 Jul 1959	7.8	0.21	
20 Jul 1959	7.2	0.19	
4 Sep 1959	8.3	0.22	
23 Oct 1959	10.2	0.27	
2 Dec 1959	4.5	0.12	
22 Jan 1960	0.5	0.01	
8 Mar 1960	4.5	0.12	
19 Apr 1960	6.5	0.18	
25 May 1960	7.5	0.20	
11 Jul 1960	5.0	0.14	
26 Aug 1960	6.0	0.16	
7 Oct 1960	8.7	0.23	
18 Nov 1960	4.8	0.13	
28 Feb 1961	5.7	0.15	
11 Apr 1961	4.7	0.13	
26 May 1961	2.2	0.06	
15 Aug 1961	0.0	0.00	
18 Oct 1961	8.8	0.24	
7 Dec 1961	3.3	0.09	
19 Jan 1962	4.8	0.13	
8 Mar 1962	2.3	0.06	
26 Apr 1962	5.5	0.15	
5 Jun 1962	14.0	0.38	
16 Jul 1962	3.7	0.10	
13 Sep 1962	0.0	0.00	
18 Oct 1962	0.0	0.00	
6 Dec 1962	4.3	0.12	
18 Jan 1963	8.8	0.24	
4 Mar 1963	4.7	0.13	
22 Apr 1963	7.2	0.19	
6 Jun 1963	7.7	0.21	
23 Jul 1963	11.0	0.30	
23 Sep 1963	5.0	0.14	
20 Nov 1963	0.0	0.00	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 213 (cont'd)			
15 Jan 1964	6.2	0.17	
3 Mar 1964	0.0	0.00	
24 Apr 1964	5.2	0.14	
26 May 1964	8.3	0.23	
10 Jul 1964	3.5	0.09	
19 Aug 1964	4.7	0.13	
1 Oct 1964	6.5	0.18	
11 Nov 1964	3.5	0.09	
23 Dec 1964	1.7	0.05	
10 Feb 1965	5.2	0.14	
25 Mar 1965	7.7	0.21	
5 May 1965	8.5	0.23	
27 Oct 1965	1.5	0.04	
29 Apr 1966	4.0	0.11	
21 Oct 1966	0.0	0.00	
12 May 1967	3.2	0.09	
30 Aug 1967			Involved in high airborne ²³⁸ Pu contamination. Nose wipe 0.0 cpm.
20 Sep 1967	28.3	0.77	
12 Oct 1967	2.5	0.07	
15 Nov 1967	20.0	0.54	
19 Dec 1967	5.8	0.16	
18 Jan 1968	10.8	0.29	
16 Feb 1968	14.3	0.39	
15 Mar 1968	55.0	1.49	
18 Apr 1968	30.2	0.82	
19 Apr 1968	23.2	0.63	
29 May 1968	14.0	0.38	
14 Jun 1968	0.0	0.00	
16 Jan 1969	11.8	0.32	
15 Jul 1969	1.0	0.29	
15 Jul 1969	0.0	0.00	
15 Jul 1969	0.0	0.00	
15 Jan 1970	8.3	0.23	
16 Jul 1970	6.3	0.17	
14 Jan 1971	6.3	0.17	
17 Jan 1972	3.5	0.1	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0242			
12 Mar 1947	0.4	0.01	
26 Mar 1947			126-273
2 May 1947	-7.8	-0.21	
6 Jun 1947	4.4	0.12	
9 Jul 1947	-28.1	-0.76	
18 Jul 1947			122
22 Jul 1947			139
8 Aug 1947	-3.7	-0.10	
5 Sep 1947	-3.7	-0.10	
2 Oct 1947	4.4	0.12	
7 Nov 1947	-20.0	-0.54	
8 Dec 1947	-15.9	-0.43	
6 Jan 1948	4.4	0.12	
4 Feb 1948	8.5	0.23	
4 Mar 1948	-11.9	-0.32	
2 Apr 1948	8.5	0.23	
5 May 1948	-11.9	-0.32	
17 May 1948			1427-625
1 Jun 1948	12.6	03.4	
7 Jul 1948	20.7	0.56	
16 Aug 1948	-15.9	-0.43	
19 Aug 1948			399-220
3 Sep 1948			171-130
7 Sep 1948			1281-328
21 Sep 1948	16.7	0.45	
20 Oct 1948	-11.9	-0.32	
2 Dec 1948	-3.7	-0.10	
6 Jan 1949	-3.7	-0.10	
7 Feb 1949	4.4	0.12	
10 Mar 1949	8.5	0.23	
13 Apr 1949	-28.0	-0.76	
18 May 1949	-7.8	-0.21	
16 Jun 1949	-7.8	-0.21	
13 Jul 1949	-3.7	-0.10	
15 Aug 1949	4.4	0.12	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0242 cont'd)			
16 Sep 1949	-28.0	-0.76	
5 Oct 1949			384-117
18 Oct 1949	21.9	0.59	
31 Oct 1949			264-853
4 Nov 1949			127-1
15 Nov 1949	2.2	0.06	
30 Dec 1949	27.0	0.73	
19 Jan 1950	7.0	0.19	
20 Feb 1950	2.6	-0.07	
16 Mar 1950	-6.3	-0.17	
18 Apr 1950	-1.1	-0.03	
17 May 1950	13.0	0.35	
20 Jun 1950	18.1	0.49	
21 Aug 1950	-0.37	-0.01	
21 Sep 1950	20.0	0.54	
21 Oct 1950	2.2	0.06	
22 Nov 1950	25.9	0.70	
21 Jan 1951	18.1	0.49	
21 Feb 1951	19.6	0.53	
28 Mar 1951	-1.1	-0.03	
26 Jun 1951	25.6	0.69	
13 Aug 1951	-7.8	-0.21	
20 Sep 1951	34.0	0.92	
6 Dec 1951	14.4	0.39	
26 Jan 1952	-1.9	-0.05	
26 Feb 1952	-2.6	-0.07	
24 Mar 1952	17.0	0.46	
25 Apr 1952	2.2	0.06	
17 Jun 1952	10.0	0.27	
18 Jul 1952	15.2	0.41	
18 Aug 1952	21.9	0.59	
17 Sep 1952	18.9	0.51	
9 Dec 1952	34.8	0.94	
31 Dec 1952	2.2	0.06	
20 Jan 1953	7.0	-0.19	
7 May 1953	2.2	0.06	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0242 (cont'd)			
3 Jun 1953	21.9	0.59	
7 Jul 1953	5.5	0.15	
23 Jul 1953	17.3	0.46	
11 Aug 1953	66.7	1.80	
2 Sep 1953	-7.8	-0.21	
19 Oct 1953	-4.8	-0.13	
11 May 1954	17.4	0.47	
22 Jul 1954	14.6	0.39	
24 Aug 1954	3.7	0.10	
27 Sep 1954	12.6	0.34	
26 Oct 1954	8.1	0.22	
30 Nov 1954	6.3	0.17	
29 Dec 1954	-2.6	-0.07	
18 Feb 1955	5.2	0.14	
8 Mar 1955	10.0	0.27	
29 Mar 1955	-5.6	-0.15	
26 Apr 1955	15.0	0.39	
27 May 1955	9.6	0.26	
5 Jun 1955	13.7	0.37	
29 Aug 1955	1.9	0.05	
27 Sep 1955	12.2	0.33	
27 Oct 1955	4.8	0.13	
28 Nov 1955	7.8	0.21	
29 Dec 1955	9.3	0.25	
30 Jan 1956	7.0	0.19	
23 Feb 1956	51.9	1.40	
1 Mar 1956	21.5	0.58	
12 Mar 1956	16.0	0.43	
20 Apr 1956	16.7	0.45	
11 May 1956	9.6	0.26	
8 Jun 1956	20.0	0.59	
21 Jun 1956	21.9	0.43	
27 Jul 1956	0.7	-0.02	
30 Aug 1956	8.2	0.22	
28 Sep 1956	-5.2	-0.14	
26 Oct 1956	21.1	0.57	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0242 (cont'd)			
7 Nov 1956	5.6	-0.15	
7 Dec 1956	15.2	0.41	
8 Jan 1957	10.7	0.29	
8 Feb 1957	16.7	0.45	
8 Mar 1957	5.9	0.16	
28 Mar 1957	8.9	0.24	
19 Apr 1957	16.7	0.45	
20 May 1957	6.4	0.17	
19 Jun 1957	11.7	0.32	
19 Jul 1957	7.1	0.19	
22 Aug 1957	6.7	0.18	
24 Sep 1957	10.2	0.27	
25 Oct 1957	8.3	0.22	
26 Nov 1957	10.7	0.29	
6 Jan 1958	42.2	1.14	
17 Jan 1958	21.9	0.59	
10 Feb 1958	0.5	0.01	
26 Mar 1958	7.9	0.21	
5 May 1958	20.6	0.56	
1 Jun 1958	22.5	0.61	
11 Jun 1958	13.4	0.36	
25 Jul 1958	15.2	0.41	
5 Sep 1958	9.9	0.27	
20 Oct 1958	14.6	0.39	
3 Dec 1958	10.2	0.28	
16 Jan 1959	11.5	0.31	
5 Mar 1959	35.8	0.97	
23 Mar 1959	12.9	0.35	
4 May 1959	9.8	0.27	
15 Jun 1959	2.8	0.08	
4 Aug 1959	8.4	0.23	
17 Sep 1959	13.5	0.36	
29 Oct 1959	3.2	0.09	
14 Dec 1959	8.7	0.23	
29 Jan 1960	0.0	0.00	
17 Mar 1960	10.0	0.27	
19 Apr 1960	8.2	0.22	

Table 1. Radiourinalysis and nose wipe data.

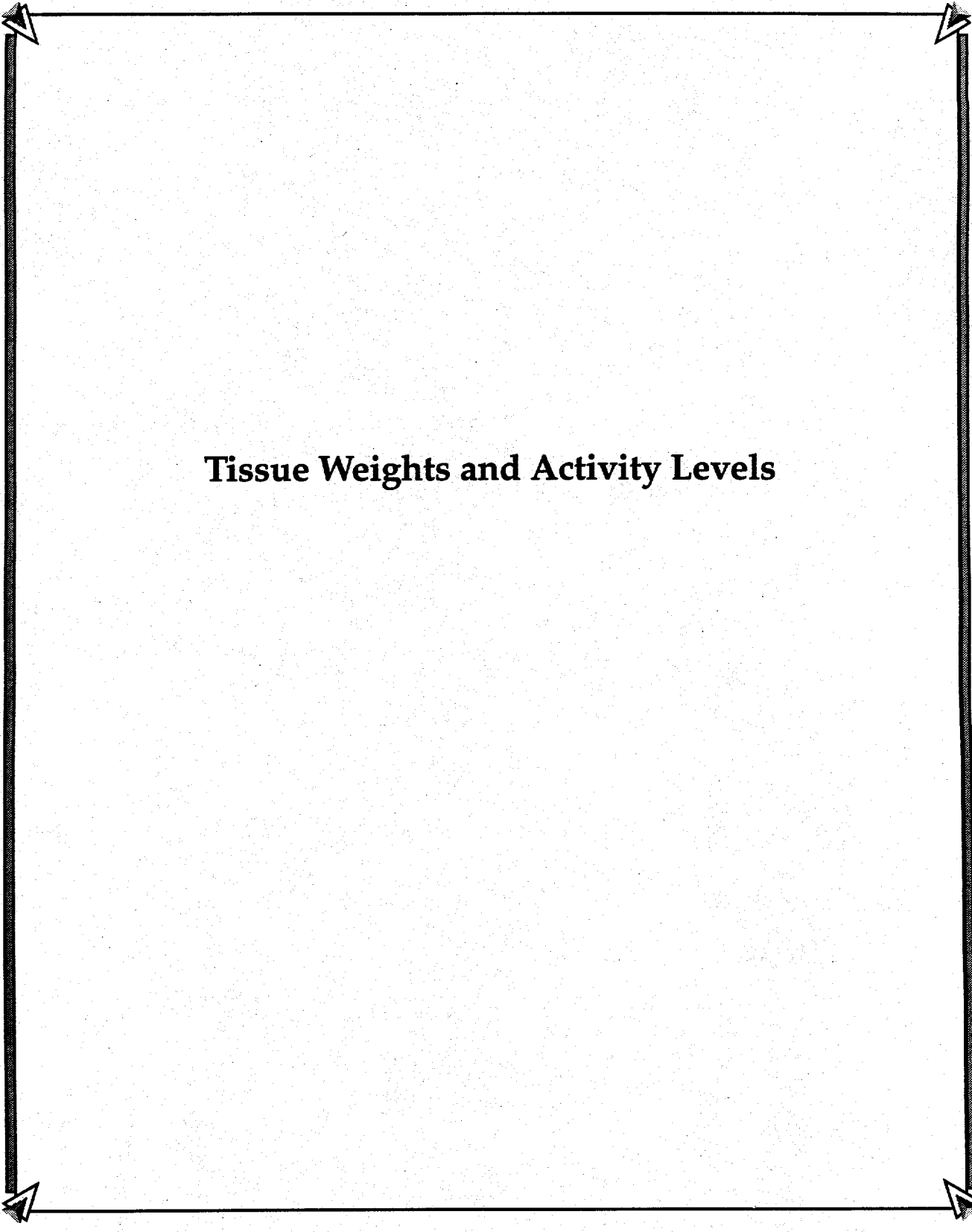
Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0242 (cont'd)			
19 Apr 1960	8.2	0.22	
5 Jun 1960	7.4	0.20	
18 Jul 1960	8.5	0.23	
25 Jul 1960	8.0	0.22	
8 Sep 1960	7.0	0.19	
28 Oct 1960	13.7	0.37	
1 Dec 1960	8.5	0.23	
19 Dec 1960	5.2	0.14	
30 Jan 1961	7.5	0.20	
20 Feb 1961	5.9	0.16	
10 Apr 1961	6.7	0.18	
18 May 1961	11.7	0.32	
30 Jun 1961	3.2	0.09	
14 Aug 1961	9.9	0.27	
5 Oct 1961	0.0	0.00	
24 Nov 1961	4.2	0.11	
15 Jan 1962	10.9	0.29	
2 Mar 1962	8.7	0.23	
23 Apr 1962	7.5	0.20	
31 May 1962	7.4	0.20	
9 Jul 1962	8.5	0.23	
27 Aug 1962	1.0	0.03	
16 Oct 1962	8.0	0.22	
28 Nov 1962	10.0	0.27	
14 Jan 1963	3.2	0.09	
11 Mar 1963	5.0	0.14	
15 Apr 1963	9.4	0.25	
3 Jun 1963	1.0	0.03	
18 Jul 1963	8.9	0.24	
9 Sep 1963	12.5	0.34	
28 Oct 1963	10.5	0.28	
16 Dec 1963	14.4	0.39	
31 Jan 1964	11.4	0.31	
19 Mar 1964	0.7	0.02	
3 May 1964	4.5	0.12	
17 Jun 1964	15.4	0.42	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0242 (cont'd)			
30 Jul 1964	1.3	0.04	
10 Sep 1964	6.5	0.18	
5 Nov 1964	11.7	0.32	
14 Dec 1964	29.7	0.80	
28 Jan 1965	26.7	0.72	
5 Mar 1965	12.5	0.34	
16 Apr 1965	10.9	0.29	
19 Jul 1965	0.0	0.0	
18 Oct 1965	2.5	0.07	
17 Jan 1966	3.7	0.10	
14 Apr 1966	3.7	0.10	
19 Jul 1966	12.4	0.33	
21 Nov 1966	15.0	0.41	
20 Feb 1967	25.4	0.69	
22 May 1967	10.7	0.29	
21 Aug 1967	7.0	0.19	
20 Nov 1967	10.9	0.29	
21 Feb 1968	13.7	0.37	
24 May 1968	4.3	0.12	
21 Aug 1968	16.4	0.44	
21 Nov 1968	4.5	0.12	
20 Feb 1969	12.9	0.35	
8 May 1969	15.4	0.42	
8 Aug 1969	15.4	0.42	
8 Aug 1969	8.0	0.22	
8 Aug 1969	11.2	0.30	
8 Aug 1969	10.7	0.29	
8 Aug 1969	11.2	0.30	
5 Feb 1970	12.9	0.35	
7 Feb 1970	19.5	0.53	
6 Aug 1970	9.4	0.25	
5 Nov 1970	22.7	0.61	
4 Feb 1971	17.4	0.47	
12 May 1971	15.4	0.42	
5 Aug 1971	0.0	0.0	
4 Nov 1971	1.0	0.03	
7 Feb 1972	22.3	0.60	

Table 1. Radiourinalysis and nose wipe data.

Date	²³⁹ Pu in Urine		Other including Nose Wipe cpm (Left/Right)
	mBq/24h	p Ci/ 24 h	
Case 0202 (cont'd)			
27 Apr 1972	8.7	0.23	
26 May 1972	23.5	0.63	
23 Jun 1972	8.5	0.23	
7 Mar 1975	11.2	0.30	



Tissue Weights and Activity Levels

LEFT SIDE of WHOLE BODY*
BONE WET WEIGHT
(grams)

TISSUE	CASE 0193	CASE 0208	CASE 0212	CASE 0213	CASE 0242
CARPALS	2.80×10^{01}	2.76×10^{01}	4.16×10^{01}	3.02×10^{01}	2.93×10^{01}
CLAVICLE	4.86×10^{01}	3.55×10^{01}	5.25×10^{01}	4.37×10^{01}	5.00×10^{01}
CRANIUM	3.87×10^{02}	4.21×10^{02}	4.59×10^{02}	4.03×10^{02}	4.10×10^{02}
FEMUR	9.08×10^{02}	7.37×10^{02}	9.06×10^{02}	7.59×10^{02}	9.74×10^{02}
FIBULA	7.58×10^{01}	6.79×10^{01}	1.16×10^{02}	9.06×10^{01}	9.17×10^{01}
HUMERUS	2.53×10^{02}	2.19×10^{02}	3.29×10^{02}	2.79×10^{02}	2.89×10^{02}
MANDIBLE	4.53×10^{01}	3.30×10^{01}	4.87×10^{01}	5.14×10^{01}	2.72×10^{01}
METACARPALS	4.37×10^{01}	3.79×10^{01}	5.95×10^{01}	4.53×10^{01}	4.48×10^{01}
METATARSALS	6.26×10^{01}	5.76×10^{01}	8.33×10^{01}	6.53×10^{01}	7.40×10^{01}
PATELLA	3.71×10^{01}	3.83×10^{01}	4.10×10^{01}	3.08×10^{01}	3.40×10^{01}
PELVIS	4.49×10^{02}	5.09×10^{02}	6.04×10^{02}	5.06×10^{02}	4.40×10^{02}
PHALANGES HAND	3.55×10^{01}	3.06×10^{01}	5.35×10^{01}	4.03×10^{01}	3.53×10^{01}
PHALANGES FOOT	2.41×10^{01}	2.37×10^{01}	3.10×10^{01}	2.75×10^{01}	2.13×10^{01}
RADIUS	7.21×10^{01}	6.50×10^{01}	9.25×10^{01}	7.88×10^{01}	7.40×10^{01}
RIBS 1-12	2.64×10^{02}	2.15×10^{02}	3.79×10^{02}	3.06×10^{02}	3.30×10^{02}
SCAPULA	1.26×10^{02}	9.88×10^{01}	1.54×10^{02}	1.31×10^{02}	1.48×10^{02}
TARSALS	1.93×10^{02}	2.08×10^{02}	2.78×10^{02}	2.11×10^{02}	2.39×10^{02}
TEETH	NA	2.20×10^{01}	3.18×10^{00}	1.16×10^{01}	NA
TIBIA	4.42×10^{02}	4.40×10^{02}	5.49×10^{02}	4.62×10^{02}	5.44×10^{02}
ULNA	8.40×10^{01}	7.71×10^{01}	1.07×10^{02}	9.26×10^{01}	1.02×10^{02}
VERTEBRAE ^b	5.10×10^{02}	5.25×10^{02}	5.74×10^{02}	6.05×10^{02}	6.07×10^{02}

a Coccyx, Hyboid, Sacrum, and Sternum were analyzed in toto.

b Odd numbered vertebrae were analyzed, weight given is for even numbered vertebrae.
NA Not analyzed.

CASE 0193 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
CALCANEUS	8.34 x 10 ⁰¹	2.2 x 10 ⁰¹	2.4 x 10 ⁰⁰	1.6 x 10 ⁻⁰¹	2.8 x 10 ⁻⁰¹	4.1 x 10 ⁻⁰²	2.3 x 10 ⁰¹	7.7 x 10 ⁻⁰¹
CANINE Left Lower 3	1.30 x 10 ⁰⁰	8.2 x 10 ⁻⁰¹	2.3 x 10 ⁰⁰	7.3 x 10 ⁻⁰¹	-2.0 x 10 ⁻⁰¹	2.7 x 10 ⁻⁰¹	9.6 x 10 ⁰⁰	1.2 x 10 ⁰⁰
CANINE Right Lower 3	1.17 x 10 ⁰⁰	8.8 x 10 ⁻⁰¹	7.6 x 10 ⁻⁰¹	3.4 x 10 ⁻⁰¹	7.6 x 10 ⁻⁰²	1.8 x 10 ⁻⁰¹	8.5 x 10 ⁰⁰	1.2 x 10 ⁰⁰
CAPITATE	4.58 x 10 ⁰⁰	1.1 x 10 ⁰⁰	2.0 x 10 ⁰⁰	7.9 x 10 ⁻⁰¹	2.4 x 10 ⁻⁰¹	2.1 x 10 ⁻⁰¹	3.0 x 10 ⁰¹	1.9 x 10 ⁰⁰
CLAVICLE ^b Acromial End-Left	1.15 x 10 ⁰¹	3.7 x 10 ⁰⁰	2.7 x 10 ⁰⁰	2.9 x 10 ⁻⁰¹	2.5 x 10 ⁻⁰¹	9.0 x 10 ⁻⁰²	2.3 x 10 ⁰¹	9.8 x 10 ⁻⁰¹
CLAVICLE Acromial End-Right	1.46 x 10 ⁰¹	2.67 x 10 ⁰⁰					3.17 x 10 ⁰¹	1.15 x 10 ⁰⁰
CLAVICLE ^b Shaft -Left	2.40 x 10 ⁰¹	7.7 x 10 ⁰⁰	1.1 x 10 ⁰⁰	1.4 x 10 ⁻⁰¹	1.4 x 10 ⁻⁰¹	4.4 x 10 ⁻⁰²	1.1 x 10 ⁰¹	4.4 x 10 ⁻⁰¹
CLAVICLE Shaft -Right	2.05 x 10 ⁰¹	9.88 x 10 ⁰⁰					1.36 x 10 ⁰¹	2.03 x 10 ⁻⁰¹
CLAVICLE ^b Sternal End-Left	1.31 x 10 ⁰¹	4.2 x 10 ⁰⁰	2.3 x 10 ⁰⁰	2.6 x 10 ⁻⁰¹	2.7 x 10 ⁻⁰¹	8.7 x 10 ⁻⁰²	1.8 x 10 ⁰¹	8.0 x 10 ⁻⁰¹
CLAVICLE Sternal End-Right	1.20 x 10 ⁰¹	2.66 x 10 ⁰⁰					2.11 x 10 ⁰¹	1.15 x 10 ⁰⁰
COCCYX	1.92 x 10 ⁰¹	3.44 x 10 ⁰⁰	3.88 x 10 ⁰⁰	8.24 x 10 ⁻⁰¹	5.81 x 10 ⁻⁰¹	2.91 x 10 ⁻⁰¹	4.10 x 10 ⁰¹	2.71 x 10 ⁰⁰
CUBOID	1.56 x 10 ⁰¹	3.42 x 10 ⁰⁰	1.56 x 10 ⁰⁰	2.63 x 10 ⁻⁰¹	2.63 x 10 ⁻⁰¹	9.75 x 10 ⁻⁰²	2.75 x 10 ⁰¹	1.23 x 10 ⁰⁰
CUNEIFORM Intermediate	5.30 x 10 ⁰⁰	1.5 x 10 ⁰⁰	4.4 x 10 ⁰⁰	1.2 x 10 ⁰⁰	-4.5 x 10 ⁻⁰²	5.3 x 10 ⁻⁰¹	2.9 x 10 ⁰¹	2.4 x 10 ⁰⁰
CUNEIFORM Lateral	6.95 x 10 ⁰⁰	1.7 x 10 ⁰⁰	2.7 x 10 ⁰⁰	4.9 x 10 ⁻⁰¹	4.1 x 10 ⁻⁰¹	1.8 x 10 ⁻⁰¹	2.6 x 10 ⁰¹	1.5 x 10 ⁰⁰
CUNEIFORM Medial	1.39 x 10 ⁰¹	4.0 x 10 ⁰⁰	1.9 x 10 ⁰⁰	2.9 x 10 ⁻⁰¹	1.0 x 10 ⁻⁰¹	1.1 x 10 ⁻⁰¹	2.4 x 10 ⁰¹	1.1 x 10 ⁰⁰
FEMUR Distal End	2.18 x 10 ⁰²	4.78 x 10 ⁰¹	2.64 x 10 ⁰⁰	1.99 x 10 ⁻⁰¹	4.01 x 10 ⁻⁰¹	7.32 x 10 ⁻⁰²	2.34 x 10 ⁰¹	2.26 x 10 ⁰⁰
FEMUR Distal Shaft	1.22 x 10 ⁰²	4.90 x 10 ⁰¹	1.25 x 10 ⁰⁰	1.70 x 10 ⁻⁰¹	1.16 x 10 ⁻⁰¹	4.09 x 10 ⁻⁰²	1.01 x 10 ⁰¹	4.53 x 10 ⁻⁰¹

Previously published data rounded to 3 significant figures, where available.

Right side of body was analyzed unless otherwise noted.

Concentrations for bone are per kg of ash.

© Revised from previously published value.

^b The wet weights were estimated.

CASE 0193 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
FEMUR	1.12 x 10 ⁰²	5.58 x 10 ⁰¹	1.44 x 10 ⁰⁰	1.49 x 10 ⁻⁰¹	1.16 x 10 ⁻⁰¹	3.88 x 10 ⁻⁰²	1.07 x 10 ⁰¹	4.66 x 10 ⁻⁰¹
Medial Shaft								
FEMUR	2.20 x 10 ⁰²	5.50 x 10 ⁰¹	2.51 x 10 ⁰⁰	1.94 x 10 ⁻⁰¹	6.36 x 10 ⁻⁰¹	2.42 x 10 ⁻⁰¹	2.67 x 10 ⁰¹	1.42 x 10 ⁰⁰
Proximal End								
FEMUR	1.21 x 10 ⁰²	6.72 x 10 ⁰¹	9.33 x 10 ⁻⁰¹	1.02 x 10 ⁻⁰¹	-1.24 x 10 ⁻⁰²	3.22 x 10 ⁻⁰²	1.04 x 10 ⁰¹	4.76 x 10 ⁻⁰¹
Proximal Shaft								
FIBULA	1.55 x 10 ⁰¹	5.10 x 10 ⁰⁰	1.91 x 10 ⁰⁰	2.55 x 10 ⁻⁰¹	1.50 x 10 ⁻⁰¹	7.84 x 10 ⁻⁰²	1.74 x 10 ⁰¹	8.56 x 10 ⁻⁰¹
Distal End								
FIBULA	2.13 x 10 ⁰¹	1.19 x 10 ⁰¹	6.39 x 10 ⁻⁰¹	1.47 x 10 ⁻⁰¹	1.26 x 10 ⁻⁰²	5.88 x 10 ⁻⁰²	6.10 x 10 ⁰⁰	3.57 x 10 ⁻⁰¹
Distal Shaft								
FIBULA	1.46 x 10 ⁰¹	3.2 x 10 ⁰⁰	3.6 x 10 ⁰⁰	4.0 x 10 ⁰⁰	3.0 x 10 ⁻⁰¹	1.1 x 10 ⁻⁰¹	4.4 x 10 ⁰¹	3.6 x 10 ⁰⁰
Proximal End								
FIBULA	2.70 x 10 ⁰¹	1.53 x 10 ⁰¹	7.82 x 10 ⁻⁰¹	1.85 x 10 ⁻⁰¹	6.95 x 10 ⁻⁰²	3.91 x 10 ⁻⁰²	5.25 x 10 ⁰⁰	2.61 x 10 ⁻⁰¹
Proximal Shaft								
FOOT PHALANGE	3.73 x 10 ⁰⁰	8.8 x 10 ⁻⁰¹	2.5 x 10 ⁰⁰	1.1 x 10 ⁰⁰	7.6 x 10 ⁻⁰²	1.5 x 10 ⁻⁰¹	3.2 x 10 ⁰¹	2.3 x 10 ⁰⁰
Distal - 1								
FOOT PHALANGE	5.5 x 10 ⁻⁰¹	8 x 10 ⁻⁰²	9 x 10 ⁰⁰	6 x 10 ⁰⁰	3 x 10 ⁰⁰	2 x 10 ⁰⁰	8 x 10 ⁰¹	1 x 10 ⁰¹
Distal - 2								
FOOT PHALANGE	5.0 x 10 ⁻⁰¹	1.2 x 10 ⁻⁰¹	6.7 x 10 ⁰⁰	3.9 x 10 ⁰⁰	1.9 x 10 ⁰⁰	1.7 x 10 ⁰⁰	4.3 x 10 ⁰¹	6.2 x 10 ⁰⁰
Distal - 3								
FOOT PHALANGE	4.5 x 10 ⁻⁰¹	6.0 x 10 ⁻⁰²	2.6 x 10 ⁰¹	8.9 x 10 ⁰⁰	2.8 x 10 ⁰⁰	3.3 x 10 ⁰⁰	6.8 x 10 ⁰¹	1.2 x 10 ⁰¹
Distal - 4								
FOOT PHALANGE	6.4 x 10 ⁻⁰¹	8 x 10 ⁻⁰²	1 x 10 ⁰¹	8 x 10 ⁰⁰	-2.3 x 10 ⁰⁰	4 x 10 ⁰⁰	4 x 10 ⁰¹	9 x 10 ⁰⁰
Distal - 5								
FOOT PHALANGE	9.1 x 10 ⁻⁰¹	4.7 x 10 ⁻⁰¹	2.3 x 10 ⁰⁰	2.6 x 10 ⁰⁰	-5.7 x 10 ⁻⁰¹	1.6 x 10 ⁰⁰	1.4 x 10 ⁰¹	2.8 x 10 ⁰⁰
Medial - 2								
FOOT PHALANGE	6.8 x 10 ⁻⁰¹	2.0 x 10 ⁻⁰¹	6.7 x 10 ⁰⁰	5.3 x 10 ⁰⁰	3.3 x 10 ⁰⁰	4.0 x 10 ⁰⁰	2.3 x 10 ⁰¹	5.3 x 10 ⁰⁰
Medial - 3								
FOOT PHALANGE	4.4 x 10 ⁻⁰¹	8 x 10 ⁻⁰²	2 x 10 ⁰¹	1 x 10 ⁰¹	2 x 10 ⁰⁰	3 x 10 ⁰⁰	6 x 10 ⁰¹	1 x 10 ⁰¹
Medial - 4								
FOOT PHALANGE	3.9 x 10 ⁻⁰¹	6 x 10 ⁻⁰²	2 x 10 ⁰²	3.22 x 10 ⁰¹	-2 x 10 ⁰⁰	3 x 10 ⁰⁰	5 x 10 ⁰¹	1 x 10 ⁰¹
Medial - 5								

Previously published data rounded to 3 significant figures, where available.

Right side of body was analyzed unless otherwise noted.

Concentrations for bone are per kg of ash.

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b The wet weights were estimated.

CASE 0193 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
FOOT PHALANGE Proximal - 1	6.77 x 10 ⁰⁰	2.25 x 10 ⁰⁰	8.44 x 10 ⁻⁰¹	2.67 x 10 ⁻⁰¹	1.93 x 10 ⁻⁰¹	1.19 x 10 ⁻⁰¹	2.07 x 10 ⁰¹	1.21 x 10 ⁰⁰
FOOT PHALANGE Proximal - 2	2.49 x 10 ⁰⁰	3.9 x 10 ⁻⁰¹	7.52 x 10 ⁰⁰	3.42 x 10 ⁰⁰	1.03 x 10 ⁰⁰	1.03 x 10 ⁰⁰	3.62 x 10 ⁰¹	3.25 x 10 ⁰⁰
FOOT PHALANGE Proximal - 3	1.81 x 10 ⁰⁰	4.0 x 10 ⁻⁰¹	7.8 x 10 ⁰⁰	3.3 x 10 ⁰⁰	8.3 x 10 ⁻⁰²	9.2 x 10 ⁻⁰¹	3.4 x 10 ⁰¹	3.3 x 10 ⁰⁰
FOOT PHALANGE Proximal - 4	1.56 x 10 ⁰⁰	3.5 x 10 ⁻⁰¹	3.7 x 10 ⁰⁰	1.5 x 10 ⁰⁰	3.8 x 10 ⁻⁰¹	6.7 x 10 ⁻⁰¹	3.5 x 10 ⁰¹	3.7 x 10 ⁰⁰
FOOT PHALANGE Proximal - 5	1.75 x 10 ⁰⁰	4.1 x 10 ⁻⁰¹	2.1 x 10 ⁰¹	2.8 x 10 ⁰⁰	2.4 x 10 ⁻⁰¹	3.3 x 10 ⁻⁰¹	2.7 x 10 ⁰¹	2.9 x 10 ⁰⁰
FRONTAL # 1	4.43 x 10 ⁰¹	2.19 x 10 ⁰¹	1.49 x 10 ⁰⁰	2.25 x 10 ⁻⁰¹	4.50 x 10 ⁻⁰¹	1.34 x 10 ⁻⁰¹	1.64 x 10 ⁰¹	7.97 x 10 ⁻⁰¹
FRONTAL # 2	1.22 x 10 ⁰¹	7.60 x 10 ⁰⁰	1.08 x 10 ⁰⁰	1.89 x 10 ⁻⁰¹	6.58 x 10 ⁻⁰¹	1.27 x 10 ⁻⁰¹	1.39 x 10 ⁰¹	6.58 x 10 ⁻⁰¹
FRONTAL # 3	1.96 x 10 ⁰¹	1.08 x 10 ⁰¹	1.55 x 10 ⁰⁰	2.16 x 10 ⁻⁰¹	2.35 x 10 ⁻⁰¹	8.64 x 10 ⁻⁰²	1.78 x 10 ⁰¹	8.64 x 10 ⁻⁰¹
HAMATE	5.60 x 10 ⁰⁰	1.42 x 10 ⁰⁰	3.71 x 10 ⁰⁰	1.08 x 10 ⁰⁰	8.92 x 10 ⁻⁰¹	4.23 x 10 ⁻⁰¹	2.82 x 10 ⁰¹	1.74 x 10 ⁰⁰
HAND PHALANGE Distal - 1	1.93 x 10 ⁰⁰	5.5 x 10 ⁻⁰¹	5.6 x 10 ⁰⁰	1.2 x 10 ⁰⁰	4.9 x 10 ⁻⁰¹	3.6 x 10 ⁻⁰¹	3.2 x 10 ⁰¹	2.6 x 10 ⁰⁰
HAND PHALANGE Distal - 2	8.80 x 10 ⁻⁰¹	2.5 x 10 ⁻⁰¹	4.7 x 10 ⁰⁰	1.7 x 10 ⁰⁰	1.1 x 10 ⁰⁰	9.3 x 10 ⁻⁰¹	2.7 x 10 ⁰¹	3.6 x 10 ⁰⁰
HAND PHALANGE Distal - 3	1.06 x 10 ⁰⁰	2.4 x 10 ⁻⁰¹	4.0 x 10 ⁰⁰	1.8 x 10 ⁰⁰	6.9 x 10 ⁻⁰¹	6.9 x 10 ⁻⁰¹	3.5 x 10 ⁰¹	4.3 x 10 ⁰⁰
HAND PHALANGE Distal - 4	1.23 x 10 ⁰⁰	2.0 x 10 ⁻⁰¹	1.7 x 10 ⁰⁰	2.7 x 10 ⁰⁰	0.0 x 10 ⁰⁰	1.2 x 10 ⁰⁰	3.5 x 10 ⁰¹	4.8 x 10 ⁰⁰
HAND PHALANGE Distal - 5	7.40 x 10 ⁻⁰¹	1.4 x 10 ⁻⁰¹	8.6 x 10 ⁰⁰	5.7 x 10 ⁰⁰	5.2 x 10 ⁰⁰	2.4 x 10 ⁰⁰	4.1 x 10 ⁰¹	6.2 x 10 ⁰⁰
HAND PHALANGE Medial - 2	1.95 x 10 ⁰⁰	6.1 x 10 ⁻⁰¹	3.8 x 10 ⁰⁰	2.3 x 10 ⁰⁰	6.6 x 10 ⁻⁰¹	6.6 x 10 ⁻⁰¹	2.3 x 10 ⁰¹	2.2 x 10 ⁰⁰
HAND PHALANGE Medial - 3	2.57 x 10 ⁰⁰	7.3 x 10 ⁻⁰¹	3.6 x 10 ⁰⁰	1.8 x 10 ⁰⁰	8.2 x 10 ⁻⁰¹	1.3 x 10 ⁰⁰	2.2 x 10 ⁰¹	2.7 x 10 ⁰⁰
HAND PHALANGE Medial - 4	2.32 x 10 ⁰⁰	9.2 x 10 ⁻⁰¹	6.8 x 10 ⁰⁰	1.6 x 10 ⁰⁰	4.0 x 10 ⁻⁰¹	3.6 x 10 ⁻⁰²	1.5 x 10 ⁰¹	1.7 x 10 ⁰⁰

Previously published data rounded to 3 significant figures, where available.

Right side of body was analyzed unless otherwise noted.

Concentrations for bone are per kg of ash.

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b The wet weights were estimated.

CASE 0193 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
HAND PHALANGE Medial - 5	1.38 x 10 ⁰⁰	3.6 x 10 ⁻⁰¹	9.6 x 10 ⁰⁰	2.8 x 10 ⁰⁰	-1.9 x 10 ⁻⁰¹	2.8 x 10 ⁻⁰¹	2.2 x 10 ⁰¹	3.1 x 10 ⁰⁰
HAND PHALANGE Proximal - 1	4.07 x 10 ⁰⁰	1.19 x 10 ⁰⁰	3.14 x 10 ⁰⁰	1.23 x 10 ⁰⁰	7.84 x 10 ⁻⁰¹	4.76 x 10 ⁻⁰¹	2.46 x 10 ⁰¹	1.74 x 10 ⁰⁰
HAND PHALANGE Proximal - 2	5.18 x 10 ⁰⁰	1.73 x 10 ⁰⁰	1.50 x 10 ⁰⁰	6.94 x 10 ⁻⁰¹	3.85 x 10 ⁻⁰¹	2.70 x 10 ⁻⁰¹	1.72 x 10 ⁰¹	1.21 x 10 ⁰⁰
HAND PHALANGE Proximal - 3	6.10 x 10 ⁰⁰	2.14 x 10 ⁰⁰	2.74 x 10 ⁰⁰	6.23 x 10 ⁻⁰¹	2.49 x 10 ⁻⁰¹	1.25 x 10 ⁻⁰¹	1.83 x 10 ⁰¹	1.11 x 10 ⁰⁰
HAND PHALANGE Proximal - 4	4.66 x 10 ⁰⁰	1.64 x 10 ⁰⁰	1.54 x 10 ⁰⁰	5.28 x 10 ⁻⁰¹	1.83 x 10 ⁻⁰¹	1.42 x 10 ⁻⁰¹	1.89 x 10 ⁰¹	1.22 x 10 ⁰⁰
HAND PHALANGE Proximal - 5	3.19 x 10 ⁰⁰	9.1 x 10 ⁻⁰¹	1.3 x 10 ⁰⁰	1.1 x 10 ⁰⁰	7.3 x 10 ⁻⁰¹	5.1 x 10 ⁻⁰¹	2.3 x 10 ⁰¹	1.8 x 10 ⁰⁰
HUMERUS Distal End	5.31 x 10 ⁰¹	1.66 x 10 ⁰¹	2.18 x 10 ⁰⁰	1.77 x 10 ⁻⁰¹	2.95 x 10 ⁻⁰¹	5.02 x 10 ⁻⁰²	2.20 x 10 ⁰¹	7.73 x 10 ⁻⁰¹
HUMERUS Distal Shaft	5.64 x 10 ⁰¹	2.86 x 10 ⁰¹	9.43 x 10 ⁻⁰¹	1.48 x 10 ⁻⁰¹	1.34 x 10 ⁻⁰¹	3.79 x 10 ⁻⁰²	9.79 x 10 ⁰⁰	4.16 x 10 ⁻⁰¹
HUMERUS Proximal End	8.08 x 10 ⁰¹	1.51 x 10 ⁰¹	3.31 x 10 ⁰⁰	3.92 x 10 ⁻⁰¹	4.40 x 10 ⁻⁰¹	9.25 x 10 ⁻⁰²	3.31 x 10 ⁰¹	1.24 x 10 ⁰⁰
HUMERUS Proximal Shaft	6.59 x 10 ⁰¹	2.78 x 10 ⁰¹	8.84 x 10 ⁻⁰¹	1.56 x 10 ⁻⁰¹	1.50 x 10 ⁻⁰¹	4.79 x 10 ⁻⁰²	1.36 x 10 ⁰¹	5.93 x 10 ⁻⁰¹
HYOID	2.90 x 10 ⁰⁰	5.7 x 10 ⁻⁰¹	6.7 x 10 ⁰⁰	1.5 x 10 ⁰⁰	7.0 x 10 ⁻⁰¹	8.2 x 10 ⁻⁰¹	3.7 x 10 ⁰¹	3.1 x 10 ⁰⁰
ILIUM Body	1.27 x 10 ⁰²	4.02 x 10 ⁰¹	7.64 x 10 ⁻⁰¹	1.91 x 10 ⁻⁰¹	5.35 x 10 ⁻⁰¹	1.04 x 10 ⁻⁰¹	2.29 x 10 ⁰¹	9.25 x 10 ⁻⁰¹
ILIUM Crest	8.49 x 10 ⁰¹	1.92 x 10 ⁰¹	2.92 x 10 ⁰⁰	2.23 x 10 ⁻⁰¹	6.78 x 10 ⁻⁰¹	9.39 x 10 ⁻⁰²	2.90 x 10 ⁰¹	1.01 x 10 ⁰⁰
INCISOR Left Lower 1	6.20 x 10 ⁻⁰¹	4.8 x 10 ⁻⁰¹	6.3 x 10 ⁻⁰¹	4.7 x 10 ⁻⁰¹	4.2 x 10 ⁻⁰¹	4.2 x 10 ⁻⁰¹	9.4 x 10 ⁰⁰	1.6 x 10 ⁰⁰
INCISOR Left Lower 2	7.70 x 10 ⁻⁰¹	3.8 x 10 ⁻⁰¹	1.1 x 10 ⁰⁰	6.1 x 10 ⁻⁰¹	-1.8 x 10 ⁻⁰¹	1.8 x 10 ⁻⁰¹	1.4 x 10 ⁰¹	2.1 x 10 ⁰⁰
INCISOR Right Lower 1	6.40 x 10 ⁻⁰¹	4.9 x 10 ⁻⁰¹	2.5 x 10 ⁰⁰	8.8 x 10 ⁻⁰¹	6.1 x 10 ⁻⁰¹	5.4 x 10 ⁻⁰¹	1.1 x 10 ⁰¹	1.8 x 10 ⁰⁰
INCISOR Right Lower 2	7.90 x 10 ⁻⁰¹	3.2 x 10 ⁻⁰¹	4.4 x 10 ⁰⁰	1.4 x 10 ⁰⁰	1.5 x 10 ⁰⁰	7.3 x 10 ⁻⁰¹	1.5 x 10 ⁰¹	2.5 x 10 ⁰⁰

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b The wet weights were estimated.

CASE 0193 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ISCHIUM	2.32 x 10 ⁰²	5.68 x 10 ⁰¹	2.00 x 10 ⁰⁰	1.23 x 10 ⁻⁰¹	5.10 x 10 ⁻⁰¹	5.04 x 10 ⁻⁰²	2.39 x 10 ⁰¹	7.54 x 10 ⁻⁰¹
LUNATE	2.59 x 10 ⁰⁰	6.10 x 10 ⁻⁰¹	1.80 x 10 ⁰⁰	1.09 x 10 ⁰⁰	9.29 x 10 ⁻⁰¹	8.74 x 10 ⁻⁰¹	3.08 x 10 ⁰¹	2.68 x 10 ⁰⁰
MANDIBLE	3.23 x 10 ⁰¹	1.51 x 10 ⁰¹	7.73 x 10 ⁻⁰¹	1.63 x 10 ⁻⁰¹	1.81 x 10 ⁻⁰¹	7.05 x 10 ⁻⁰²	1.19 x 10 ⁰¹	5.47 x 10 ⁻⁰¹
MAXILLA	2.74 x 10 ⁰¹	9.54 x 10 ⁰⁰	2.12 x 10 ⁰⁰	2.24 x 10 ⁻⁰¹	5.24 x 10 ⁻⁰¹	1.40 x 10 ⁻⁰¹	2.58 x 10 ⁰¹	1.12 x 10 ⁰⁰
METACARPAL # 1	7.20 x 10 ⁰⁰	1.99 x 10 ⁰⁰	3.48 x 10 ⁰⁰	7.71 x 10 ⁻⁰¹	4.69 x 10 ⁻⁰¹	1.68 x 10 ⁻⁰¹	2.51 x 10 ⁰¹	1.42 x 10 ⁰⁰
METACARPAL #2 ^a	1.15 x 10 ⁰¹	4.03 x 10 ⁰⁰	2.29 x 10 ⁰⁰	3.31 x 10 ⁻⁰¹	9.93 x 10 ⁻⁰²	1.16 x 10 ⁻⁰¹	1.72 x 10 ⁰¹	9.10 x 10 ⁻⁰¹
METACARPAL # 3	9.89 x 10 ⁰⁰	3.50 x 10 ⁰⁰	2.28 x 10 ⁰⁰	3.05 x 10 ⁻⁰¹	2.95 x 10 ⁻⁰¹	1.05 x 10 ⁻⁰¹	1.99 x 10 ⁰¹	9.43 x 10 ⁻⁰¹
METACARPAL # 4	6.25 x 10 ⁰⁰	1.92 x 10 ⁰⁰	2.81 x 10 ⁰⁰	6.60 x 10 ⁻⁰¹	5.03 x 10 ⁻⁰¹	1.74 x 10 ⁻⁰¹	2.46 x 10 ⁰¹	1.42 x 10 ⁰⁰
METACARPAL # 5	7.61 x 10 ⁰⁰	1.73 x 10 ⁰⁰	2.27 x 10 ⁰⁰	6.17 x 10 ⁻⁰¹	2.50 x 10 ⁻⁰¹	1.54 x 10 ⁻⁰¹	1.88 x 10 ⁰¹	1.29 x 10 ⁰⁰
METATARSAL # 1	2.12 x 10 ⁰¹	6.94 x 10 ⁰⁰	1.83 x 10 ⁰⁰	2.16 x 10 ⁻⁰¹	2.83 x 10 ⁻⁰¹	7.20 x 10 ⁻⁰²	2.04 x 10 ⁰¹	8.21 x 10 ⁻⁰¹
METATARSAL # 2	1.15 x 10 ⁰¹	4.22 x 10 ⁰⁰	1.29 x 10 ⁰⁰	2.21 x 10 ⁻⁰¹	2.92 x 10 ⁻⁰¹	9.48 x 10 ⁻⁰²	1.79 x 10 ⁰¹	8.93 x 10 ⁻⁰¹
METATARSAL # 3	9.78 x 10 ⁰⁰	3.28 x 10 ⁰⁰	2.05 x 10 ⁰⁰	3.35 x 10 ⁻⁰¹	1.32 x 10 ⁻⁰¹	7.11 x 10 ⁻⁰²	1.95 x 10 ⁰¹	1.01 x 10 ⁰⁰
METATARSAL # 4	9.08 x 10 ⁰⁰	3.28 x 10 ⁰⁰	2.45 x 10 ⁰⁰	3.76 x 10 ⁻⁰¹	3.76 x 10 ⁻⁰¹	1.22 x 10 ⁻⁰¹	1.95 x 10 ⁰¹	1.01 x 10 ⁰⁰
METATARSAL # 5	9.52 x 10 ⁰⁰	3.44 x 10 ⁰⁰	2.21 x 10 ⁰⁰	3.49 x 10 ⁻⁰¹	2.42 x 10 ⁻⁰¹	1.16 x 10 ⁻⁰¹	1.68 x 10 ⁰¹	9.11 x 10 ⁻⁰¹
NAVICULAR	1.73 x 10 ⁰¹	4.68 x 10 ⁰⁰	2.56 x 10 ⁰⁰	3.13 x 10 ⁻⁰¹	2.85 x 10 ⁻⁰¹	9.26 x 10 ⁻⁰²	2.23 x 10 ⁰¹	9.83 x 10 ⁻⁰¹
OCCIPITAL	5.86 x 10 ⁰¹	3.00 x 10 ⁰¹	1.64 x 10 ⁰⁰	2.13 x 10 ⁻⁰¹	2.31 x 10 ⁻⁰¹	6.21 x 10 ⁻⁰²	1.52 x 10 ⁰¹	6.32 x 10 ⁻⁰¹
PARIETAL # 1	7.57 x 10 ⁰¹	4.86 x 10 ⁰¹	1.24 x 10 ⁰⁰	1.78 x 10 ⁻⁰¹	3.16 x 10 ⁻⁰¹	8.23 x 10 ⁻⁰²	1.59 x 10 ⁰¹	6.62 x 10 ⁻⁰¹
PARIETAL # 2	3.55 x 10 ⁰¹	2.19 x 10 ⁰¹	1.60 x 10 ⁰⁰	2.25 x 10 ⁻⁰¹	2.62 x 10 ⁻⁰¹	6.40 x 10 ⁻⁰²	1.54 x 10 ⁰¹	6.22 x 10 ⁻⁰¹
PATELLA Right	3.79 x 10 ⁰¹	8.82 x 10 ⁰⁰	2.15 x 10 ⁰⁰	2.42 x 10 ⁻⁰¹	4.27 x 10 ⁻⁰¹	8.31 x 10 ⁻⁰²	2.08 x 10 ⁰¹	7.71 x 10 ⁻⁰¹
PISIFORM	1.38 x 10 ⁰⁰	2.0 x 10 ⁻⁰¹	1.4 x 10 ⁰¹	4.7 x 10 ⁰⁰	3.3 x 10 ⁻⁰¹	5.0 x 10 ⁻⁰¹	4.5 x 10 ⁰¹	5.7 x 10 ⁰⁰
RADIUS Distal End	1.83 x 10 ⁰¹	4.62 x 10 ⁰⁰	2.16 x 10 ⁰⁰	2.74 x 10 ⁻⁰¹	2.38 x 10 ⁻⁰¹	8.66 x 10 ⁻⁰²	1.86 x 10 ⁰¹	9.09 x 10 ⁻⁰¹
RADIUS Distal Shaft	1.73 x 10 ⁰¹	9.57 x 10 ⁰⁰	3.76 x 10 ⁻⁰¹	8.36 x 10 ⁻⁰²	6.27 x 10 ⁻⁰²	2.79 x 10 ⁻⁰²	5.77 x 10 ⁰⁰	3.20 x 10 ⁻⁰¹
RADIUS Proximal End	8.60 x 10 ⁰⁰	2.70 x 10 ⁰⁰	2.78 x 10 ⁰⁰	4.57 x 10 ⁻⁰¹	2.72 x 10 ⁻⁰¹	1.85 x 10 ⁻⁰¹	1.89 x 10 ⁰¹	1.04 x 10 ⁰⁰

Previously published data rounded to 3 significant figures, where available.

Right side of body was analyzed unless otherwise noted.

Concentrations for bone are per kg of ash.

^a Revised from previously published value.

^b The wet weights were estimated.

CASE 0193 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
RADIUS	2.62 x 10 ⁰¹	1.27 x 10 ⁰¹	8.33 x 10 ⁻⁰¹	1.29 x 10 ⁻⁰¹	8.15 x 10 ⁻⁰²	3.15 x 10 ⁻⁰²	8.03 x 10 ⁰⁰	3.73 x 10 ⁻⁰¹
Proximal Shaft								
RIB # 1	4.44 x 10 ⁰⁰	1.58 x 10 ⁰⁰	2.13 x 10 ⁰⁰	4.64 x 10 ⁻⁰¹	4.85 x 10 ⁻⁰¹	2.11 x 10 ⁻⁰¹	2.02 x 10 ⁰¹	1.41 x 10 ⁰⁰
Medial Shaft								
RIB # 1	5.47 x 10 ⁰⁰	7.4 x 10 ⁻⁰¹	6.8 x 10 ⁰⁰	2.3 x 10 ⁰⁰	9.9 x 10 ⁻⁰¹	4.5 x 10 ⁻⁰¹	5.0 x 10 ⁰¹	3.1 x 10 ⁰⁰
Sternal End								
RIB # 1	7.02 x 10 ⁰⁰	1.06 x 10 ⁰⁰	2.45 x 10 ⁰⁰	7.55 x 10 ⁻⁰¹	2.52 x 10 ⁻⁰¹	2.52 x 10 ⁻⁰¹	1.87 x 10 ⁰¹	1.48 x 10 ⁰⁰
Vertebral End								
RIB # 2	5.44 x 10 ⁰⁰	1.56 x 10 ⁰⁰	3.21 x 10 ⁰⁰	7.26 x 10 ⁻⁰¹	1.50 x 10 ⁻⁰¹	2.56 x 10 ⁻⁰¹	1.91 x 10 ⁰¹	1.37 x 10 ⁰⁰
Medial Shaft								
RIB # 2	5.19 x 10 ⁰⁰	1.51 x 10 ⁰⁰	3.00 x 10 ⁰⁰	5.74 x 10 ⁻⁰¹	1.10 x 10 ⁻⁰¹	2.87 x 10 ⁻⁰¹	2.06 x 10 ⁰¹	1.48 x 10 ⁰⁰
Sternal End								
RIB # 2	4.21 x 10 ⁰⁰	9.5 x 10 ⁻⁰¹	5.3 x 10 ⁰⁰	9.5 x 10 ⁻⁰¹	2.8 x 10 ⁻⁰¹	2.8 x 10 ⁻⁰¹	2.5 x 10 ⁰¹	2.3 x 10 ⁰⁰
Vertebral End								
RIB # 3	5.20 x 10 ⁰⁰	1.68 x 10 ⁰⁰	2.24 x 10 ⁰⁰	4.56 x 10 ⁻⁰¹	3.77 x 10 ⁻⁰¹	2.78 x 10 ⁻⁰¹	2.01 x 10 ⁰¹	1.33 x 10 ⁰⁰
Medial Shaft								
RIB # 3	5.56 x 10 ⁰⁰	1.22 x 10 ⁰⁰	4.95 x 10 ⁰⁰	9.29 x 10 ⁻⁰¹	7.92 x 10 ⁻⁰¹	4.37 x 10 ⁻⁰¹	2.29 x 10 ⁰¹	1.61 x 10 ⁰⁰
Sternal End								
RIB # 3	6.51 x 10 ⁰⁰	1.74 x 10 ⁰⁰	3.28 x 10 ⁰⁰	6.13 x 10 ⁻⁰¹	6.51 x 10 ⁻⁰¹	2.68 x 10 ⁻⁰¹	2.24 x 10 ⁰¹	1.48 x 10 ⁰⁰
Vertebral End								
RIB # 4	7.55 x 10 ⁰⁰	2.16 x 10 ⁰⁰	3.60 x 10 ⁰⁰	5.71 x 10 ⁻⁰¹	4.63 x 10 ⁻⁰¹	1.70 x 10 ⁻⁰¹	2.46 x 10 ⁰¹	1.37 x 10 ⁰⁰
Medial Shaft								
RIB # 4	5.96 x 10 ⁰⁰	1.40 x 10 ⁰⁰	1.81 x 10 ⁰⁰	4.29 x 10 ⁻⁰¹	9.05 x 10 ⁻⁰¹	4.29 x 10 ⁻⁰¹	3.08 x 10 ⁰¹	1.86 x 10 ⁰⁰
Sternal End								
RIB # 4	8.38 x 10 ⁰⁰	2.34 x 10 ⁰⁰	3.13 x 10 ⁰⁰	5.84 x 10 ⁻⁰¹	4.56 x 10 ⁻⁰¹	2.42 x 10 ⁻⁰¹	2.66 x 10 ⁰¹	1.51 x 10 ⁰⁰
Vertebral End								
RIB # 5	8.08 x 10 ⁰⁰	2.42 x 10 ⁰⁰	2.60 x 10 ⁰⁰	4.15 x 10 ⁻⁰¹	5.25 x 10 ⁻⁰¹	1.80 x 10 ⁻⁰¹	2.45 x 10 ⁰¹	1.26 x 10 ⁰⁰
Medial Shaft								
RIB # 5	8.42 x 10 ⁰⁰	1.56 x 10 ⁰⁰	4.66 x 10 ⁰⁰	9.40 x 10 ⁻⁰¹	8.76 x 10 ⁻⁰¹	3.63 x 10 ⁻⁰¹	3.23 x 10 ⁰¹	1.88 x 10 ⁰⁰
Sternal End								
RIB # 5	1.05 x 10 ⁰¹	3.36 x 10 ⁰⁰	3.13 x 10 ⁰⁰	4.46 x 10 ⁻⁰¹	4.17 x 10 ⁻⁰¹	1.79 x 10 ⁻⁰¹	2.12 x 10 ⁰¹	1.12 x 10 ⁰⁰
Vertebral End								

Previously published data rounded to 3 significant figures, where available.

Right side of body was analyzed unless otherwise noted.

Concentrations for bone are per kg of ash.

© Revised from previously published value.

b The wet weights were estimated.

CASE 0193 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
RIB # 6 Medial Shaft	1.09 x 10 ⁰¹	3.40 x 10 ⁰⁰	5.22 x 10 ⁰⁰	8.24 x 10 ⁻⁰¹	7.84 x 10 ⁻⁰²	2.16 x 10 ⁻⁰¹	2.48 x 10 ⁰¹	1.45 x 10 ⁰⁰
RIB # 6 Sternal End	1.40 x 10 ⁰¹	2.48 x 10 ⁰⁰	3.32 x 10 ⁰⁰	5.38 x 10 ⁻⁰¹	0.00 x 10 ⁰⁰	1.61 x 10 ⁻⁰¹	2.32 x 10 ⁰¹	1.22 x 10 ⁰⁰
RIB # 6 Vertebral End	1.15 x 10 ⁰¹	3.92 x 10 ⁰⁰	2.76 x 10 ⁰⁰	4.08 x 10 ⁻⁰¹	2.04 x 10 ⁻⁰¹	9.35 x 10 ⁻⁰²	2.35 x 10 ⁰¹	1.12 x 10 ⁰⁰
RIB # 7 Medial Shaft	8.87 x 10 ⁰⁰	2.94 x 10 ⁰⁰	2.35 x 10 ⁰⁰	3.97 x 10 ⁻⁰¹	4.08 x 10 ⁻⁰¹	1.36 x 10 ⁻⁰¹	2.11 x 10 ⁰¹	1.05 x 10 ⁰⁰
RIB # 7 Sternal End	1.09 x 10 ⁰¹	2.28 x 10 ⁰⁰	1.87 x 10 ⁰⁰	3.95 x 10 ⁻⁰¹	7.02 x 10 ⁻⁰¹	2.34 x 10 ⁻⁰¹	4.13 x 10 ⁰¹	2.16 x 10 ⁰⁰
RIB # 7 Vertebral End	1.48 x 10 ⁰¹	5.08 x 10 ⁰⁰	1.58 x 10 ⁰⁰	2.95 x 10 ⁻⁰¹	4.07 x 10 ⁻⁰¹	1.12 x 10 ⁻⁰¹	1.93 x 10 ⁰¹	8.73 x 10 ⁻⁰¹
RIB # 8 Medial Shaft	8.13 x 10 ⁰⁰	3.48 x 10 ⁰⁰	2.35 x 10 ⁰⁰	3.83 x 10 ⁻⁰¹	2.01 x 10 ⁻⁰¹	8.62 x 10 ⁻⁰²	1.60 x 10 ⁰¹	8.33 x 10 ⁻⁰¹
RIB # 8 Sternal End	9.65 x 10 ⁰⁰	2.23 x 10 ⁰⁰	2.45 x 10 ⁰¹	2.09 x 10 ⁰⁰	2.18 x 10 ⁰⁰	6.88 x 10 ⁻⁰¹	1.10 x 10 ⁰²	5.32 x 10 ⁰⁰
RIB # 8 Vertebral End	1.23 x 10 ⁰¹	3.98 x 10 ⁰⁰	2.46 x 10 ⁰⁰	4.02 x 10 ⁻⁰¹	4.02 x 10 ⁻⁰¹	1.17 x 10 ⁻⁰¹	1.95 x 10 ⁰¹	9.55 x 10 ⁻⁰¹
RIB # 9 Medial Shaft	8.20 x 10 ⁰⁰	2.36 x 10 ⁰⁰	1.88 x 10 ⁰⁰	3.95 x 10 ⁻⁰¹	6.07 x 10 ⁻⁰¹	2.12 x 10 ⁻⁰¹	2.40 x 10 ⁰¹	1.40 x 10 ⁰⁰
RIB # 9 Sternal End	7.74 x 10 ⁰⁰	9.2 x 10 ⁻⁰¹	4.6 x 10 ⁰⁰	9.8 x 10 ⁻⁰¹	4.4 x 10 ⁻⁰¹	2.5 x 10 ⁻⁰¹	2.6 x 10 ⁰¹	1.9 x 10 ⁰⁰
RIB # 9 Vertebral End	1.29 x 10 ⁰¹	3.36 x 10 ⁰⁰	5.16 x 10 ⁻⁰¹	1.79 x 10 ⁻⁰¹	2.78 x 10 ⁻⁰¹	1.39 x 10 ⁻⁰¹	2.53 x 10 ⁰¹	1.22 x 10 ⁰⁰
RIB # 10 Medial Shaft	6.11 x 10 ⁰⁰	2.56 x 10 ⁰⁰	3.02 x 10 ⁰⁰	5.08 x 10 ⁻⁰¹	4.56 x 10 ⁻⁰¹	1.56 x 10 ⁻⁰¹	1.56 x 10 ⁰¹	9.51 x 10 ⁻⁰¹
RIB # 10 Sternal End	4.92 x 10 ⁰⁰	7.8 x 10 ⁻⁰¹	2.0 x 10 ⁰⁰	1.2 x 10 ⁰⁰	8.1 x 10 ⁻⁰¹	5.6 x 10 ⁻⁰¹	3.4 x 10 ⁰¹	2.4 x 10 ⁰⁰
RIB # 10 Vertebral End	9.12 x 10 ⁰⁰	2.86 x 10 ⁰⁰	2.79 x 10 ⁰⁰	4.31 x 10 ⁻⁰¹	3.96 x 10 ⁻⁰¹	1.40 x 10 ⁻⁰¹	2.07 x 10 ⁰¹	1.12 x 10 ⁰⁰
RIB # 11 Medial Shaft	4.12 x 10 ⁰⁰	1.52 x 10 ⁰⁰	3.40 x 10 ⁰⁰	6.80 x 10 ⁻⁰¹	6.58 x 10 ⁻⁰²	6.58 x 10 ⁻⁰²	1.53 x 10 ⁰¹	1.21 x 10 ⁰⁰

Previously published data rounded to 3 significant figures, where available.

Right side of body was analyzed unless otherwise noted.

Concentrations for bone are per kg of ash.

© Revised from previously published value.

b The wet weights were estimated.

CASE 0193 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
RIB # 11 Sternal End	2.89 x 10 ⁰⁰	5.6 x 10 ⁻⁰¹	2.3 x 10 ⁰⁰	1.3 x 10 ⁰⁰	1.2 x 10 ⁰⁰	6.6 x 10 ⁻⁰¹	2.4 x 10 ⁰¹	2.6 x 10 ⁰⁰
RIB # 11 Vertebral End	5.67 x 10 ⁰⁰	1.6 x 10 ⁰⁰	3.4 x 10 ⁰⁰	6.9 x 10 ⁻⁰¹	2.9 x 10 ⁻⁰¹	1.7 x 10 ⁻⁰¹	1.9 x 10 ⁰¹	1.3 x 10 ⁰⁰
RIB # 12 Medial Shaft	2.42 x 10 ⁰⁰	8.8 x 10 ⁻⁰¹	3.0 x 10 ⁰⁰	7.6 x 10 ⁻⁰¹	7.6 x 10 ⁻⁰²	1.5 x 10 ⁻⁰¹	1.8 x 10 ⁰¹	1.7 x 10 ⁰⁰
RIB # 12 Sternal End	1.07 x 10 ⁰⁰	2.8 x 10 ⁻⁰¹	5.1 x 10 ⁰⁰	1.8 x 10 ⁰⁰	3.6 x 10 ⁻⁰¹	8.3 x 10 ⁻⁰¹	2.2 x 10 ⁰¹	3.3 x 10 ⁰⁰
RIB # 12 Vertebral End	3.42 x 10 ⁰⁰	8.6 x 10 ⁻⁰¹	6.6 x 10 ⁰⁰	1.3 x 10 ⁰⁰	2.7 x 10 ⁻⁰¹	2.3 x 10 ⁻⁰¹	2.8 x 10 ⁰¹	2.2 x 10 ⁰⁰
SACRUM	2.37 x 10 ⁰²	4.41 x 10 ⁰¹	4.03 x 10 ⁰⁰	2.07 x 10 ⁻⁰¹	4.93 x 10 ⁻⁰¹	5.44 x 10 ⁻⁰²	3.53 x 10 ⁰¹	1.08 x 10 ⁰⁰
SCAPHOID	4.50 x 10 ⁰⁰	1.29 x 10 ⁰⁰	2.30 x 10 ⁰⁰	5.17 x 10 ⁻⁰¹	3.88 x 10 ⁻⁰¹	2.07 x 10 ⁻⁰¹	2.59 x 10 ⁰¹	1.78 x 10 ⁰⁰
SCAPULA # 1	2.68 x 10 ⁰¹	7.28 x 10 ⁰⁰	2.67 x 10 ⁰⁰	2.84 x 10 ⁻⁰¹	3.98 x 10 ⁻⁰¹	1.24 x 10 ⁻⁰¹	1.92 x 10 ⁰¹	9.07 x 10 ⁻⁰¹
SCAPULA # 2	1.15 x 10 ⁰¹	5.20 x 10 ⁰⁰	2.29 x 10 ⁰⁰	2.88 x 10 ⁻⁰¹	3.46 x 10 ⁻⁰¹	1.22 x 10 ⁻⁰¹	1.47 x 10 ⁰¹	7.44 x 10 ⁻⁰¹
SCAPULA # 3	2.39 x 10 ⁰¹	5.96 x 10 ⁰⁰	2.48 x 10 ⁰⁰	2.52 x 10 ⁻⁰¹	5.20 x 10 ⁻⁰¹	1.01 x 10 ⁻⁰¹	2.17 x 10 ⁰¹	8.61 x 10 ⁻⁰¹
SCAPULA # 4	4.34 x 10 ⁰¹	1.59 x 10 ⁰¹	1.61 x 10 ⁰⁰	3.18 x 10 ⁻⁰¹	2.51 x 10 ⁻⁰¹	4.82 x 10 ⁻⁰²	1.77 x 10 ⁰¹	6.11 x 10 ⁻⁰¹
SCAPULA # 5	7.90 x 10 ⁰⁰	2.82 x 10 ⁰⁰	2.13 x 10 ⁰⁰	3.66 x 10 ⁻⁰¹	3.55 x 10 ⁻⁰²	7.09 x 10 ⁻⁰²	1.57 x 10 ⁰¹	8.87 x 10 ⁻⁰¹
SCAPULA # 6	1.72 x 10 ⁰¹	2.06 x 10 ⁰⁰	3.14 x 10 ⁰⁰	1.00 x 10 ⁰⁰	9.39 x 10 ⁻⁰¹	2.27 x 10 ⁻⁰¹	5.02 x 10 ⁰¹	2.10 x 10 ⁰⁰
STERNUM	9.64 x 10 ⁰¹	1.46 x 10 ⁰¹	5.35 x 10 ⁻⁰¹	1.10 x 10 ⁻⁰¹	5.35 x 10 ⁻⁰¹	1.10 x 10 ⁻⁰¹	3.12 x 10 ⁰¹	1.15 x 10 ⁰⁰
TALUS	5.20 x 10 ⁰¹	1.51 x 10 ⁰¹	2.54 x 10 ⁰⁰	1.85 x 10 ⁻⁰¹	2.07 x 10 ⁻⁰¹	4.19 x 10 ⁻⁰²	2.01 x 10 ⁰¹	7.03 x 10 ⁻⁰¹
TEMPORAL # 1	1.95 x 10 ⁰¹	1.09 x 10 ⁰¹	1.38 x 10 ⁰⁰	2.33 x 10 ⁻⁰¹	2.46 x 10 ⁻⁰¹	1.17 x 10 ⁻⁰¹	1.68 x 10 ⁰¹	8.47 x 10 ⁻⁰¹
TEMPORAL # 2	4.12 x 10 ⁰¹	1.84 x 10 ⁰¹	1.66 x 10 ⁰⁰	2.48 x 10 ⁻⁰¹	2.26 x 10 ⁻⁰¹	1.17 x 10 ⁻⁰¹	1.89 x 10 ⁰¹	8.89 x 10 ⁻⁰¹
TEMPORAL # 3	3.03 x 10 ⁰¹	7.78 x 10 ⁰⁰	2.04 x 10 ⁰⁰	2.01 x 10 ⁻⁰¹	4.11 x 10 ⁻⁰¹	8.14 x 10 ⁻⁰²	2.92 x 10 ⁰¹	1.07 x 10 ⁰⁰
TIBIA Distal End	5.29 x 10 ⁰¹	1.49 x 10 ⁰¹	2.20 x 10 ⁰⁰	2.51 x 10 ⁻⁰¹	3.27 x 10 ⁻⁰¹	8.96 x 10 ⁻⁰²	2.06 x 10 ⁰¹	8.33 x 10 ⁻⁰¹
TIBIA Distal Shaft	9.60 x 10 ⁰¹	4.94 x 10 ⁰¹	9.05 x 10 ⁻⁰¹	1.59 x 10 ⁻⁰¹	5.06 x 10 ⁻⁰²	4.39 x 10 ⁻⁰²	8.94 x 10 ⁰⁰	4.12 x 10 ⁻⁰¹
TIBIA Proximal End	1.62 x 10 ⁰²	3.69 x 10 ⁰¹	2.49 x 10 ⁰⁰	2.17 x 10 ⁻⁰¹	2.71 x 10 ⁻⁰¹	9.04 x 10 ⁻⁰²	2.44 x 10 ⁰¹	2.28 x 10 ⁰⁰

Previously published data rounded to 3 significant figures, where available.

Right side of body was analyzed unless otherwise noted.

Concentrations for bone are per kg of ash.

© Revised from previously published value.

b The wet weights were estimated.

CASE 0193 BONES

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TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
TIBIA	1.26 x 10 ⁰²	5.84 x 10 ⁰¹	1.22 x 10 ⁰⁰	1.77 x 10 ⁻⁰¹	1.26 x 10 ⁻⁰¹	4.85 x 10 ⁻⁰²	1.04 x 10 ⁰¹	4.54 x 10 ⁻⁰¹
Proximal Shaft								
TRAPEZIUM	3.64 x 10 ⁰⁰	8.24 x 10 ⁻⁰¹	6.88 x 10 ⁰⁰	2.10 x 10 ⁰⁰	8.13 x 10 ⁻⁰²	2.44 x 10 ⁻⁰¹	2.83 x 10 ⁰¹	2.20 x 10 ⁰⁰
TRAPEZOIDE	1.99 x 10 ⁰⁰	5.48 x 10 ⁻⁰¹	1.82 x 10 ⁰⁰	1.22 x 10 ⁰⁰	9.70 x 10 ⁻⁰¹	8.48 x 10 ⁻⁰¹	2.76 x 10 ⁰¹	3.39 x 10 ⁰⁰
TRIANGULAR	3.82 x 10 ⁰⁰	1.00 x 10 ⁰⁰	2.13 x 10 ⁰⁰	6.67 x 10 ⁻⁰¹	2.00 x 10 ⁻⁰¹	2.67 x 10 ⁻⁰¹	2.80 x 10 ⁰¹	2.30 x 10 ⁰⁰
ULNA	6.70 x 10 ⁰⁰	1.39 x 10 ⁰⁰	3.72 x 10 ⁰⁰	6.00 x 10 ⁻⁰¹	5.04 x 10 ⁻⁰¹	2.40 x 10 ⁻⁰¹	2.53 x 10 ⁰¹	1.70 x 10 ⁰⁰
Distal End								
ULNA	1.67 x 10 ⁰¹	7.78 x 10 ⁰⁰	8.01 x 10 ⁻⁰¹	1.63 x 10 ⁻⁰¹	5.57 x 10 ⁻⁰²	3.86 x 10 ⁻⁰²	7.20 x 10 ⁰⁰	4.07 x 10 ⁻⁰¹
Distal Shaft								
ULNA	3.45 x 10 ⁰¹	9.55 x 10 ⁰⁰	2.35 x 10 ⁰⁰	3.32 x 10 ⁻⁰¹	1.99 x 10 ⁻⁰¹	6.28 x 10 ⁻⁰²	2.03 x 10 ⁰¹	7.96 x 10 ⁻⁰¹
Proximal End								
ULNA	2.70 x 10 ⁰¹	1.39 x 10 ⁰¹	5.55 x 10 ⁻⁰¹	1.04 x 10 ⁻⁰¹	1.08 x 10 ⁻⁰¹	3.96 x 10 ⁻⁰²	7.29 x 10 ⁰⁰	3.85 x 10 ⁻⁰¹
Proximal Shaft								
VERTEBRA Cervical- 1	2.09 x 10 ⁰¹	7.44 x 10 ⁰⁰	2.63 x 10 ⁰⁰	2.69 x 10 ⁻⁰¹	5.02 x 10 ⁻⁰¹	9.86 x 10 ⁻⁰²	2.47 x 10 ⁰¹	9.05 x 10 ⁻⁰¹
VERTEBRA Cervical- 3 Arch	8.80 x 10 ⁰⁰	2.56 x 10 ⁰⁰	1.77 x 10 ⁰⁰	3.65 x 10 ⁻⁰¹	4.82 x 10 ⁻⁰¹	1.69 x 10 ⁻⁰¹	2.92 x 10 ⁰¹	1.45 x 10 ⁰⁰
VERTEBRA Cervical- 3 Body	7.80 x 10 ⁰⁰	1.60 x 10 ⁰⁰	7.56 x 10 ⁰⁰	1.06 x 10 ⁰⁰	3.54 x 10 ⁻⁰¹	2.08 x 10 ⁻⁰¹	3.38 x 10 ⁰¹	1.94 x 10 ⁰⁰
VERTEBRA Cervical- 5 Arch	8.22 x 10 ⁰⁰	2.62 x 10 ⁰⁰	3.79 x 10 ⁰⁰	5.34 x 10 ⁻⁰¹	6.74 x 10 ⁻⁰¹	2.04 x 10 ⁻⁰¹	2.33 x 10 ⁰¹	1.27 x 10 ⁰⁰
VERTEBRA Cervical- 5 Body	8.50 x 10 ⁰⁰	1.92 x 10 ⁰⁰	3.16 x 10 ⁰⁰	4.86 x 10 ⁻⁰¹	4.17 x 10 ⁻⁰¹	1.74 x 10 ⁻⁰¹	2.99 x 10 ⁰¹	1.61 x 10 ⁰⁰
VERTEBRA Cervical- 7 Arch	1.31 x 10 ⁰¹	3.92 x 10 ⁰⁰	3.31 x 10 ⁰⁰	3.49 x 10 ⁻⁰¹	2.47 x 10 ⁻⁰¹	9.35 x 10 ⁻⁰²	2.45 x 10 ⁰¹	1.06 x 10 ⁰⁰
VERTEBRA Cervical- 7 Body	9.53 x 10 ⁰⁰	2.08 x 10 ⁰⁰	4.33 x 10 ⁰⁰	5.77 x 10 ⁻⁰¹	8.33 x 10 ⁻⁰¹	2.24 x 10 ⁻⁰¹	3.06 x 10 ⁰¹	1.62 x 10 ⁰⁰
VERTEBRA Lumbar- 1 Arch	2.98 x 10 ⁰¹	7.42 x 10 ⁰⁰	2.60 x 10 ⁰⁰	3.01 x 10 ⁻⁰¹	6.02 x 10 ⁻⁰¹	1.17 x 10 ⁻⁰¹	2.77 x 10 ⁰¹	1.05 x 10 ⁰⁰
VERTEBRA Lumbar- 1 Body	4.98 x 10 ⁰¹	6.10 x 10 ⁰⁰	5.04 x 10 ⁰⁰	4.81 x 10 ⁻⁰¹	9.40 x 10 ⁻⁰¹	1.37 x 10 ⁻⁰¹	4.25 x 10 ⁰¹	1.49 x 10 ⁰⁰

Previously published data rounded to 3 significant figures, where available.

Right side of body was analyzed unless otherwise noted.

Concentrations for bone are per kg of ash.

© Revised from previously published value.

b The wet weights were estimated.

CASE 0193 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
VERTEBRA Lumbar- 3 Arch	3.53 x 10 ⁰¹	9.56 x 10 ⁰⁰	2.74 x 10 ⁰⁰	2.89 x 10 ⁻⁰¹	3.70 x 10 ⁻⁰¹	9.41 x 10 ⁻⁰²	3.22 x 10 ⁰¹	1.23 x 10 ⁰⁰
VERTEBRA Lumbar- 3 Body	6.17 x 10 ⁰¹	6.72 x 10 ⁰⁰	4.09 x 10 ⁰⁰	4.17 x 10 ⁻⁰¹	7.04 x 10 ⁻⁰¹	1.71 x 10 ⁻⁰¹	4.24 x 10 ⁰¹	1.71 x 10 ⁰⁰
VERTEBRA Lumbar- 5 Arch	3.49 x 10 ⁰¹	1.03 x 10 ⁰¹	2.60 x 10 ⁰⁰	3.12 x 10 ⁻⁰¹	4.29 x 10 ⁻⁰¹	9.75 x 10 ⁻⁰²	2.27 x 10 ⁰¹	9.49 x 10 ⁻⁰¹
VERTEBRA Lumbar- 5 Body	5.21 x 10 ⁰¹	8.77 x 10 ⁰⁰	3.73 x 10 ⁰⁰	4.87 x 10 ⁻⁰¹	7.75 x 10 ⁻⁰¹	1.52 x 10 ⁻⁰¹	3.11 x 10 ⁰¹	1.28 x 10 ⁰⁰
VERTEBRA Thoracic-1 Arch	1.95 x 10 ⁰¹	5.66 x 10 ⁰⁰	2.49 x 10 ⁰⁰	2.83 x 10 ⁻⁰¹	3.24 x 10 ⁻⁰¹	8.83 x 10 ⁻⁰²	2.56 x 10 ⁰¹	1.02 x 10 ⁰⁰
VERTEBRA Thoracic-1 Body	1.18 x 10 ⁰¹	2.08 x 10 ⁰⁰	4.44 x 10 ⁰⁰	6.09 x 10 ⁻⁰¹	5.45 x 10 ⁻⁰¹	3.69 x 10 ⁻⁰¹	3.83 x 10 ⁰¹	2.28 x 10 ⁰⁰
VERTEBRA Thoracic-11 Arch	2.22 x 10 ⁰¹	5.61 x 10 ⁰⁰	2.69 x 10 ⁰⁰	2.79 x 10 ⁻⁰¹	4.58 x 10 ⁻⁰¹	1.01 x 10 ⁻⁰¹	2.31 x 10 ⁰¹	9.39 x 10 ⁻⁰¹
VERTEBRA Thoracic-11 Body	3.77 x 10 ⁰¹	5.48 x 10 ⁰⁰	4.43 x 10 ⁰⁰	4.20 x 10 ⁻⁰¹	7.73 x 10 ⁻⁰¹	1.40 x 10 ⁻⁰¹	3.65 x 10 ⁰¹	1.41 x 10 ⁰⁰
VERTEBRA Thoracic-3 Arch	1.43 x 10 ⁰¹	4.16 x 10 ⁰⁰	3.12 x 10 ⁰⁰	3.85 x 10 ⁻⁰¹	6.49 x 10 ⁻⁰¹	1.60 x 10 ⁻⁰¹	2.38 x 10 ⁰¹	1.08 x 10 ⁰⁰
VERTEBRA Thoracic-3 Body	1.25 x 10 ⁰¹	1.91 x 10 ⁰⁰	4.71 x 10 ⁰⁰	6.63 x 10 ⁻⁰¹	8.38 x 10 ⁻⁰¹	2.44 x 10 ⁻⁰¹	3.68 x 10 ⁰¹	1.90 x 10 ⁰⁰
VERTEBRA Thoracic-5 Arch	1.48 x 10 ⁰¹	3.58 x 10 ⁰⁰	6.74 x 10 ⁰⁰	7.45 x 10 ⁻⁰¹	6.15 x 10 ⁻⁰¹	2.05 x 10 ⁻⁰¹	2.82 x 10 ⁰¹	1.55 x 10 ⁰⁰
VERTEBRA Thoracic-5 Body	1.47 x 10 ⁰¹	2.51 x 10 ⁰⁰	4.75 x 10 ⁰⁰	5.98 x 10 ⁻⁰¹	4.78 x 10 ⁻⁰¹	2.26 x 10 ⁻⁰¹	3.79 x 10 ⁰¹	1.81 x 10 ⁰⁰
VERTEBRA Thoracic-7 Arch	1.59 x 10 ⁰¹	4.36 x 10 ⁰⁰	3.57 x 10 ⁰⁰	3.82 x 10 ⁻⁰¹	3.13 x 10 ⁻⁰¹	9.94 x 10 ⁻⁰²	2.80 x 10 ⁰¹	1.19 x 10 ⁰⁰
VERTEBRA Thoracic-7 Body	2.05 x 10 ⁰¹	2.45 x 10 ⁰⁰	5.32 x 10 ⁰⁰	7.48 x 10 ⁻⁰¹	1.50 x 10 ⁰⁰	3.27 x 10 ⁻⁰¹	4.09 x 10 ⁰¹	1.93 x 10 ⁰⁰
VERTEBRA Thoracic-9 Arch	2.07 x 10 ⁰¹	4.98 x 10 ⁰⁰	3.05 x 10 ⁰⁰	3.35 x 10 ⁻⁰¹	4.55 x 10 ⁻⁰¹	1.34 x 10 ⁻⁰¹	2.91 x 10 ⁰¹	1.20 x 10 ⁰⁰
VERTEBRA Thoracic-9 Body	2.23 x 10 ⁰¹	3.92 x 10 ⁰⁰	3.50 x 10 ⁰⁰	4.08 x 10 ⁻⁰¹	9.27 x 10 ⁻⁰¹	1.79 x 10 ⁻⁰¹	4.08 x 10 ⁰¹	1.51 x 10 ⁰⁰

Previously published data rounded to 3 significant figures, where available.

Right side of body was analyzed unless otherwise noted.

Concentrations for bone are per kg of ash.

⊗ Revised from previously published value.

b The wet weights were estimated.

CASE 0193 VISCERA and MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ADRENALS*	2.90 x 10 ⁰¹ (0.7 x 10 ⁰⁰)	6.78 x 10 ⁻⁰²	2.07 x 10 ⁻⁰²	1.27 x 10 ⁻⁰²	8.05 x 10 ⁻⁰³	7.93 x 10 ⁻⁰¹	6.32 x 10 ⁻⁰²
BILE	1.66 x 10 ⁰¹	1.89 x 10 ⁻⁰¹	7.63 x 10 ⁻⁰²	6.43 x 10 ⁻⁰²	5.22 x 10 ⁻⁰²	4.66 x 10 ⁻⁰¹	9.64 x 10 ⁻⁰²
BLADDER*	1.43 x 10 ⁰² (1.64 x 10 ⁰¹)	4.40 x 10 ⁻⁰²	6.52 x 10 ⁻⁰³	3.97 x 10 ⁻⁰³	2.10 x 10 ⁻⁰³	1.81 x 10 ⁻⁰¹	1.37 x 10 ⁻⁰²
BLOOD	2.84 x 10 ⁰¹	1.29 x 10 ⁻⁰²	1.06 x 10 ⁻⁰²	1.17 x 10 ⁻⁰³	4.67 x 10 ⁻⁰³	2.47 x 10 ⁻⁰²	1.17 x 10 ⁻⁰²
BLOOD-Liver	1.76 x 10 ⁰²	9.11 x 10 ⁻⁰²	1.99 x 10 ⁻⁰²	2.37 x 10 ⁻⁰²	9.49 x 10 ⁻⁰³	1.34 x 10 ⁰⁰	7.50 x 10 ⁻⁰²
BRAIN Fluid	2.09 x 10 ⁰¹	8.77 x 10 ⁻⁰²	3.03 x 10 ⁻⁰²	2.55 x 10 ⁻⁰²	2.23 x 10 ⁻⁰²	1.25 x 10 ⁰⁰	1.24 x 10 ⁻⁰¹
CARTILAGE Costal-Right	2.05 x 10 ⁰¹	3.87 x 10 ⁰⁰	6.43 x 10 ⁻⁰¹	5.92 x 10 ⁻⁰¹	2.20 x 10 ⁻⁰¹	2.13 x 10 ⁰¹	1.25 x 10 ⁰⁰
CARTILAGE Costal	3.10 x 10 ⁰⁰			6.67 x 10 ⁻⁰¹	2.00 x 10 ⁻⁰¹	1.68 x 10 ⁰¹	8.49 x 10 ⁻⁰¹
CARTILAGE Nasal	6.60 x 10 ⁰⁰	4.80 x 10 ⁻⁰¹	1.36 x 10 ⁻⁰¹	7.07 x 10 ⁻⁰²	7.07 x 10 ⁻⁰²	3.20 x 10 ⁰⁰	2.58 x 10 ⁻⁰¹
CEREBELLUM	1.30 x 10 ⁰²	2.20 x 10 ⁻⁰²	4.87 x 10 ⁻⁰³	7.17 x 10 ⁻⁰³	2.82 x 10 ⁻⁰³	2.54 x 10 ⁻⁰¹	1.56 x 10 ⁻⁰²
CEREBRUM	1.17 x 10 ⁰³	7.95 x 10 ⁻⁰³	1.59 x 10 ⁻⁰³	6.83 x 10 ⁻⁰⁴	7.97 x 10 ⁻⁰⁴	1.21 x 10 ⁻⁰¹	6.37 x 10 ⁻⁰³
CONNECTIVE TISSUE	1.70 x 10 ⁰²	6.47 x 10 ⁻⁰³	2.16 x 10 ⁻⁰³	6.47 x 10 ⁻⁰³	2.16 x 10 ⁻⁰³	2.23 x 10 ⁻⁰¹	1.37 x 10 ⁻⁰²
DIAPHRAGM	4.27 x 10 ⁰²	4.81 x 10 ⁻⁰²	4.06 x 10 ⁻⁰³	6.17 x 10 ⁻⁰³	1.72 x 10 ⁻⁰³	4.61 x 10 ⁻⁰¹	1.77 x 10 ⁻⁰²
EARS	4.50 x 10 ⁰¹	5.04 x 10 ⁻⁰²	1.11 x 10 ⁻⁰²	2.22 x 10 ⁻⁰³	5.17 x 10 ⁻⁰³	1.90 x 10 ⁻⁰¹	2.22 x 10 ⁻⁰²
EYE-Left	7.60 x 10 ⁰⁰	1.12 x 10 ⁰⁰	2.63 x 10 ⁻⁰¹	1.01 x 10 ⁻⁰¹	4.39 x 10 ⁻⁰²	9.64 x 10 ⁰⁰	4.82 x 10 ⁻⁰¹
EYE-Right	4.10 x 10 ⁰⁰	6.26 x 10 ⁻⁰¹	1.79 x 10 ⁻⁰¹	8.13 x 10 ⁻⁰²	6.50 x 10 ⁻⁰²	7.12 x 10 ⁰⁰	4.88 x 10 ⁻⁰¹
FAT Left-Kidney	2.73 x 10 ⁰¹	6.84 x 10 ⁻⁰²	4.88 x 10 ⁻⁰²	6.10 x 10 ⁻⁰³	1.34 x 10 ⁻⁰²	1.14 x 10 ⁰⁰	7.94 x 10 ⁻⁰²
FAT-Body	1.54 x 10 ⁰¹	2.60 x 10 ⁻⁰²	1.95 x 10 ⁻⁰²	2.17 x 10 ⁻⁰³	4.33 x 10 ⁻⁰³	1.08 x 10 ⁻⁰²	1.08 x 10 ⁻⁰²
FINGERNAIL	1.00 x 10 ⁰⁰	3.59 x 10 ⁻⁰¹	9.74 x 10 ⁻⁰¹	6.67 x 10 ⁻⁰²	1.33 x 10 ⁻⁰¹	1.03 x 10 ⁰⁰	3.67 x 10 ⁻⁰¹
GALL BLADDER	2.65 x 10 ⁰¹	3.22 x 10 ⁻⁰¹	4.40 x 10 ⁻⁰²	6.54 x 10 ⁻⁰²	1.64 x 10 ⁻⁰²	4.01 x 10 ⁰⁰	1.69 x 10 ⁻⁰¹
GI TRACT	1.46 x 10 ⁰³	2.10 x 10 ⁻⁰³	6.85 x 10 ⁻⁰⁴	2.10 x 10 ⁻⁰³	6.85 x 10 ⁻⁰⁴	7.38 x 10 ⁻⁰²	4.07 x 10 ⁻⁰³
HEART*	4.51 x 10 ⁰² (2.29 x 10 ⁰¹)	1.15 x 10 ⁻⁰²	5.91 x 10 ⁻⁰³	2.95 x 10 ⁻⁰³	3.83 x 10 ⁻⁰³	1.67 x 10 ⁻⁰¹	1.45 x 10 ⁻⁰²
KIDNEY Left	1.94 x 10 ⁰²	2.19 x 10 ⁻⁰²	3.96 x 10 ⁻⁰³	7.75 x 10 ⁻⁰³	3.10 x 10 ⁻⁰³	2.77 x 10 ⁻⁰¹	1.58 x 10 ⁻⁰²

*First number includes tissue and tissue fluid weight. Numbers in parentheses are weight of fluid.

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CASE 0193 VISCERA and MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
KIDNEY Right	1.71×10^{02}	1.56×10^{-02}	5.47×10^{-03}	2.93×10^{-03}	1.56×10^{-03}	1.89×10^{-01}	1.25×10^{-02}
LARYNX	4.57×10^{01}	6.20×10^{-01}	5.54×10^{-02}	7.73×10^{-02}	2.48×10^{-02}	2.87×10^{00}	1.47×10^{-01}
LIVER	1.86×10^{03}	7.61×10^{-01}	4.47×10^{-02}	9.66×10^{-01}	1.50×10^{00}	2.61×10^{01}	1.52×10^{00}
LUNG Fluid	1.14×10^{02}	1.47×10^{-01}	1.32×10^{-01}	5.14×10^{-02}	9.55×10^{-02}	1.54×10^{00}	2.13×10^{-01}
LUNG Left	2.73×10^{02}	8.53×10^{00}	4.40×10^{-01}	1.37×10^{00}	1.87×10^{-01}	8.76×10^{01}	3.23×10^{00}
LUNG Parenchyma	2.78×10^{02}	1.29×10^{01}	6.77×10^{-01}	1.54×10^{00}	1.86×10^{-01}	7.74×10^{01}	2.55×10^{00}
LUNG Right	7.52×10^{02}	9.09×10^{00}	4.81×10^{-01}	1.20×10^{00}	4.43×10^{-01}	5.50×10^{01}	2.68×10^{00}
LYMPH NODE Tracheobronchial-1	1.75×10^{00}	3.40×10^{02}	2.13×10^{01}	7.22×10^{01}	7.43×10^{00}	3.22×10^{03}	1.04×10^{02}
LYMPH NODE Tracheobronchial-2	2.57×10^{00}	1.29×10^{02}	1.48×10^{01}	2.44×10^{01}	4.93×10^{00}	1.39×10^{03}	5.34×10^{01}
LYMPH NODE Tracheobronchial-3	4.98×10^{00}	2.46×10^{02}	1.96×10^{01}	9.21×10^{01}	9.15×10^{00}	6.00×10^{03}	1.87×10^{02}
LYMPH NODE ^a Tracheobronchial-4	7.20×10^{00}	1.88×10^{02}	2.69×10^{01}	6.53×10^{01}	1.06×10^{01}	4.02×10^{03}	1.39×10^{02}
MENINGES	5.76×10^{01}	5.38×10^{-02}	1.39×10^{-02}	5.78×10^{-03}	3.47×10^{-03}	4.35×10^{-01}	3.18×10^{-02}
MESENTERY	3.79×10^{02}	9.87×10^{-03}	2.29×10^{-03}	3.50×10^{-04}	9.63×10^{-04}	6.03×10^{-02}	4.76×10^{-03}
PANCREAS (1.11×10^{01})	1.42×10^{02}	1.99×10^{-01}	6.32×10^{-02}	5.86×10^{-02}	2.34×10^{-02}	1.55×10^{00}	1.22×10^{-01}
PENIS	3.95×10^{01}	7.43×10^{-02}	2.03×10^{-02}	4.22×10^{-03}	1.01×10^{-02}	3.81×10^{-01}	3.63×10^{-02}
PERICARDIUM	1.20×10^{02}	1.81×10^{00}	9.26×10^{-02}	3.33×10^{-01}	1.02×10^{-01}	1.87×10^{01}	8.18×10^{-01}
PERITESTIC	2.87×10^{01}	1.86×10^{-02}	1.28×10^{-02}	0.00×10^{00}	0.00×10^{00}	1.73×10^{-01}	2.56×10^{-02}
PITUITARY	5.4×10^{-01}	1.93×10^{00}	8.67×10^{-01}	6.67×10^{-01}	4.67×10^{-01}	2.30×10^{01}	2.47×10^{00}
PROSTATE	2.42×10^{01}	3.77×10^{-01}	4.96×10^{-02}	6.34×10^{-02}	1.65×10^{-02}	4.09×10^{00}	1.78×10^{-01}
SALIVARY GLAND	5.90×10^{00}	-2.83×10^{-02}	9.61×10^{-02}	3.39×10^{-02}	7.91×10^{-02}	6.61×10^{-01}	1.30×10^{-01}
SPINAL CHORD	2.91×10^{01}	9.39×10^{-02}	3.78×10^{-02}	1.15×10^{-03}	1.27×10^{-02}	1.88×10^{-01}	2.75×10^{-02}
SPLEEN ^a (2.94×10^{01})	2.88×10^{02}	3.33×10^{-01}	3.94×10^{-02}	8.00×10^{-02}	2.32×10^{-02}	5.08×10^{00}	2.04×10^{-01}

^aFirst number includes tissue and tissue fluid weight. Numbers in parentheses are weight of fluid.
^bRevised from previous published value.

CASE 0193 VISCERA and MISCELLANEOUS TISSUES

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TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
STOMACH*	4.04 x 10 ⁻⁰² (1.69 x 10 ⁻⁰¹)	3.27 x 10 ⁻⁰¹	1.69 x 10 ⁻⁰²	1.26 x 10 ⁻⁰²	2.31 x 10 ⁻⁰³	1.14 x 10 ⁻⁰⁰	4.14 x 10 ⁻⁰²
TESTES	1.44 x 10 ⁻⁰¹	1.16 x 10 ⁻⁰¹	3.93 x 10 ⁻⁰²	4.63 x 10 ⁻⁰³	9.27 x 10 ⁻⁰³	7.73 x 10 ⁻⁰¹	8.33 x 10 ⁻⁰²
THYROID*	1.41 x 10 ⁻⁰¹ (1.4 x 10 ⁻⁰⁰)	1.61 x 10 ⁻⁰¹	6.15 x 10 ⁻⁰²	3.55 x 10 ⁻⁰²	3.07 x 10 ⁻⁰²	7.54 x 10 ⁻⁰¹	8.51 x 10 ⁻⁰²
TOENAIL	5.00 x 10 ⁻⁰¹	1.23 x 10 ⁻⁰⁰	6.17 x 10 ⁻⁰¹	-6.17 x 10 ⁻⁰²	1.23 x 10 ⁻⁰¹	4.63 x 10 ⁻⁰⁰	1.05 x 10 ⁻⁰⁰
TONGUE	9.04 x 10 ⁻⁰¹	2.99 x 10 ⁻⁰²	1.03 x 10 ⁻⁰²	7.37 x 10 ⁻⁰³	3.68 x 10 ⁻⁰³	1.85 x 10 ⁻⁰¹	1.73 x 10 ⁻⁰²
TRACHEA	1.74 x 10 ⁻⁰¹	4.69 x 10 ⁻⁰¹	1.63 x 10 ⁻⁰¹	1.34 x 10 ⁻⁰¹	1.25 x 10 ⁻⁰¹	4.23 x 10 ⁻⁰⁰	4.02 x 10 ⁻⁰¹
TRACHEA Scrap	2.93 x 10 ⁻⁰¹	6.12 x 10 ⁻⁰⁰	3.47 x 10 ⁻⁰¹	1.08 x 10 ⁻⁰⁰	1.37 x 10 ⁻⁰¹	7.90 x 10 ⁻⁰¹	2.45 x 10 ⁻⁰⁰

*First number includes tissue and tissue fluid weight. Numbers in parentheses are weight of fluid.
 © Revised from previous published value.

CASE 0193 MUSCLE

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ABDOMINAL # 1	1.26 x 10 ⁰³	1.21 x 10 ⁻⁰²	2.23 x 10 ⁻⁰³	4.83 x 10 ⁻⁰⁴	3.22 x 10 ⁻⁰⁴	8.01 x 10 ⁻⁰²	4.46 x 10 ⁻⁰³
ABDOMINAL # 2	1.49 x 10 ⁰³	1.11 x 10 ⁻⁰²	2.15 x 10 ⁻⁰³	2.50 x 10 ⁻⁰³	1.70 x 10 ⁻⁰³	5.09 x 10 ⁻⁰²	5.46 x 10 ⁻⁰³
ABDOMINAL # 3	2.83 x 10 ⁰³	2.96 x 10 ⁻⁰²	2.71 x 10 ⁻⁰³	2.50 x 10 ⁻⁰³	5.90 x 10 ⁻⁰⁴	1.34 x 10 ⁻⁰¹	6.05 x 10 ⁻⁰³
ABDOMINAL # 4	1.99 x 10 ⁰²	3.89 x 10 ⁻⁰²	7.38 x 10 ⁻⁰³	1.68 x 10 ⁻⁰³	2.02 x 10 ⁻⁰³	2.80 x 10 ⁻⁰¹	1.98 x 10 ⁻⁰²
CALF Left	1.28 x 10 ⁰³	2.31 x 10 ⁻⁰²	2.10 x 10 ⁻⁰³	3.23 x 10 ⁻⁰³	7.01 x 10 ⁻⁰⁴	1.18 x 10 ⁻⁰¹	5.33 x 10 ⁻⁰³
CALF Right	1.25 x 10 ⁰³	2.08 x 10 ⁻⁰²	2.78 x 10 ⁻⁰³	1.93 x 10 ⁻⁰³	8.59 x 10 ⁻⁰⁴	8.11 x 10 ⁻⁰²	5.46 x 10 ⁻⁰³
CLAVICLE Left	6.37 x 10 ⁰¹	1.57 x 10 ⁻⁰²	9.42 x 10 ⁻⁰³	3.67 x 10 ⁻⁰³	6.29 x 10 ⁻⁰³	8.95 x 10 ⁻⁰²	1.26 x 10 ⁻⁰²
FOOT Left	1.74 x 10 ⁰²	2.41 x 10 ⁻⁰²	6.03 x 10 ⁻⁰³	2.58 x 10 ⁻⁰³	3.73 x 10 ⁻⁰³	2.20 x 10 ⁻⁰¹	1.52 x 10 ⁻⁰²
FOOT Right	2.97 x 10 ⁰²	2.29 x 10 ⁻⁰²	3.25 x 10 ⁻⁰³	4.03 x 10 ⁻⁰³	1.90 x 10 ⁻⁰³	1.91 x 10 ⁻⁰¹	1.05 x 10 ⁻⁰²
FOREARM Left	6.47 x 10 ⁰²	2.73 x 10 ⁻⁰²	3.17 x 10 ⁻⁰³	2.93 x 10 ⁻⁰³	1.00 x 10 ⁻⁰³	1.47 x 10 ⁻⁰¹	7.27 x 10 ⁻⁰³
FOREARM Right	6.15 x 10 ⁰²	1.99 x 10 ⁻⁰²	3.25 x 10 ⁻⁰³	5.50 x 10 ⁻⁰⁴	5.50 x 10 ⁻⁰⁴	5.56 x 10 ⁻⁰²	4.66 x 10 ⁻⁰³
HAND Left	1.26 x 10 ⁰²	4.09 x 10 ⁻⁰²	6.37 x 10 ⁻⁰³	9.57 x 10 ⁻⁰³	3.19 x 10 ⁻⁰³	3.95 x 10 ⁻⁰¹	2.23 x 10 ⁻⁰²
HAND Right	1.44 x 10 ⁰²	4.60 x 10 ⁻⁰²	6.97 x 10 ⁻⁰³	2.55 x 10 ⁻⁰³	1.85 x 10 ⁻⁰³	1.18 x 10 ⁻⁰¹	1.07 x 10 ⁻⁰²
HEAD	1.67 x 10 ⁰²	2.87 x 10 ⁻⁰²	4.79 x 10 ⁻⁰³	4.20 x 10 ⁻⁰³	3.00 x 10 ⁻⁰³	2.67 x 10 ⁻⁰¹	1.61 x 10 ⁻⁰¹
SCAPULA Left	4.98 x 10 ⁰²	1.75 x 10 ⁻⁰²	2.71 x 10 ⁻⁰³	3.72 x 10 ⁻⁰³	1.31 x 10 ⁻⁰³	1.12 x 10 ⁻⁰¹	6.52 x 10 ⁻⁰³
STERNUM	2.38 x 10 ⁰²	1.11 x 10 ⁻⁰²	2.24 x 10 ⁻⁰³	2.23 x 10 ⁻⁰³	9.77 x 10 ⁻⁰⁴	8.96 x 10 ⁻⁰²	6.44 x 10 ⁻⁰³
THIGH Left	2.70 x 10 ⁰³	1.23 x 10 ⁻⁰³	4.69 x 10 ⁻⁰⁴	1.23 x 10 ⁻⁰³	4.69 x 10 ⁻⁰⁴	9.35 x 10 ⁻⁰²	3.96 x 10 ⁻⁰³
THIGH Right	3.16 x 10 ⁰³	4.52 x 10 ⁻⁰¹	1.75 x 10 ⁻⁰²	1.05 x 10 ⁻⁰³	4.62 x 10 ⁻⁰⁴	8.64 x 10 ⁻⁰²	4.81 x 10 ⁻⁰³
THORACIC # 1	1.05 x 10 ⁰³	6.17 x 10 ⁻⁰²	5.32 x 10 ⁻⁰³	9.12 x 10 ⁻⁰³	1.46 x 10 ⁻⁰³	6.59 x 10 ⁻⁰¹	2.20 x 10 ⁻⁰²
THORACIC # 2	1.10 x 10 ⁰³	1.38 x 10 ⁻⁰²	2.24 x 10 ⁻⁰³	6.00 x 10 ⁻⁰⁴	4.80 x 10 ⁻⁰⁴	6.33 x 10 ⁻⁰²	4.25 x 10 ⁻⁰³
THORACIC # 3	1.31 x 10 ⁰³	1.46 x 10 ⁻⁰²	1.93 x 10 ⁻⁰³	2.23 x 10 ⁻⁰³	6.60 x 10 ⁻⁰⁴	1.16 x 10 ⁻⁰¹	5.48 x 10 ⁻⁰³
THORACIC # 4	8.89 x 10 ⁰²	7.42 x 10 ⁻⁰³	1.50 x 10 ⁻⁰³	7.42 x 10 ⁻⁰³	1.50 x 10 ⁻⁰³	5.27 x 10 ⁻⁰¹	1.90 x 10 ⁻⁰²
UPPER ARM Left	1.05 x 10 ⁰³	1.70 x 10 ⁻⁰²	1.96 x 10 ⁻⁰³	1.63 x 10 ⁻⁰³	6.73 x 10 ⁻⁰⁴	8.19 x 10 ⁻⁰²	4.26 x 10 ⁻⁰³
UPPER ARM Right	9.96 x 10 ⁰²	1.29 x 10 ⁻⁰²	2.01 x 10 ⁻⁰³	1.80 x 10 ⁻⁰³	1.07 x 10 ⁻⁰³	1.71 x 10 ⁻⁰¹	8.30 x 10 ⁻⁰³

CASE 0193 SKIN

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ABDOMEN #1	1.07×10^{03}	5.53×10^{-03}	1.18×10^{-03}	2.50×10^{-04}	3.75×10^{-04}	3.00×10^{-02}	2.73×10^{-03}
ABDOMEN #2	9.08×10^{02}	1.04×10^{-02}	1.76×10^{-03}	8.83×10^{-04}	5.15×10^{-04}	3.27×10^{-02}	3.01×10^{-03}
ABDOMEN #3	1.54×10^{03}	1.33×10^{-02}	1.56×10^{-03}	7.83×10^{-04}	7.83×10^{-04}	3.77×10^{-02}	3.11×10^{-03}
ABDOMEN #4	1.08×10^{03}	9.55×10^{-03}	1.66×10^{-03}	6.17×10^{-04}	4.32×10^{-04}	3.08×10^{-02}	2.83×10^{-03}
CALF Left	6.48×10^{02}	2.32×10^{-02}	2.62×10^{-03}	3.02×10^{-03}	1.01×10^{-03}	1.35×10^{-01}	6.56×10^{-03}
CALF Right	1.30×10^{03}	2.12×10^{-02}	2.21×10^{-03}	1.28×10^{-03}	5.13×10^{-04}	8.56×10^{-02}	4.46×10^{-03}
FOOT Left	3.42×10^{02}	3.16×10^{-02}	4.53×10^{-03}	3.07×10^{-03}	1.46×10^{-03}	1.39×10^{-01}	9.20×10^{-03}
FOOT Right	2.54×10^{02}	2.99×10^{-02}	3.93×10^{-03}	7.83×10^{-04}	9.14×10^{-04}	1.13×10^{-01}	8.65×10^{-03}
FORE ARM Left	2.79×10^{02}	9.11×10^{-02}	9.14×10^{-03}	9.00×10^{-04}	1.44×10^{-03}	1.29×10^{-01}	9.50×10^{-03}
FORE ARM Right	2.79×10^{02}	1.76×10^{-02}	2.39×10^{-03}	9.50×10^{-04}	7.13×10^{-04}	1.06×10^{-01}	7.17×10^{-03}
HAND Left	1.27×10^{02}	5.50×10^{-01}	3.07×10^{-02}	8.75×10^{-02}	9.72×10^{-03}	5.69×10^{00}	1.80×10^{-01}
HAND Right	1.33×10^{02}	3.36×10^{-02}	5.77×10^{-03}	4.27×10^{-03}	2.26×10^{-03}	1.81×10^{-01}	1.40×10^{-02}
HEAD	4.41×10^{02}	3.80×10^{-02}	5.29×10^{-03}	1.66×10^{-01}	4.16×10^{-02}	1.31×10^{-01}	7.24×10^{-03}
STERNUM	8.65×10^{02}	8.32×10^{-03}	3.08×10^{-03}	2.33×10^{-04}	7.78×10^{-04}	4.87×10^{-02}	4.08×10^{-03}
THIGH Left	2.57×10^{03}	1.53×10^{-02}	1.19×10^{-03}	9.33×10^{-04}	2.72×10^{-04}	4.54×10^{-02}	2.06×10^{-03}
THIGH Right	1.47×10^{03}	1.34×10^{-02}	1.45×10^{-03}	5.00×10^{-04}	5.91×10^{-04}	5.24×10^{-02}	3.30×10^{-03}
THORACIC #1	1.19×10^{03}	1.72×10^{-02}	1.91×10^{-03}	1.35×10^{-03}	5.63×10^{-04}	5.00×10^{-02}	3.47×10^{-03}
THORACIC #2	7.40×10^{02}	6.51×10^{-02}	5.41×10^{-03}	8.02×10^{-03}	1.71×10^{-03}	4.63×10^{-01}	1.83×10^{-02}
THORACIC #3	1.30×10^{03}	1.30×10^{-02}	1.48×10^{-03}	1.43×10^{-03}	5.61×10^{-04}	5.07×10^{-02}	3.43×10^{-03}
THORACIC #4	9.37×10^{02}	1.26×10^{-02}	1.99×10^{-03}	2.20×10^{-03}	7.10×10^{-04}	5.17×10^{-02}	3.70×10^{-03}
UPPER ARM Left	9.04×10^{02}	8.53×10^{-02}	5.30×10^{-03}	9.72×10^{-03}	1.33×10^{-03}	5.02×10^{-01}	1.64×10^{-02}
UPPER ARM Right	8.70×10^{02}	2.10×10^{-02}	2.53×10^{-03}	1.62×10^{-03}	1.00×10^{-03}	6.21×10^{-02}	4.52×10^{-03}

CASE 0208 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
CALCANEUS	9.08 x 10 ⁰¹	2.89 x 10 ⁰¹	1.21 x 10 ⁰⁰	1.41 x 10 ⁻⁰¹	1.34 x 10 ⁻⁰¹	3.46 x 10 ⁻⁰²	2.52 x 10 ⁰¹	8.16 x 10 ⁻⁰¹
CANINE	1.28 x 10 ⁰⁰	1.26 x 10 ⁰⁰	6.22 x 10 ⁻⁰¹	2.38 x 10 ⁻⁰¹	-6.61 x 10 ⁻⁰²	1.06 x 10 ⁻⁰¹	9.20 x 10 ⁰⁰	6.82 x 10 ⁻⁰¹
Right Lower 3								
CANINE	1.26 x 10 ⁰⁰	1.04 x 10 ⁰⁰	8.01 x 10 ⁻⁰¹	2.72 x 10 ⁻⁰¹	-9.62 x 10 ⁻⁰²	1.12 x 10 ⁻⁰¹	8.21 x 10 ⁰⁰	7.09 x 10 ⁻⁰¹
Right Upper 3								
CAPITATE	1.99 x 10 ⁰⁰	2.90 x 10 ⁻⁰¹	4.02 x 10 ⁰⁰	1.38 x 10 ⁰⁰	0.00 x 10 ⁰⁰	7.24 x 10 ⁻⁰¹	8.10 x 10 ⁰¹	5.95 x 10 ⁰⁰
CLAVICLE	1.24 x 10 ⁰¹	7.64 x 10 ⁰⁰	7.46 x 10 ⁻⁰¹	1.05 x 10 ⁻⁰¹	1.13 x 10 ⁻⁰¹	4.36 x 10 ⁻⁰²	1.42 x 10 ⁰¹	5.82 x 10 ⁻⁰¹
Shaft								
CLAVICLE	1.24 x 10 ⁰¹	3.13 x 10 ⁰⁰	1.68 x 10 ⁰⁰	2.34 x 10 ⁻⁰¹	2.34 x 10 ⁻⁰¹	1.17 x 10 ⁻⁰¹	5.10 x 10 ⁰¹	2.04 x 10 ⁰⁰
Sternal End								
CLAVICLE	3.71 x 10 ⁰¹	1.24 x 10 ⁰¹	1.07 x 10 ⁰⁰	1.51 x 10 ⁻⁰¹	1.77 x 10 ⁻⁰¹	5.91 x 10 ⁻⁰²	3.19 x 10 ⁰¹	1.10 x 10 ⁰⁰
CLAVICLE Acromial	9.48 x 10 ⁰⁰	3.39 x 10 ⁰⁰	1.51 x 10 ⁰⁰	2.26 x 10 ⁻⁰¹	1.38 x 10 ⁻⁰¹	7.87 x 10 ⁻⁰²	3.09 x 10 ⁰¹	1.24 x 10 ⁰⁰
End								
COCCYX	5.44 x 10 ⁰⁰	5.5 x 10 ⁻⁰¹	1.9 x 10 ⁰⁰	7.9 x 10 ⁻⁰¹	1.3 x 10 ⁰⁰	5.3 x 10 ⁻⁰¹	6.3 x 10 ⁰¹	3.8 x 10 ⁰⁰
CUBOID	1.66 x 10 ⁰¹	3.27 x 10 ⁰⁰	1.24 x 10 ⁰⁰	2.65 x 10 ⁻⁰¹	1.63 x 10 ⁻⁰¹	1.53 x 10 ⁻⁰¹	4.72 x 10 ⁰¹	1.83 x 10 ⁰⁰
CUNEIFORM	5.35 x 10 ⁰⁰	1.32 x 10 ⁰⁰	1.84 x 10 ⁰⁰	4.55 x 10 ⁻⁰¹	3.28 x 10 ⁻⁰¹	2.02 x 10 ⁻⁰¹	4.13 x 10 ⁰¹	2.06 x 10 ⁰⁰
Intermediate								
CUNEIFORM	7.92 x 10 ⁰⁰	1.85 x 10 ⁰⁰	2.18 x 10 ⁰⁰	3.60 x 10 ⁻⁰¹	5.41 x 10 ⁻⁰²	1.08 x 10 ⁻⁰¹	4.98 x 10 ⁰¹	2.20 x 10 ⁰⁰
Lateral								
CUNEIFORM	1.40 x 10 ⁰¹	3.38 x 10 ⁰⁰	2.64 x 10 ⁰⁰	3.25 x 10 ⁻⁰¹	4.04 x 10 ⁻⁰¹	1.38 x 10 ⁻⁰¹	4.97 x 10 ⁰¹	1.88 x 10 ⁰⁰
Medial								
FEMUR	2.00 x 10 ⁰²	4.28 x 10 ⁰¹	1.68 x 10 ⁰⁰	1.71 x 10 ⁻⁰¹	1.83 x 10 ⁻⁰¹	5.06 x 10 ⁻⁰²	3.15 x 10 ⁰¹	1.06 x 10 ⁰⁰
Distal End								
FEMUR	1.22 x 10 ⁰²	5.09 x 10 ⁰¹	1.06 x 10 ⁰⁰	1.90 x 10 ⁻⁰¹	-6.55 x 10 ⁻⁰³	1.11 x 10 ⁻⁰¹	1.26 x 10 ⁰¹	7.14 x 10 ⁻⁰¹
Distal Shaft								
FEMUR	1.18 x 10 ⁰²	7.56 x 10 ⁰¹	7.61 x 10 ⁻⁰¹	8.16 x 10 ⁻⁰²	1.68 x 10 ⁻⁰¹	5.07 x 10 ⁻⁰²	1.35 x 10 ⁰¹	5.38 x 10 ⁻⁰¹
Medial Shaft								
FEMUR	2.04 x 10 ⁰²	4.76 x 10 ⁰¹	1.62 x 10 ⁰⁰	1.65 x 10 ⁻⁰¹	3.78 x 10 ⁻⁰¹	7.36 x 10 ⁻⁰²	5.04 x 10 ⁰¹	1.59 x 10 ⁰⁰
Proximal End								
FEMUR	9.81 x 10 ⁰¹	5.47 x 10 ⁰¹	6.52 x 10 ⁻⁰¹	9.75 x 10 ⁻⁰²	1.28 x 10 ⁻⁰¹	4.27 x 10 ⁻⁰²	1.39 x 10 ⁰¹	5.28 x 10 ⁻⁰¹
Proximal Shaft								
FIBULA	1.37 x 10 ⁰¹	3.15 x 10 ⁰⁰	1.51 x 10 ⁰⁰	2.43 x 10 ⁻⁰¹	2.75 x 10 ⁻⁰¹	1.16 x 10 ⁻⁰¹	3.91 x 10 ⁰¹	1.58 x 10 ⁰⁰
Distal End								

Right side of body was analyzed unless otherwise noted.
Concentrations for bone are per kg of ash.

CASE 0208 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
FIBULA	2.30 x 10 ⁰¹	1.31 x 10 ⁰¹	7.43 x 10 ⁻⁰¹	1.48 x 10 ⁻⁰¹	3.05 x 10 ⁻⁰²	3.05 x 10 ⁻⁰²	1.02 x 10 ⁻⁰¹	4.90 x 10 ⁻⁰¹
Distal Shaft								
FIBULA	1.31 x 10 ⁰¹	2.50 x 10 ⁰⁰	2.37 x 10 ⁰⁰	3.60 x 10 ⁻⁰¹	2.93 x 10 ⁻⁰¹	1.33 x 10 ⁻⁰¹	4.96 x 10 ⁻⁰¹	2.00 x 10 ⁰⁰
Proximal End								
FIBULA	2.06 x 10 ⁰¹	1.19 x 10 ⁰¹	7.84 x 10 ⁻⁰¹	1.62 x 10 ⁻⁰¹	5.04 x 10 ⁻⁰²	5.60 x 10 ⁻⁰²	1.33 x 10 ⁻⁰¹	6.40 x 10 ⁻⁰¹
Proximal Shaft								
FOOT PHALANGE	3.50 x 10 ⁰⁰	5.5 x 10 ⁻⁰¹	2.9 x 10 ⁰⁰	9.1 x 10 ⁻⁰¹	-1.8 x 10 ⁻⁰¹	4.9 x 10 ⁻⁰¹	6.3 x 10 ⁻⁰¹	4.0 x 10 ⁰⁰
Distal-1								
FOOT PHALANGE	6.5 x 10 ⁻⁰¹	2.3 x 10 ⁻⁰¹	3.9 x 10 ⁰⁰	1.9 x 10 ⁰⁰	-4.4 x 10 ⁻⁰¹	1.0 x 10 ⁰⁰	2.7 x 10 ⁻⁰¹	3.4 x 10 ⁰⁰
Distal-2								
FOOT PHALANGE	7.1 x 10 ⁻⁰¹	9.0 x 10 ⁻⁰²	5.2 x 10 ⁰⁰	4.1 x 10 ⁰⁰	-2.2 x 10 ⁰⁰	1.5 x 10 ⁰⁰	9.2 x 10 ⁻⁰¹	1.2 x 10 ⁰¹
Distal-3								
FOOT PHALANGE	6.1 x 10 ⁻⁰¹	9.0 x 10 ⁻⁰²	1.2 x 10 ⁰¹	4.4 x 10 ⁰⁰	3.7 x 10 ⁻⁰¹	2.2 x 10 ⁰⁰	9.4 x 10 ⁻⁰¹	1.2 x 10 ⁰¹
Distal-4								
FOOT PHALANGE	6.8 x 10 ⁻⁰¹	4.0 x 10 ⁻⁰²	-1.7 x 10 ⁰⁰	6.4 x 10 ⁰⁰	-5.0 x 10 ⁰⁰	5.4 x 10 ⁰⁰	1.2 x 10 ⁰²	1.9 x 10 ⁰¹
Distal-5								
FOOT PHALANGE	7.4 x 10 ⁻⁰¹	1.3 x 10 ⁻⁰¹	5.9 x 10 ⁰⁰	3.1 x 10 ⁰⁰	-1.5 x 10 ⁰⁰	1.0 x 10 ⁰⁰	5.5 x 10 ⁻⁰¹	6.1 x 10 ⁰⁰
Medial-2								
FOOT PHALANGE	5.7 x 10 ⁻⁰¹	1.1 x 10 ⁻⁰¹	1.1 x 10 ⁰¹	4.9 x 10 ⁰⁰	3.0 x 10 ⁻⁰¹	2.4 x 10 ⁰⁰	3.6 x 10 ⁻⁰¹	5.8 x 10 ⁰⁰
Medial-3								
FOOT PHALANGE	4.6 x 10 ⁻⁰¹	3.1 x 10 ⁻⁰¹	6.5 x 10 ⁻⁰¹	1.6 x 10 ⁰⁰	-1.4 x 10 ⁰⁰	1.2 x 10 ⁰⁰	1.9 x 10 ⁻⁰¹	2.8 x 10 ⁰⁰
Medial-4								
FOOT PHALANGE	6.73 x 10 ⁰⁰	1.68 x 10 ⁰⁰	1.43 x 10 ⁰⁰	3.57 x 10 ⁻⁰¹	2.38 x 10 ⁻⁰¹	1.59 x 10 ⁻⁰¹	4.98 x 10 ⁻⁰¹	2.21 x 10 ⁰⁰
Proximal-1								
FOOT PHALANGE	1.90 x 10 ⁰⁰	5.6 x 10 ⁻⁰¹	3.1 x 10 ⁰⁰	1.0 x 10 ⁰⁰	0.0 x 10 ⁰⁰	4.8 x 10 ⁻⁰¹	4.2 x 10 ⁻⁰¹	3.3 x 10 ⁰⁰
Proximal-2								
FOOT PHALANGE	1.70 x 10 ⁰⁰	6.0 x 10 ⁻⁰¹	8.7 x 10 ⁰⁰	1.2 x 10 ⁰⁰	4.1 x 10 ⁻⁰¹	3.5 x 10 ⁻⁰¹	1.1 x 10 ⁰²	5.0 x 10 ⁰⁰
Proximal-3								
FOOT PHALANGE	1.50 x 10 ⁰⁰	3.5 x 10 ⁻⁰¹	3.1 x 10 ⁰⁰	1.3 x 10 ⁰⁰	-3.8 x 10 ⁻⁰¹	3.8 x 10 ⁻⁰¹	4.9 x 10 ⁻⁰¹	4.4 x 10 ⁰⁰
Proximal-4								
FOOT PHALANGE	1.10 x 10 ⁰⁰	2.4 x 10 ⁻⁰¹	4.6 x 10 ⁰⁰	2.4 x 10 ⁰⁰	-1.4 x 10 ⁻⁰¹	9.7 x 10 ⁻⁰¹	3.8 x 10 ⁻⁰¹	4.2 x 10 ⁰⁰
Proximal-5								
FRONTAL # 1	3.81 x 10 ⁰¹	2.40 x 10 ⁰¹	7.42 x 10 ⁻⁰¹	8.61 x 10 ⁻⁰²	1.06 x 10 ⁻⁰¹	3.33 x 10 ⁻⁰²	2.12 x 10 ⁻⁰¹	6.78 x 10 ⁻⁰¹
FRONTAL # 2	4.54 x 10 ⁰¹	3.03 x 10 ⁰¹	8.03 x 10 ⁻⁰¹	1.36 x 10 ⁻⁰¹	9.46 x 10 ⁻⁰²	3.08 x 10 ⁻⁰²	1.54 x 10 ⁻⁰¹	5.41 x 10 ⁻⁰¹

Right side of body was analyzed unless otherwise noted.
Concentrations for bone are per kg of ash.

CASE 0208 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
FRONTAL # 3	1.72 x 10 ⁰¹	9.90 x 10 ⁰⁰	9.70 x 10 ⁻⁰¹	2.29 x 10 ⁻⁰¹	2.09 x 10 ⁻⁰¹	9.43 x 10 ⁻⁰²	2.40 x 10 ⁻⁰¹	1.03 x 10 ⁻⁰⁰
HAMATE	3.73 x 10 ⁰⁰	7.6 x 10 ⁻⁰¹	3.1 x 10 ⁰⁰	7.9 x 10 ⁻⁰¹	5.3 x 10 ⁻⁰¹	4.4 x 10 ⁻⁰¹	5.4 x 10 ⁻⁰¹	3.3 x 10 ⁻⁰⁰
HAND PHALANGE Distal-1	1.83 x 10 ⁰⁰	8.0 x 10 ⁻⁰¹	1.6 x 10 ⁰⁰	5.4 x 10 ⁻⁰¹	8.3 x 10 ⁻⁰¹	4.2 x 10 ⁻⁰¹	2.1 x 10 ⁻⁰¹	1.8 x 10 ⁻⁰⁰
HAND PHALANGE Distal-2	8.1 x 10 ⁻⁰¹	1.4 x 10 ⁻⁰¹	1.9 x 10 ⁰⁰	3.0 x 10 ⁰⁰	2.4 x 10 ⁻⁰¹	2.6 x 10 ⁰⁰	2.9 x 10 ⁻⁰¹	4.3 x 10 ⁻⁰⁰
HAND PHALANGE Distal-3	9.6 x 10 ⁻⁰¹	1.7 x 10 ⁻⁰¹	3.5 x 10 ⁰⁰	3.1 x 10 ⁰⁰	2.9 x 10 ⁰⁰	2.9 x 10 ⁰⁰	6.6 x 10 ⁻⁰¹	7.4 x 10 ⁻⁰⁰
HAND PHALANGE Distal-4	1.01 x 10 ⁰⁰	1.5 x 10 ⁻⁰¹	4.9 x 10 ⁰⁰	2.7 x 10 ⁰⁰	0.0 x 10 ⁰⁰	1.7 x 10 ⁰⁰	5.8 x 10 ⁻⁰¹	7.7 x 10 ⁻⁰⁰
HAND PHALANGE Distal-5	7.0 x 10 ⁻⁰¹	1.4 x 10 ⁻⁰¹	6.2 x 10 ⁰⁰	3.1 x 10 ⁰⁰	0.0 x 10 ⁰⁰	1.5 x 10 ⁰⁰	3.0 x 10 ⁻⁰¹	4.3 x 10 ⁻⁰⁰
HAND PHALANGE Medial-2	1.69 x 10 ⁰⁰	4.2 x 10 ⁻⁰¹	2.7 x 10 ⁰⁰	1.0 x 10 ⁰⁰	4.0 x 10 ⁻⁰¹	5.6 x 10 ⁻⁰¹	4.5 x 10 ⁻⁰¹	3.6 x 10 ⁻⁰⁰
HAND PHALANGE Medial-3	2.29 x 10 ⁰⁰	8.2 x 10 ⁻⁰¹	1.6 x 10 ⁻⁰¹	4.5 x 10 ⁻⁰¹	4.5 x 10 ⁻⁰¹	3.7 x 10 ⁻⁰¹	3.2 x 10 ⁻⁰¹	2.3 x 10 ⁻⁰⁰
HAND PHALANGE Medial-4	1.79 x 10 ⁰⁰	4.9 x 10 ⁻⁰¹	2.4 x 10 ⁰⁰	8.8 x 10 ⁻⁰¹	2.0 x 10 ⁻⁰¹	4.8 x 10 ⁻⁰¹	4.1 x 10 ⁻⁰¹	3.3 x 10 ⁻⁰⁰
HAND PHALANGE Medial-5	9.9 x 10 ⁻⁰¹	2.4 x 10 ⁻⁰¹	5.8 x 10 ⁰⁰	2.2 x 10 ⁰⁰	-1.4 x 10 ⁻⁰¹	1.3 x 10 ⁰⁰	3.8 x 10 ⁻⁰¹	4.1 x 10 ⁻⁰⁰
HAND PHALANGE Proximal-1	3.24 x 10 ⁰⁰	9.2 x 10 ⁻⁰¹	1.9 x 10 ⁰⁰	5.1 x 10 ⁻⁰¹	-7.3 x 10 ⁻⁰²	1.8 x 10 ⁻⁰¹	3.5 x 10 ⁻⁰¹	2.2 x 10 ⁻⁰⁰
HAND PHALANGE Proximal-2	4.70 x 10 ⁰⁰	1.42 x 10 ⁰⁰	1.31 x 10 ⁰⁰	3.76 x 10 ⁻⁰¹	-7.04 x 10 ⁻⁰²	1.64 x 10 ⁻⁰¹	2.95 x 10 ⁻⁰¹	1.73 x 10 ⁻⁰⁰
HAND PHALANGE Proximal-3	5.17 x 10 ⁰⁰	1.71 x 10 ⁰⁰	1.25 x 10 ⁰⁰	2.92 x 10 ⁻⁰¹	-9.75 x 10 ⁻⁰²	1.95 x 10 ⁻⁰¹	2.73 x 10 ⁻⁰¹	1.50 x 10 ⁻⁰⁰
HAND PHALANGE Proximal-4	4.12 x 10 ⁰⁰	1.26 x 10 ⁰⁰	9.52 x 10 ⁻⁰¹	3.44 x 10 ⁻⁰¹	-2.64 x 10 ⁻⁰²	1.32 x 10 ⁻⁰¹	3.16 x 10 ⁻⁰¹	1.86 x 10 ⁻⁰⁰
HAND PHALANGE Proximal-5	2.48 x 10 ⁰⁰	7.1 x 10 ⁻⁰¹	9.4 x 10 ⁻⁰¹	6.1 x 10 ⁻⁰¹	1.9 x 10 ⁻⁰¹	3.8 x 10 ⁻⁰¹	3.2 x 10 ⁻⁰¹	2.5 x 10 ⁻⁰⁰
HUMERUS Distal End	4.93 x 10 ⁰¹	1.46 x 10 ⁰¹	1.03 x 10 ⁰⁰	1.50 x 10 ⁻⁰¹	1.09 x 10 ⁻⁰¹	5.46 x 10 ⁻⁰²	1.95 x 10 ⁻⁰¹	7.45 x 10 ⁻⁰¹
HUMERUS Distal Shaft	3.45 x 10 ⁰¹	2.13 x 10 ⁰¹	7.26 x 10 ⁻⁰¹	1.19 x 10 ⁻⁰¹	1.63 x 10 ⁻⁰¹	4.69 x 10 ⁻⁰²	1.53 x 10 ⁻⁰¹	5.83 x 10 ⁻⁰¹

Right side of body was analyzed unless otherwise noted.
Concentrations for bone are per kg of ash.

CASE 0208 BONE

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TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
HUMERUS Proximal End	8.55 x 10 ⁰¹	1.42 x 10 ⁰¹	1.69 x 10 ⁰⁰	1.92 x 10 ⁻⁰¹	2.25 x 10 ⁻⁰¹	6.09 x 10 ⁻⁰²	6.18 x 10 ⁰¹	1.93 x 10 ⁰⁰
HUMERUS Proximal Shaft	6.15 x 10 ⁰¹	3.12 x 10 ⁰¹	9.38 x 10 ⁻⁰¹	1.30 x 10 ⁻⁰¹	9.40 x 10 ⁻⁰²	2.99 x 10 ⁻⁰²	1.59 x 10 ⁰¹	5.51 x 10 ⁻⁰¹
HYOID	3.30 x 10 ⁰⁰	8.0 x 10 ⁻⁰¹	2.9 x 10 ⁰⁰	7.5 x 10 ⁻⁰¹	2.5 x 10 ⁻⁰¹	3.3 x 10 ⁻⁰¹	6.2 x 10 ⁰¹	3.4 x 10 ⁰⁰
ILIUM Crest	2.03 x 10 ⁰²	5.02 x 10 ⁰¹	2.09 x 10 ⁰⁰	2.13 x 10 ⁻⁰¹	3.36 x 10 ⁻⁰¹	6.65 x 10 ⁻⁰²	5.74 x 10 ⁰¹	1.77 x 10 ⁰⁰
INCISOR Right Lower 2	6.30 x 10 ⁻⁰¹	5.0 x 10 ⁻⁰¹	1.3 x 10 ⁻⁰¹	4.3 x 10 ⁻⁰¹	-6.7 x 10 ⁻⁰²	1.7 x 10 ⁻⁰¹	1.1 x 10 ⁰¹	1.1 x 10 ⁰⁰
INCISOR Right Upper 1	2.41 x 10 ⁰⁰	5.0 x 10 ⁻⁰¹	6.7 x 10 ⁻⁰¹	4.7 x 10 ⁻⁰¹	4.3 x 10 ⁻⁰¹	3.7 x 10 ⁻⁰¹	7.4 x 10 ⁰⁰	7.6 x 10 ⁰⁰
INCISOR Right Upper 2	7.80 x 10 ⁻⁰¹	5.5 x 10 ⁻⁰¹	9.70 x 10 ⁻⁰¹	5.5 x 10 ⁻⁰¹	9.1 x 10 ⁻⁰²	3.6 x 10 ⁻⁰¹	8.3 x 10 ⁰⁰	9.6 x 10 ⁻⁰¹
ISCHIUM	2.01 x 10 ⁰²	5.03 x 10 ⁰¹	1.58 x 10 ⁰⁰	1.62 x 10 ⁻⁰¹	3.91 x 10 ⁻⁰¹	6.63 x 10 ⁻⁰²	5.97 x 10 ⁰¹	1.79 x 10 ⁰⁰
LUNATE	3.41 x 10 ⁰⁰	8.1 x 10 ⁻⁰¹	2.0 x 10 ⁰⁰	6.2 x 10 ⁻⁰¹	5.4 x 10 ⁻⁰¹	4.1 x 10 ⁻⁰¹	5.2 x 10 ⁰¹	3.1 x 10 ⁰⁰
MANDIBLE	3.34 x 10 ⁰¹	1.86 x 10 ⁰¹	6.77 x 10 ⁻⁰¹	1.18 x 10 ⁻⁰¹	1.18 x 10 ⁻⁰¹	5.73 x 10 ⁻⁰²	1.64 x 10 ⁰¹	6.19 x 10 ⁻⁰¹
MAXILLA	3.74 x 10 ⁰¹	1.20 x 10 ⁰¹	1.52 x 10 ⁰⁰	2.00 x 10 ⁻⁰¹	2.11 x 10 ⁻⁰¹	8.32 x 10 ⁻⁰²	3.32 x 10 ⁰¹	1.18 x 10 ⁰⁰
METACARPAL # 1	6.62 x 10 ⁰⁰	1.67 x 10 ⁰⁰	1.42 x 10 ⁰⁰	3.59 x 10 ⁻⁰¹	7.98 x 10 ⁻⁰²	9.98 x 10 ⁻⁰²	3.53 x 10 ⁰¹	1.79 x 10 ⁰⁰
METACARPAL # 2	1.09 x 10 ⁰¹	3.46 x 10 ⁰⁰	1.73 x 10 ⁰⁰	4.43 x 10 ⁻⁰¹	3.85 x 10 ⁻⁰²	2.12 x 10 ⁻⁰¹	2.54 x 10 ⁰¹	1.44 x 10 ⁰⁰
METACARPAL # 3	9.63 x 10 ⁰⁰	3.02 x 10 ⁰⁰	1.70 x 10 ⁰⁰	5.30 x 10 ⁻⁰¹	-2.21 x 10 ⁻⁰¹	2.21 x 10 ⁻⁰¹	2.45 x 10 ⁰¹	1.45 x 10 ⁰⁰
METACARPAL # 4	6.22 x 10 ⁰⁰	1.75 x 10 ⁰⁰	2.99 x 10 ⁰⁰	5.14 x 10 ⁻⁰¹	1.14 x 10 ⁻⁰¹	1.71 x 10 ⁻⁰¹	3.18 x 10 ⁰¹	1.63 x 10 ⁰⁰
METACARPAL # 5	5.16 x 10 ⁰⁰	1.43 x 10 ⁰⁰	2.73 x 10 ⁰⁰	1.21 x 10 ⁰⁰	-4.66 x 10 ⁻⁰²	1.17 x 10 ⁻⁰¹	3.12 x 10 ⁰¹	1.67 x 10 ⁰⁰
METATARSAL # 1	2.08 x 10 ⁰¹	5.16 x 10 ⁰⁰	1.69 x 10 ⁰⁰	2.13 x 10 ⁻⁰¹	2.20 x 10 ⁻⁰¹	8.40 x 10 ⁻⁰²	4.23 x 10 ⁰¹	1.53 x 10 ⁰⁰
METATARSAL # 2	1.04 x 10 ⁰¹	3.20 x 10 ⁰⁰	2.60 x 10 ⁰⁰	5.52 x 10 ⁻⁰¹	2.40 x 10 ⁻⁰¹	1.25 x 10 ⁻⁰¹	3.23 x 10 ⁰¹	1.40 x 10 ⁰⁰
METATARSAL # 3	9.30 x 10 ⁰⁰	2.62 x 10 ⁰⁰	1.73 x 10 ⁰⁰	3.18 x 10 ⁻⁰¹	2.80 x 10 ⁻⁰¹	1.27 x 10 ⁻⁰¹	3.35 x 10 ⁰¹	1.49 x 10 ⁰⁰
METATARSAL # 4	8.50 x 10 ⁰⁰	2.38 x 10 ⁰⁰	1.09 x 10 ⁰⁰	2.66 x 10 ⁻⁰¹	5.60 x 10 ⁻⁰²	9.80 x 10 ⁻⁰²	3.53 x 10 ⁰¹	1.62 x 10 ⁰⁰
METATARSAL # 5	9.95 x 10 ⁰⁰	2.93 x 10 ⁰⁰	1.23 x 10 ⁰⁰	2.50 x 10 ⁻⁰¹	2.62 x 10 ⁻⁰¹	1.25 x 10 ⁻⁰¹	3.34 x 10 ⁰¹	1.50 x 10 ⁰⁰
MOLAR Right Lower 6	2.83 x 10 ⁰⁰	9.0 x 10 ⁻⁰¹	2.0 x 10 ⁰⁰	1.2 x 10 ⁰⁰	1.5 x 10 ⁻⁰¹	3.7 x 10 ⁻⁰¹	1.5 x 10 ⁰¹	1.3 x 10 ⁰⁰
MOLAR Right Lower 7	1.54 x 10 ⁰⁰	9.9 x 10 ⁻⁰¹	1.7 x 10 ⁻⁰¹	7.9 x 10 ⁻⁰¹	8.4 x 10 ⁻⁰²	1.4 x 10 ⁻⁰¹	1.5 x 10 ⁰¹	9.5 x 10 ⁻⁰¹

Right side of body was analyzed unless otherwise noted.
Concentrations for bone are per kg of ash.

CASE 0208 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
MOLAR	2.45 x 10 ⁰⁰	1.39 x 10 ⁰⁰	5.88 x 10 ⁻⁰¹	2.16 x 10 ⁻⁰¹	1.44 x 10 ⁻⁰¹	1.20 x 10 ⁻⁰¹	1.18 x 10 ⁰¹	7.37 x 10 ⁻⁰¹
Right Upper 6								
MOLAR	5.07 x 10 ⁰⁰	1.83 x 10 ⁰⁰	4.83 x 10 ⁻⁰¹	1.55 x 10 ⁻⁰¹	3.64 x 10 ⁻⁰²	7.29 x 10 ⁻⁰²	9.49 x 10 ⁰⁰	5.46 x 10 ⁻⁰¹
Right Upper 7								
NAVICULAR	1.48 x 10 ⁰¹	3.80 x 10 ⁰⁰	1.45 x 10 ⁰⁰	2.19 x 10 ⁻⁰¹	1.67 x 10 ⁻⁰¹	7.89 x 10 ⁻⁰²	4.17 x 10 ⁰¹	1.58 x 10 ⁰⁰
OCCIPITAL	3.20 x 10 ⁰¹	1.96 x 10 ⁰¹	5.69 x 10 ⁻⁰¹	8.18 x 10 ⁻⁰²	7.15 x 10 ⁻⁰²	4.09 x 10 ⁻⁰²	1.55 x 10 ⁰¹	6.07 x 10 ⁻⁰¹
PARIETAL # 1	5.81 x 10 ⁰¹	3.86 x 10 ⁰¹	9.07 x 10 ⁻⁰¹	1.34 x 10 ⁻⁰¹	9.07 x 10 ⁻⁰²	4.75 x 10 ⁻⁰²	1.86 x 10 ⁰¹	7.17 x 10 ⁻⁰¹
PARIETAL # 2	7.78 x 10 ⁰¹	5.12 x 10 ⁰¹	7.06 x 10 ⁻⁰¹	1.01 x 10 ⁻⁰¹	1.33 x 10 ⁻⁰¹	4.88 x 10 ⁻⁰²	2.10 x 10 ⁰¹	7.33 x 10 ⁻⁰¹
PATELLA Right	3.35 x 10 ⁰¹	7.48 x 10 ⁰⁰	1.70 x 10 ⁰⁰	1.60 x 10 ⁻⁰¹	1.92 x 10 ⁻⁰¹	5.35 x 10 ⁻⁰²	3.93 x 10 ⁰¹	1.29 x 10 ⁰⁰
PISIFORM	1.10 x 10 ⁰⁰	1.8 x 10 ⁻⁰¹	2.7 x 10 ⁰¹	4.3 x 10 ⁰⁰	-3.7 x 10 ⁻⁰¹	1.3 x 10 ⁰⁰	5.9 x 10 ⁰¹	6.6 x 10 ⁰⁰
PREMOLAR	9.30 x 10 ⁻⁰¹	7.8 x 10 ⁻⁰¹	4.9 x 10 ⁻⁰¹	3.2 x 10 ⁻⁰¹	2.1 x 10 ⁻⁰²	1.7 x 10 ⁻⁰¹	1.2 x 10 ⁰¹	9.6 x 10 ⁻⁰¹
Right Lower 4								
PREMOLAR	6.50 x 10 ⁻⁰¹	4.8 x 10 ⁻⁰¹	1.4 x 10 ⁰⁰	7.6 x 10 ⁻⁰¹	3.5 x 10 ⁻⁰²	3.1 x 10 ⁻⁰¹	1.5 x 10 ⁰¹	1.5 x 10 ⁰⁰
Right Lower 5								
PREMOLAR	1.28 x 10 ⁰⁰	8.8 x 10 ⁻⁰¹	9.7 x 10 ⁻⁰¹	3.2 x 10 ⁻⁰¹	0.0 x 10 ⁰⁰	1.8 x 10 ⁻⁰¹	8.0 x 10 ⁰⁰	7.2 x 10 ⁻⁰¹
Right Upper 4								
PREMOLAR	8.90 x 10 ⁻⁰¹	6.6 x 10 ⁻⁰¹	9.1 x 10 ⁻⁰¹	3.8 x 10 ⁻⁰¹	0.0 x 10 ⁰⁰	1.5 x 10 ⁻⁰¹	1.2 x 10 ⁰¹	1.0 x 10 ⁰⁰
Right Upper 5								
RADIUS	1.79 x 10 ⁰¹	4.66 x 10 ⁰⁰	1.19 x 10 ⁰⁰	2.15 x 10 ⁻⁰¹	9.30 x 10 ⁻⁰²	6.44 x 10 ⁻⁰²	3.28 x 10 ⁰¹	1.25 x 10 ⁰⁰
Distal End								
RADIUS	1.61 x 10 ⁰¹	1.01 x 10 ⁰¹	4.49 x 10 ⁻⁰¹	1.25 x 10 ⁻⁰¹	1.98 x 10 ⁻⁰²	5.28 x 10 ⁻⁰²	1.02 x 10 ⁰¹	5.70 x 10 ⁻⁰¹
Distal Shaft								
RADIUS	8.60 x 10 ⁰⁰	2.66 x 10 ⁰⁰	1.69 x 10 ⁰⁰	2.88 x 10 ⁻⁰¹	7.52 x 10 ⁻⁰²	8.77 x 10 ⁻⁰²	3.11 x 10 ⁰¹	1.46 x 10 ⁰⁰
Proximal End								
RADIUS	2.41 x 10 ⁰¹	8.20 x 10 ⁰⁰	8.62 x 10 ⁻⁰¹	1.87 x 10 ⁻⁰¹	8.13 x 10 ⁻⁰²	6.50 x 10 ⁻⁰²	1.23 x 10 ⁰¹	6.41 x 10 ⁻⁰¹
Proximal Shaft								
RIB # 1	2.23 x 10 ⁰¹	5.05 x 10 ⁰⁰	2.15 x 10 ⁰⁰	2.84 x 10 ⁻⁰¹	5.94 x 10 ⁻⁰¹	1.32 x 10 ⁻⁰¹	5.24 x 10 ⁰¹	1.77 x 10 ⁰⁰
RIB # 2	1.30 x 10 ⁰¹	3.36 x 10 ⁰⁰	1.95 x 10 ⁰⁰	3.47 x 10 ⁻⁰¹	2.68 x 10 ⁻⁰¹	1.49 x 10 ⁻⁰¹	5.25 x 10 ⁰¹	1.92 x 10 ⁰⁰
RIB # 3	1.62 x 10 ⁰¹	4.32 x 10 ⁰⁰	1.91 x 10 ⁰⁰	2.62 x 10 ⁻⁰¹	5.32 x 10 ⁻⁰¹	1.31 x 10 ⁻⁰¹	4.97 x 10 ⁰¹	1.71 x 10 ⁰⁰
RIB # 4	2.14 x 10 ⁰¹	6.45 x 10 ⁰⁰	2.51 x 10 ⁰⁰	2.84 x 10 ⁻⁰¹	2.79 x 10 ⁻⁰¹	8.27 x 10 ⁻⁰²	4.34 x 10 ⁰¹	1.50 x 10 ⁰⁰
RIB # 5	2.02 x 10 ⁰¹	5.26 x 10 ⁰⁰	1.96 x 10 ⁰⁰	2.34 x 10 ⁻⁰¹	5.51 x 10 ⁻⁰¹	1.08 x 10 ⁻⁰¹	5.47 x 10 ⁰¹	1.77 x 10 ⁰⁰

Right side of body was analyzed unless otherwise noted.
Concentrations for bone are per kg of ash.

CASE 0208 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
RIB # 6	2.38 x 10 ⁰¹	7.82 x 10 ⁰⁰	1.58 x 10 ⁰⁰	1.96 x 10 ⁻⁰¹	1.96 x 10 ⁻⁰¹	5.97 x 10 ⁻⁰²	4.51 x 10 ⁰¹	1.46 x 10 ⁰⁰
RIB # 7	2.87 x 10 ⁰¹	7.81 x 10 ⁰⁰	1.90 x 10 ⁰⁰	1.96 x 10 ⁻⁰¹	2.73 x 10 ⁻⁰¹	6.83 x 10 ⁻⁰²	5.10 x 10 ⁰¹	1.63 x 10 ⁰⁰
RIB # 8	2.17 x 10 ⁰¹	7.05 x 10 ⁰⁰	1.58 x 10 ⁰⁰	2.13 x 10 ⁻⁰¹	2.74 x 10 ⁻⁰¹	8.51 x 10 ⁻⁰²	4.89 x 10 ⁰¹	1.59 x 10 ⁰⁰
RIB # 9	2.06 x 10 ⁰¹	6.15 x 10 ⁰⁰	1.56 x 10 ⁰⁰	1.95 x 10 ⁻⁰¹	1.63 x 10 ⁻⁰¹	6.50 x 10 ⁻⁰²	4.99 x 10 ⁰¹	1.67 x 10 ⁰⁰
RIB # 10	1.92 x 10 ⁰¹	5.93 x 10 ⁰⁰	2.06 x 10 ⁰⁰	2.47 x 10 ⁻⁰¹	3.37 x 10 ⁻⁰¹	8.99 x 10 ⁻⁰²	4.71 x 10 ⁰¹	1.61 x 10 ⁰⁰
RIB # 11	1.38 x 10 ⁰¹	4.52 x 10 ⁰⁰	1.44 x 10 ⁰⁰	2.36 x 10 ⁻⁰¹	2.51 x 10 ⁻⁰¹	8.85 x 10 ⁻⁰²	4.49 x 10 ⁰¹	1.60 x 10 ⁰⁰
RIB # 12	8.20 x 10 ⁰⁰	2.79 x 10 ⁰¹	1.71 x 10 ⁰⁰	3.11 x 10 ⁻⁰¹	2.51 x 10 ⁻⁰¹	1.55 x 10 ⁻⁰¹	4.77 x 10 ⁰¹	1.98 x 10 ⁰⁰
SACRUM	2.21 x 10 ⁰²	3.27 x 10 ⁰¹	6.94 x 10 ⁻⁰¹	8.96 x 10 ⁻⁰²	1.04 x 10 ⁻⁰¹	3.05 x 10 ⁻⁰²	2.58 x 10 ⁰¹	8.19 x 10 ⁻⁰¹
SCAPHOID	4.60 x 10 ⁰⁰	1.15 x 10 ⁰⁰	2.90 x 10 ⁰⁰	5.80 x 10 ⁻⁰¹	1.16 x 10 ⁻⁰¹	2.32 x 10 ⁻⁰¹	5.30 x 10 ⁰¹	2.81 x 10 ⁰⁰
SCAPULA Distal End	2.54 x 10 ⁰¹	1.08 x 10 ⁰¹	1.55 x 10 ⁰⁰	3.56 x 10 ⁻⁰¹	4.95 x 10 ⁻⁰¹	1.86 x 10 ⁻⁰¹	3.73 x 10 ⁰¹	1.72 x 10 ⁰⁰
SCAPULA Proximal End	4.02 x 10 ⁰¹	1.23 x 10 ⁰¹	1.89 x 10 ⁰⁰	2.27 x 10 ⁻⁰¹	4.32 x 10 ⁻⁰¹	9.18 x 10 ⁻⁰²	5.04 x 10 ⁰¹	1.70 x 10 ⁰⁰
SCAPULA Spine	3.05 x 10 ⁰¹	1.08 x 10 ⁰¹	1.91 x 10 ⁰⁰	2.03 x 10 ⁻⁰¹	2.89 x 10 ⁻⁰¹	7.38 x 10 ⁻⁰²	4.27 x 10 ⁻⁰¹	1.38 x 10 ⁰⁰
STERNUM	8.25 x 10 ⁰¹	6.90 x 10 ⁰⁰	4.22 x 10 ⁰⁰	4.54 x 10 ⁻⁰¹	8.02 x 10 ⁻⁰¹	6.76 x 10 ⁻⁰²	1.01 x 10 ⁰²	3.02 x 10 ⁰⁰
TALUS	5.42 x 10 ⁰¹	1.39 x 10 ⁰¹	1.26 x 10 ⁰⁰	2.54 x 10 ⁻⁰¹	2.97 x 10 ⁻⁰¹	9.10 x 10 ⁻⁰²	3.71 x 10 ⁰¹	1.31 x 10 ⁰⁰
TEMPORAL # 1	2.28 x 10 ⁰¹	1.57 x 10 ⁰¹	7.94 x 10 ⁻⁰¹	1.87 x 10 ⁻⁰¹	4.29 x 10 ⁻⁰¹	8.92 x 10 ⁻⁰²	1.77 x 10 ⁰¹	7.10 x 10 ⁻⁰¹
TEMPORAL # 2	4.49 x 10 ⁰¹	1.91 x 10 ⁰¹	1.03 x 10 ⁰⁰	1.99 x 10 ⁻⁰¹	1.47 x 10 ⁻⁰¹	5.24 x 10 ⁻⁰²	2.44 x 10 ⁰¹	8.74 x 10 ⁻⁰¹
TEMPORAL # 3	4.50 x 10 ⁰¹	1.52 x 10 ⁰¹	1.28 x 10 ⁰⁰	2.28 x 10 ⁻⁰¹	3.02 x 10 ⁻⁰¹	7.44 x 10 ⁻⁰²	4.13 x 10 ⁰¹	1.42 x 10 ⁰⁰
TIBIA Proximal Shaft	1.29 x 10 ⁰²	5.97 x 10 ⁰¹	6.11 x 10 ⁻⁰¹	1.03 x 10 ⁻⁰¹	2.23 x 10 ⁻⁰²	5.58 x 10 ⁻⁰²	1.26 x 10 ⁰¹	6.31 x 10 ⁻⁰¹
TIBIA Distal End	5.83 x 10 ⁰¹	1.39 x 10 ⁰¹	2.11 x 10 ⁰⁰	2.40 x 10 ⁻⁰¹	2.30 x 10 ⁻⁰¹	6.24 x 10 ⁻⁰²	3.61 x 10 ⁰¹	1.22 x 10 ⁰⁰
TIBIA Distal Shaft	8.10 x 10 ⁰¹	4.54 x 10 ⁰¹	6.61 x 10 ⁻⁰¹	1.03 x 10 ⁻⁰¹	1.43 x 10 ⁻⁰¹	6.24 x 10 ⁻⁰²	1.21 x 10 ⁰¹	6.13 x 10 ⁻⁰¹
TIBIA Proximal End	1.41 x 10 ⁰²	2.70 x 10 ⁰¹	1.59 x 10 ⁰⁰	1.98 x 10 ⁻⁰¹	2.41 x 10 ⁻⁰¹	8.65 x 10 ⁻⁰²	3.73 x 10 ⁰¹	1.32 x 10 ⁰⁰
TRAPEZIUM	4.19 x 10 ⁰⁰	8.1 x 10 ⁻⁰¹	1.60 x 10 ⁰⁰	5.35 x 10 ⁻⁰¹	3.29 x 10 ⁻⁰¹	2.88 x 10 ⁻⁰¹	6.02 x 10 ⁰¹	3.13 x 10 ⁰⁰
TRAPEZOIDE	5.50 x 10 ⁰⁰	1.25 x 10 ⁰⁰	2.37 x 10 ⁰⁰	5.07 x 10 ⁻⁰¹	6.67 x 10 ⁻⁰¹	3.20 x 10 ⁻⁰¹	5.28 x 10 ⁰¹	2.75 x 10 ⁰⁰
TRIANGULAR	2.40 x 10 ⁰⁰	4.9 x 10 ⁻⁰¹	4.9 x 10 ⁰⁰	1.1 x 10 ⁰⁰	8.2 x 10 ⁻⁰¹	6.8 x 10 ⁻⁰¹	5.3 x 10 ⁰¹	3.9 x 10 ⁰⁰

Right side of body was analyzed unless otherwise noted.
Concentrations for bone are per kg of ash.

CASE 0208 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ULNA Distal End	5.80 x 10 ⁰⁰	1.19 x 10 ⁰⁰	2.24 x 10 ⁰⁰	5.04 x 10 ⁻⁰¹	3.08 x 10 ⁻⁰¹	2.80 x 10 ⁻⁰¹	3.59 x 10 ⁰¹	2.06 x 10 ⁰⁰
ULNA Distal Shaft	1.78 x 10 ⁰¹	1.04 x 10 ⁰¹	4.81 x 10 ⁻⁰¹	1.15 x 10 ⁻⁰¹	1.15 x 10 ⁻⁰¹	7.69 x 10 ⁻⁰²	1.02 x 10 ⁰¹	5.81 x 10 ⁻⁰¹
ULNA Proximal End	2.56 x 10 ⁰¹	8.47 x 10 ⁰⁰	1.33 x 10 ⁰⁰	1.89 x 10 ⁻⁰¹	1.73 x 10 ⁻⁰¹	8.66 x 10 ⁻⁰²	3.26 x 10 ⁰¹	1.35 x 10 ⁰⁰
ULNA Proximal Shaft	2.17 x 10 ⁰¹	8.80 x 10 ⁰⁰	7.65 x 10 ⁻⁰¹	1.52 x 10 ⁻⁰¹	1.21 x 10 ⁻⁰¹	6.82 x 10 ⁻⁰²	1.09 x 10 ⁰¹	5.77 x 10 ⁻⁰¹
VERTEBRA Cervical- 1	2.12 x 10 ⁰¹	6.88 x 10 ⁰⁰	1.61 x 10 ⁰⁰	2.03 x 10 ⁻⁰¹	2.37 x 10 ⁻⁰¹	6.30 x 10 ⁻⁰²	5.27 x 10 ⁰¹	1.69 x 10 ⁰⁰
VERTEBRA Cervical- 2	2.24 x 10 ⁰¹	7.50 x 10 ⁰⁰	1.41 x 10 ⁰⁰	3.02 x 10 ⁻⁰¹	8.89 x 10 ⁻⁰²	1.24 x 10 ⁻⁰¹	6.24 x 10 ⁰¹	2.19 x 10 ⁰⁰
VERTEBRA Cervical- 3 Arch	9.40 x 10 ⁰⁰	2.67 x 10 ⁰⁰	2.42 x 10 ⁰⁰	5.49 x 10 ⁻⁰¹	3.50 x 10 ⁻⁰¹	2.75 x 10 ⁻⁰¹	6.70 x 10 ⁰¹	2.90 x 10 ⁰⁰
VERTEBRA Cervical- 3 Body	7.20 x 10 ⁰⁰	1.46 x 10 ⁰⁰	1.92 x 10 ⁰⁰	6.85 x 10 ⁻⁰¹	8.22 x 10 ⁻⁰¹	6.39 x 10 ⁻⁰¹	1.13 x 10 ⁰²	5.16 x 10 ⁰⁰
VERTEBRA Cervical- 4	1.58 x 10 ⁰¹	4.80 x 10 ⁰⁰	1.92 x 10 ⁰⁰	4.17 x 10 ⁻⁰¹	1.53 x 10 ⁻⁰¹	1.81 x 10 ⁻⁰¹	6.23 x 10 ⁰¹	2.35 x 10 ⁰⁰
VERTEBRA Cervical- 5 Arch	8.60 x 10 ⁰⁰	2.31 x 10 ⁰⁰	3.17 x 10 ⁻⁰¹	1.73 x 10 ⁻⁰¹	5.77 x 10 ⁻⁰²	2.02 x 10 ⁻⁰¹	1.90 x 10 ⁰¹	1.38 x 10 ⁰⁰
VERTEBRA Cervical- 5 Body	8.40 x 10 ⁰⁰	2.46 x 10 ⁰⁰	1.65 x 10 ⁰⁰	4.07 x 10 ⁻⁰¹	2.71 x 10 ⁻⁰¹	2.44 x 10 ⁻⁰¹	7.07 x 10 ⁰¹	3.06 x 10 ⁰⁰
VERTEBRA Cervical- 6	1.65 x 10 ⁰¹	4.70 x 10 ⁰⁰	1.65 x 10 ⁰⁰	3.55 x 10 ⁻⁰¹	3.55 x 10 ⁻⁰¹	1.56 x 10 ⁻⁰¹	6.69 x 10 ⁰¹	2.54 x 10 ⁰⁰
VERTEBRA Cervical- 7 Arch	1.14 x 10 ⁰¹	2.80 x 10 ⁰⁰	2.10 x 10 ⁰⁰	4.29 x 10 ⁻⁰¹	4.05 x 10 ⁻⁰¹	2.38 x 10 ⁻⁰¹	6.29 x 10 ⁰¹	2.88 x 10 ⁰⁰
VERTEBRA Cervical- 7 Body	9.70 x 10 ⁰⁰	1.60 x 10 ⁰⁰	2.71 x 10 ⁰⁰	9.58 x 10 ⁻⁰¹	9.17 x 10 ⁻⁰¹	4.17 x 10 ⁻⁰¹	1.04 x 10 ⁰²	4.63 x 10 ⁰⁰
VERTEBRA Lumbar- 1 Arch	2.55 x 10 ⁰¹	6.71 x 10 ⁰⁰	3.03 x 10 ⁰⁰	3.58 x 10 ⁻⁰¹	4.77 x 10 ⁻⁰¹	1.49 x 10 ⁻⁰¹	5.94 x 10 ⁰¹	2.17 x 10 ⁰⁰
VERTEBRA Lumbar- 1 Body	4.72 x 10 ⁰¹	5.82 x 10 ⁰⁰	3.40 x 10 ⁰⁰	4.01 x 10 ⁻⁰¹	9.74 x 10 ⁻⁰¹	2.29 x 10 ⁻⁰¹	1.72 x 10 ⁰²	5.24 x 10 ⁰⁰
VERTEBRA Lumbar- 2	9.54 x 10 ⁰¹	1.42 x 10 ⁰¹	2.66 x 10 ⁰⁰	3.40 x 10 ⁻⁰¹	3.99 x 10 ⁻⁰¹	1.64 x 10 ⁻⁰¹	9.14 x 10 ⁰¹	3.27 x 10 ⁰⁰

Right side of body was analyzed unless otherwise noted.
Concentrations for bone are per kg of ash.

CASE 0208 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
VERTEBRA Lumbar- 3 Arch	3.04 x 10 ⁰¹	8.50 x 10 ⁰⁰	1.69 x 10 ⁰⁰	1.92 x 10 ⁻⁰¹	3.65 x 10 ⁻⁰¹	7.06 x 10 ⁻⁰²	5.89 x 10 ⁰¹	1.84 x 10 ⁰⁰
VERTEBRA Lumbar- 3 Body	7.06 x 10 ⁰¹	7.17 x 10 ⁰⁰	3.07 x 10 ⁰⁰	3.44 x 10 ⁻⁰¹	6.60 x 10 ⁻⁰¹	1.77 x 10 ⁻⁰¹	1.37 x 10 ⁰²	4.23 x 10 ⁰⁰
VERTEBRA Lumbar- 4	1.05 x 10 ⁰²	1.68 x 10 ⁰¹	2.06 x 10 ⁰⁰	1.94 x 10 ⁻⁰¹	5.44 x 10 ⁻⁰¹	8.33 x 10 ⁻⁰²	9.02 x 10 ⁰¹	2.64 x 10 ⁰⁰
VERTEBRA Lumbar- 5 Arch	3.47 x 10 ⁰¹	9.38 x 10 ⁰⁰	1.31 x 10 ⁰⁰	1.74 x 10 ⁻⁰¹	4.73 x 10 ⁻⁰¹	7.46 x 10 ⁻⁰²	5.36 x 10 ⁰¹	1.64 x 10 ⁰⁰
VERTEBRA Lumbar- 5 Body	5.53 x 10 ⁰¹	7.52 x 10 ⁰⁰	2.90 x 10 ⁰⁰	2.66 x 10 ⁻⁰¹	6.91 x 10 ⁻⁰¹	9.31 x 10 ⁻⁰²	1.29 x 10 ⁰²	3.78 x 10 ⁰⁰
VERTEBRA Thoracic-1 Arch	1.57 x 10 ⁰¹	3.86 x 10 ⁰⁰	2.23 x 10 ⁰⁰	4.15 x 10 ⁻⁰¹	3.28 x 10 ⁻⁰¹	1.73 x 10 ⁻⁰¹	7.96 x 10 ⁰¹	3.07 x 10 ⁰⁰
VERTEBRA Thoracic-1 Body	1.12 x 10 ⁰¹	1.83 x 10 ⁰⁰	2.48 x 10 ⁰⁰	6.56 x 10 ⁻⁰¹	6.92 x 10 ⁻⁰¹	3.64 x 10 ⁻⁰¹	1.18 x 10 ⁰²	4.91 x 10 ⁰⁰
VERTEBRA Thoracic-2	2.56 x 10 ⁰¹	4.90 x 10 ⁰⁰	2.94 x 10 ⁰⁰	3.13 x 10 ⁻⁰¹	4.76 x 10 ⁻⁰¹	1.16 x 10 ⁻⁰¹	1.08 x 10 ⁰²	3.29 x 10 ⁰⁰
VERTEBRA Thoracic-3 Arch	1.65 x 10 ⁰¹	4.61 x 10 ⁰⁰	1.87 x 10 ⁰⁰	2.53 x 10 ⁻⁰¹	1.21 x 10 ⁰⁰	2.02 x 10 ⁻⁰¹	6.03 x 10 ⁰¹	2.17 x 10 ⁰⁰
VERTEBRA Thoracic-3 Body	1.01 x 10 ⁰¹	1.36 x 10 ⁰⁰	2.99 x 10 ⁰⁰	5.88 x 10 ⁻⁰¹	4.90 x 10 ⁻⁰¹	2.70 x 10 ⁻⁰¹	1.67 x 10 ⁰²	5.90 x 10 ⁰⁰
VERTEBRA Thoracic-4	3.05 x 10 ⁰¹	5.40 x 10 ⁰⁰	2.21 x 10 ⁰⁰	2.65 x 10 ⁻⁰¹	5.62 x 10 ⁻⁰¹	1.23 x 10 ⁻⁰¹	9.76 x 10 ⁰¹	2.97 x 10 ⁰⁰
VERTEBRA Thoracic-5 Arch	1.50 x 10 ⁰¹	3.51 x 10 ⁰⁰	2.27 x 10 ⁰⁰	3.51 x 10 ⁻⁰¹	4.94 x 10 ⁻⁰¹	1.61 x 10 ⁻⁰¹	7.56 x 10 ⁰¹	2.54 x 10 ⁰⁰
VERTEBRA Thoracic-5 Body	1.72 x 10 ⁰¹	2.06 x 10 ⁰⁰	2.67 x 10 ⁰⁰	4.53 x 10 ⁻⁰¹	1.39 x 10 ⁰⁰	2.91 x 10 ⁻⁰¹	1.44 x 10 ⁰²	4.68 x 10 ⁰⁰
VERTEBRA Thoracic-6	3.86 x 10 ⁰¹	7.20 x 10 ⁰⁰	2.26 x 10 ⁰⁰	2.41 x 10 ⁻⁰¹	5.93 x 10 ⁻⁰¹	9.72 x 10 ⁻⁰²	9.48 x 10 ⁰¹	2.81 x 10 ⁰⁰
VERTEBRA Thoracic-7 Arch	1.44 x 10 ⁰¹	3.52 x 10 ⁰⁰	3.22 x 10 ⁰⁰	3.69 x 10 ⁻⁰¹	3.31 x 10 ⁻⁰¹	1.14 x 10 ⁻⁰¹	6.64 x 10 ⁰¹	2.24 x 10 ⁰⁰
VERTEBRA Thoracic-7 Body	2.05 x 10 ⁰¹	2.53 x 10 ⁰⁰	3.87 x 10 ⁰⁰	5.27 x 10 ⁻⁰¹	6.72 x 10 ⁻⁰¹	1.98 x 10 ⁻⁰¹	1.51 x 10 ⁰²	4.88 x 10 ⁰⁰
VERTEBRA Thoracic-8	4.38 x 10 ⁰¹	8.10 x 10 ⁰⁰	2.59 x 10 ⁰⁰	3.46 x 10 ⁻⁰¹	4.61 x 10 ⁻⁰¹	1.23 x 10 ⁻⁰¹	9.93 x 10 ⁰¹	3.25 x 10 ⁰⁰

Right side of body was analyzed unless otherwise noted.
Concentrations for bone are per kg of ash.

CASE 0208 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
VERTEBRA Thoracic-9 Arch	1.82 x 10 ⁰¹	4.18 x 10 ⁰⁰	2.55 x 10 ⁰⁰	2.63 x 10 ⁻⁰¹	5.02 x 10 ⁻⁰¹	1.28 x 10 ⁻⁰¹	7.11 x 10 ⁰¹	2.40 x 10 ⁰⁰
VERTEBRA Thoracic-9 Body	2.63 x 10 ⁰¹	3.48 x 10 ⁰⁰	3.58 x 10 ⁰⁰	5.75 x 10 ⁻⁰¹	6.13 x 10 ⁻⁰¹	2.49 x 10 ⁻⁰¹	1.43 x 10 ⁰²	5.07 x 10 ⁰⁰
VERTEBRA Thoracic-10	5.34 x 10 ⁰¹	9.40 x 10 ⁰⁰	2.40 x 10 ⁰⁰	2.99 x 10 ⁻⁰¹	6.93 x 10 ⁻⁰¹	1.50 x 10 ⁻⁰¹	9.38 x 10 ⁰¹	2.94 x 10 ⁰⁰
VERTEBRA Thoracic-11 Arch	1.82 x 10 ⁰¹	4.01 x 10 ⁰⁰	2.22 x 10 ⁰⁰	2.74 x 10 ⁻⁰¹	6.07 x 10 ⁻⁰¹	1.33 x 10 ⁻⁰¹	7.62 x 10 ⁰¹	2.51 x 10 ⁰⁰
VERTEBRA Thoracic-11 Body	4.32 x 10 ⁰¹	1.06 x 10 ⁰¹	1.60 x 10 ⁰⁰	1.88 x 10 ⁻⁰¹	4.14 x 10 ⁻⁰¹	9.40 x 10 ⁻⁰²	7.61 x 10 ⁰¹	2.38 x 10 ⁰⁰
VERTEBRA Thoracic-12	7.06 x 10 ⁰¹	9.90 x 10 ⁰⁰	2.69 x 10 ⁰⁰	2.84 x 10 ⁻⁰¹	5.81 x 10 ⁻⁰¹	1.16 x 10 ⁻⁰¹	1.10 x 10 ⁰²	3.26 x 10 ⁰⁰

Right side of body was analyzed unless otherwise noted.
Concentrations for bone are per kg of ash.

CASE 0208 VISCERA and MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ADRENAL-Left	2.33×10^{01}	3.01×10^{-02}	1.57×10^{-02}	-5.72×10^{-03}	1.43×10^{-02}	1.44×10^{00}	1.23×10^{-01}
ADRENAL-Right	2.90×10^{01}	1.72×10^{-02}	9.19×10^{-03}	1.04×10^{-02}	8.05×10^{-03}	1.22×10^{00}	7.46×10^{-02}
AORTA	1.81×10^{01}	1.31×10^{-01}	2.39×10^{-02}	7.74×10^{-02}	3.68×10^{-03}	5.65×10^{00}	3.02×10^{-01}
AORTA -Descending	6.21×10^{01}	6.76×10^{-02}	2.04×10^{-02}	1.29×10^{-02}	1.07×10^{-03}	2.87×10^{00}	1.34×10^{-01}
AORTA Arch	8.18×10^{01}	4.07×10^{-01}	4.07×10^{-01}	3.38×10^{-02}	6.93×10^{-03}	6.95×10^{00}	2.14×10^{-01}
BLADDER	8.50×10^{01}	2.94×10^{-02}	7.45×10^{-03}	1.18×10^{-03}	2.76×10^{-03}	4.14×10^{-01}	2.47×10^{-02}
BLOOD	1.12×10^{01}	7.14×10^{-02}	4.17×10^{-02}	-2.98×10^{-03}	1.49×10^{-02}	9.20×10^{-02}	3.27×10^{-02}
BRAIN STEM	2.58×10^{01}	2.33×10^{-02}	1.06×10^{-01}	-7.75×10^{-03}	5.17×10^{-03}	4.90×10^{-01}	4.53×10^{-02}
CAROTID ARTERY	1.18×10^{01}	1.16×10^{-01}	3.67×10^{-02}	5.93×10^{-02}	2.82×10^{-03}	4.04×10^{00}	2.15×10^{-01}
CARTILAGE Costal Left	3.20×10^{00}	1.61×10^{00}	3.02×10^{-01}	6.46×10^{-01}	1.67×10^{-01}	2.89×10^{01}	1.22×10^{00}
CARTILAGE Costal Right	2.10×10^{00}	1.71×10^{00}	3.02×10^{-01}	1.59×10^{-01}	1.11×10^{-01}	3.11×10^{01}	1.44×10^{00}
CARTILAGE Costal	1.63×10^{01}	1.44×10^{00}	7.22×10^{-01}	2.78×10^{-01}	5.56×10^{-01}	2.58×10^{01}	2.19×10^{00}
CARTILAGE Nasal	2.41×10^{01}	4.29×10^{-02}	2.21×10^{-02}	4.29×10^{-02}	2.21×10^{-02}	4.64×10^{00}	2.50×10^{-01}
CEREBELLUM	1.83×10^{02}	7.12×10^{-03}	3.65×10^{-03}	2.73×10^{-03}	1.64×10^{-03}	3.14×10^{-01}	1.55×10^{-02}
CEREBRUM	1.02×10^{03}	3.48×10^{-03}	1.12×10^{-03}	1.97×10^{-03}	7.87×10^{-04}	2.64×10^{-01}	1.06×10^{-02}
DIAPHRAGM	5.70×10^{02}	3.86×10^{-02}	6.14×10^{-03}	4.38×10^{-03}	2.34×10^{-03}	1.04×10^{00}	4.30×10^{-02}
EAR-Left	2.59×10^{01}	1.04×10^{-01}	2.70×10^{-02}	6.43×10^{-03}	7.72×10^{-03}	5.05×10^{-01}	4.75×10^{-02}
EAR-Right	2.73×10^{01}	7.20×10^{-02}	2.20×10^{-02}	1.22×10^{-03}	8.52×10^{-03}	3.70×10^{-01}	4.16×10^{-02}
EPIGLOTTIS	3.80×10^{00}	1.23×10^{-01}	7.89×10^{-02}			1.65×10^{00}	2.28×10^{-01}
EYES	1.60×10^{01}	5.34×10^{-02}	2.35×10^{-02}	4.92×10^{-02}	1.92×10^{-02}	2.60×10^{-01}	4.17×10^{-02}
FAT-Abdominal	1.18×10^{02}	6.67×10^{-05}	4.00×10^{-04}	-2.17×10^{-04}	2.17×10^{-04}	5.65×10^{-03}	2.26×10^{-03}
FAT-Body	1.80×10^{02}	5.00×10^{-03}	2.78×10^{-03}	7.33×10^{-04}	1.28×10^{-03}	2.78×10^{-03}	1.67×10^{-03}
FINGERNAIL	8.00×10^{-01}	9.17×10^{-01}	1.71×10^{00}	2.08×10^{-01}	5.00×10^{-01}	7.81×10^{-01}	4.17×10^{-01}
GALL BLADDER	1.48×10^{01}	4.28×10^{-02}	2.25×10^{-02}	1.35×10^{-02}	1.58×10^{-02}	7.36×10^{-01}	7.45×10^{-02}
HAIR	1.42×10^{01}	9.45×10^{-03}	3.31×10^{-02}	-2.13×10^{-02}	3.07×10^{-02}	8.33×10^{-01}	8.69×10^{-02}
HEART	4.41×10^{02}	1.59×10^{-02}	2.61×10^{-03}	1.70×10^{-03}	1.13×10^{-03}	4.68×10^{-01}	1.77×10^{-02}

CASE 0208 VISCERA and MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
INTESTINE Large	3.65×10^2	2.30×10^{-02}	3.65×10^{-03}	5.50×10^{-04}	1.47×10^{-03}	1.61×10^{-01}	1.26×10^{-02}
INTESTINE Small	1.64×10^3	7.55×10^{-03}	1.06×10^{-03}	1.35×10^{-03}	4.50×10^{-04}	1.34×10^{-01}	5.55×10^{-03}
KIDNEY-Left	1.86×10^2	1.97×10^{-02}	4.84×10^{-03}	1.83×10^{-04}	1.28×10^{-03}	4.04×10^{-01}	1.85×10^{-02}
KIDNEY-Right	1.89×10^2	2.82×10^{-02}	4.76×10^{-03}	1.23×10^{-03}	1.23×10^{-03}	4.35×10^{-01}	1.90×10^{-02}
LARYNX	3.49×10^1	1.59×10^{-01}	3.44×10^{-02}	4.78×10^{-02}	1.91×10^{-02}	4.85×10^0	2.23×10^{-01}
LIVER	1.60×10^3	1.00×10^{-01}	6.88×10^{-02}	1.13×10^{-01}	8.75×10^{-02}	2.23×10^0	9.13×10^{-01}
LUNG-Left	4.20×10^2	1.08×10^0	1.27×10^{-01}	3.97×10^{-01}	1.19×10^{-01}	3.85×10^0	1.56×10^0
LUNG-Right	4.29×10^2	1.67×10^0	1.48×10^{-01}	3.89×10^{-01}	1.09×10^{-01}	4.83×10^0	1.77×10^0
LYMPH NODE Tracheobronchial # 1	2.48×10^0	3.31×10^1	7.26×10^0	1.01×10^1	4.03×10^0	2.51×10^3	9.21×10^1
LYMPH NODE Tracheobronchial # 2	1.24×10^0	5.51×10^2	4.44×10^1	1.89×10^2	2.08×10^1	3.33×10^4	9.72×10^2
MENINGES	4.25×10^1	1.30×10^{-01}	2.98×10^{-02}	6.27×10^{-03}	1.10×10^{-02}	8.79×10^{-01}	6.91×10^{-02}
MESENTERY	9.02×10^1	8.13×10^{-03}	5.18×10^{-03}	5.17×10^{-03}	5.17×10^{-03}	1.82×10^{-01}	2.22×10^{-02}
PANCREAS	1.42×10^2	1.09×10^{-01}	1.46×10^{-02}	2.35×10^{-02}	7.51×10^{-03}	3.83×10^0	1.32×10^{-01}
PENIS	1.18×10^2	2.16×10^{-02}	5.68×10^{-03}	-1.70×10^{-03}	3.12×10^{-03}	1.80×10^{-01}	1.41×10^{-02}
PITUITARY	4.00×10^{-01}	4.17×10^{-02}	5.83×10^{-01}	-8.33×10^{-02}	1.25×10^{-01}	8.33×10^{-01}	4.17×10^{-01}
PROSTATE	1.50×10^1	8.44×10^{-02}	4.44×10^{-02}	2.22×10^{-03}	1.33×10^{-02}	3.87×10^{-01}	5.78×10^{-02}
SALIVARY GLAND	4.94×10^1	7.42×10^{-03}	6.07×10^{-03}	2.18×10^{-02}	8.84×10^{-03}	5.09×10^{-01}	3.64×10^{-02}
SPLEEN	9.80×10^1	1.94×10^{-01}	5.78×10^{-02}	-1.36×10^{-02}	1.70×10^{-02}	9.83×10^{-01}	1.02×10^{-01}
STOMACH	6.14×10^2	1.80×10^{-02}	2.71×10^{-03}	3.25×10^{-03}	1.41×10^{-03}	7.81×10^{-01}	2.71×10^{-02}
TESTIS-Left	1.78×10^1	1.84×10^{-01}	3.56×10^{-02}	3.00×10^{-02}	1.87×10^{-02}	3.69×10^0	1.82×10^{-01}
TESTIS-Right	1.16×10^1	5.46×10^{-02}	3.74×10^{-02}	-2.87×10^{-03}	1.43×10^{-02}	5.83×10^{-01}	7.47×10^{-02}
THYROID	1.32×10^1	8.33×10^{-02}	3.54×10^{-02}	0.00×10^0	0.00×10^0	5.79×10^{-01}	7.05×10^{-02}
TOENAILS	2.10×10^0	-8.10×10^{-01}	6.83×10^{-01}	3.17×10^{-02}	1.11×10^{-01}	8.01×10^{-02}	9.62×10^{-02}
TONGUE	1.00×10^2	2.89×10^{-02}	8.07×10^{-03}	1.00×10^{-03}	2.33×10^{-03}	4.53×10^{-01}	2.47×10^{-02}
TRACHEA	3.08×10^1	5.92×10^{-01}	4.77×10^{-02}	1.46×10^{-01}	5.95×10^{-02}	2.33×10^0	9.64×10^{-01}
TRACHEA Scrap	4.95×10^1	2.32×10^0	1.54×10^{-01}	1.32×10^{-01}	4.58×10^{-02}	3.19×10^0	1.09×10^0

CASE 0208 MUSCLE

TISSUE	WE TWT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ABDOMENAL # 1	3.08 x 10 ⁰³	6.15 x 10 ⁻⁰²	5.64 x 10 ⁻⁰³	1.30 x 10 ⁻⁰³	1.73 x 10 ⁻⁰³	3.68 x 10 ⁻⁰¹	1.89 x 10 ⁻⁰²
ABDOMENAL # 2	2.76 x 10 ⁰³	2.92 x 10 ⁻⁰¹	1.59 x 10 ⁻⁰²	1.38 x 10 ⁻⁰²	2.66 x 10 ⁻⁰³	2.74 x 10 ⁰⁰	8.39 x 10 ⁻⁰²
ABDOMENAL # 3	6.10 x 10 ⁰²	4.32 x 10 ⁻⁰³	1.04 x 10 ⁻⁰³	3.83 x 10 ⁻⁰⁴	4.38 x 10 ⁻⁰⁴	1.02 x 10 ⁻⁰¹	5.14 x 10 ⁻⁰³
ABDOMENAL # 4	7.80 x 10 ⁰²	4.10 x 10 ⁻⁰³	9.40 x 10 ⁻⁰⁴	7.67 x 10 ⁻⁰⁴	3.83 x 10 ⁻⁰⁴	1.12 x 10 ⁻⁰¹	4.91 x 10 ⁻⁰³
CALF Left	9.64 x 10 ⁰²	1.34 x 10 ⁻⁰²	1.94 x 10 ⁻⁰³	1.03 x 10 ⁻⁰³	4.82 x 10 ⁻⁰⁴	2.58 x 10 ⁻⁰¹	9.82 x 10 ⁻⁰³
CALF Right	1.01 x 10 ⁰³	1.87 x 10 ⁻⁰²	2.37 x 10 ⁻⁰³	3.22 x 10 ⁻⁰³	9.85 x 10 ⁻⁰⁴	3.04 x 10 ⁻⁰¹	1.14 x 10 ⁻⁰²
FOOT Left	2.46 x 10 ⁰²	2.28 x 10 ⁻⁰²	5.02 x 10 ⁻⁰³	1.50 x 10 ⁻⁰³	9.55 x 10 ⁻⁰⁴	2.92 x 10 ⁻⁰¹	1.38 x 10 ⁻⁰²
FOOT Right	3.04 x 10 ⁰²	2.46 x 10 ⁻⁰²	3.84 x 10 ⁻⁰³	1.43 x 10 ⁻⁰³	8.82 x 10 ⁻⁰⁴	2.90 x 10 ⁻⁰¹	1.25 x 10 ⁻⁰²
FOREARM Left	4.68 x 10 ⁰²	1.08 x 10 ⁻⁰²	1.71 x 10 ⁻⁰³	9.33 x 10 ⁻⁰⁴	7.18 x 10 ⁻⁰⁴	1.73 x 10 ⁻⁰¹	8.90 x 10 ⁻⁰³
FOREARM Right	5.13 x 10 ⁰²	7.80 x 10 ⁻⁰³	1.50 x 10 ⁻⁰³	1.03 x 10 ⁻⁰³	5.17 x 10 ⁻⁰⁴	1.91 x 10 ⁻⁰¹	7.87 x 10 ⁻⁰³
HAND Left	1.07 x 10 ⁰²	2.89 x 10 ⁻⁰²	6.52 x 10 ⁻⁰³	-6.17 x 10 ⁻⁰⁴	1.54 x 10 ⁻⁰³	2.46 x 10 ⁻⁰¹	1.74 x 10 ⁻⁰²
HAND Right	1.14 x 10 ⁰²	2.22 x 10 ⁻⁰²	5.85 x 10 ⁻⁰³	1.47 x 10 ⁻⁰³	2.35 x 10 ⁻⁰³	2.59 x 10 ⁻⁰¹	1.67 x 10 ⁻⁰²
HEAD	7.39 x 10 ⁰²	2.05 x 10 ⁻⁰²	1.76 x 10 ⁻⁰³	1.62 x 10 ⁻⁰³	4.94 x 10 ⁻⁰⁴	3.15 x 10 ⁻⁰¹	1.06 x 10 ⁻⁰²
MUSCLE	3.66 x 10 ⁰²	1.86 x 10 ⁻⁰²	3.00 x 10 ⁻⁰³	2.10 x 10 ⁻⁰³	1.00 x 10 ⁻⁰³	4.65 x 10 ⁻⁰¹	1.73 x 10 ⁻⁰²
PSOAS-Left	6.00 x 10 ⁰²	7.67 x 10 ⁻⁰³	1.39 x 10 ⁻⁰³	1.22 x 10 ⁻⁰³	5.53 x 10 ⁻⁰⁴	2.11 x 10 ⁻⁰¹	8.27 x 10 ⁻⁰³
PSOAS-Right	4.94 x 10 ⁰²	9.93 x 10 ⁻⁰³	1.76 x 10 ⁻⁰³	2.03 x 10 ⁻⁰³	7.46 x 10 ⁻⁰⁴	2.51 x 10 ⁻⁰¹	1.05 x 10 ⁻⁰²
SCRAP	2.05 x 10 ⁰²	6.11 x 10 ⁻⁰²	9.42 x 10 ⁻⁰³	8.12 x 10 ⁻⁰³	3.25 x 10 ⁻⁰³	7.41 x 10 ⁻⁰¹	3.44 x 10 ⁻⁰²
STERNUM	1.23 x 10 ⁰²	1.36 x 10 ⁻⁰²	2.04 x 10 ⁻⁰²	7.62 x 10 ⁻⁰³	3.81 x 10 ⁻⁰³	3.54 x 10 ⁻⁰¹	2.01 x 10 ⁻⁰²
THIGH Left	3.10 x 10 ⁰³	1.03 x 10 ⁻⁰²	1.35 x 10 ⁻⁰³	1.22 x 10 ⁻⁰³	3.63 x 10 ⁻⁰⁴	2.19 x 10 ⁻⁰¹	7.05 x 10 ⁻⁰³
THIGH Right	3.39 x 10 ⁰³	7.45 x 10 ⁻⁰³	7.67 x 10 ⁻⁰⁴	8.00 x 10 ⁻⁰⁴	2.34 x 10 ⁻⁰⁴	1.53 x 10 ⁻⁰¹	5.13 x 10 ⁻⁰³
THORACIC # 1	8.43 x 10 ⁰²	5.85 x 10 ⁻⁰³	9.09 x 10 ⁻⁰⁴	2.00 x 10 ⁻⁰⁴	2.40 x 10 ⁻⁰⁴	1.20 x 10 ⁻⁰¹	4.82 x 10 ⁻⁰³
THORACIC # 2	7.09 x 10 ⁰²	5.27 x 10 ⁻⁰³	1.60 x 10 ⁻⁰³	1.03 x 10 ⁻⁰³	6.58 x 10 ⁻⁰⁴	1.18 x 10 ⁻⁰¹	6.49 x 10 ⁻⁰³
THORACIC # 3	1.66 x 10 ⁰³	6.77 x 10 ⁻⁰³	9.61 x 10 ⁻⁰⁴	9.17 x 10 ⁻⁰⁴	3.59 x 10 ⁻⁰⁴	1.51 x 10 ⁻⁰¹	5.53 x 10 ⁻⁰³
THORACIC # 4	1.62 x 10 ⁰³	1.07 x 10 ⁻⁰³	1.63 x 10 ⁻⁰⁴	6.67 x 10 ⁻⁰⁵	3.81 x 10 ⁻⁰⁵	2.00 x 10 ⁻⁰¹	7.24 x 10 ⁻⁰³
UPPER ARM Left	1.03 x 10 ⁰³	7.13 x 10 ⁻⁰³	1.56 x 10 ⁻⁰³	1.82 x 10 ⁻⁰³	7.14 x 10 ⁻⁰⁴	1.64 x 10 ⁻⁰¹	7.26 x 10 ⁻⁰³

CASE 0208 MUSCLE

TISSUE	WE T WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
UPPER ARM Right	9.70×10^{-02}	8.62×10^{-03}	1.48×10^{-03}	8.17×10^{-04}	3.74×10^{-04}	1.91×10^{-01}	6.97×10^{-03}

CASE 0208 SKIN

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ABDOMENAL # 1	3.17 x 10 ⁰²	1.18 x 10 ⁻⁰²	2.53 x 10 ⁻⁰³	3.17 x 10 ⁻⁰⁴	9.50 x 10 ⁻⁰⁴	1.33 x 10 ⁻⁰¹	7.37 x 10 ⁻⁰³
ABDOMENAL # 2	5.08 x 10 ⁰²	1.28 x 10 ⁻⁰²	1.97 x 10 ⁻⁰³	5.83 x 10 ⁻⁰⁴	5.83 x 10 ⁻⁰⁴	1.12 x 10 ⁻⁰¹	7.48 x 10 ⁻⁰³
CALF Left	3.42 x 10 ⁰²	1.95 x 10 ⁻⁰²	4.98 x 10 ⁻⁰³	4.98 x 10 ⁻⁰³	1.37 x 10 ⁻⁰³	2.97 x 10 ⁻⁰¹	1.25 x 10 ⁻⁰²
CALF Right	4.82 x 10 ⁰²	1.53 x 10 ⁻⁰²	1.73 x 10 ⁻⁰³	2.98 x 10 ⁻⁰³	8.33 x 10 ⁻⁰⁴	2.50 x 10 ⁻⁰¹	9.55 x 10 ⁻⁰³
FOOT Left	2.28 x 10 ⁰²	2.75 x 10 ⁻⁰²	4.09 x 10 ⁻⁰³	7.33 x 10 ⁻⁰⁴	1.03 x 10 ⁻⁰³	2.39 x 10 ⁻⁰¹	1.26 x 10 ⁻⁰²
FOOT Right	2.18 x 10 ⁰²	1.85 x 10 ⁻⁰²	3.52 x 10 ⁻⁰³	1.98 x 10 ⁻⁰³	1.07 x 10 ⁻⁰³	2.68 x 10 ⁻⁰¹	1.32 x 10 ⁻⁰²
FOREARM Left	1.56 x 10 ⁰²	1.90 x 10 ⁻⁰²	3.84 x 10 ⁻⁰³	3.83 x 10 ⁻⁰³	1.70 x 10 ⁻⁰³	2.58 x 10 ⁻⁰¹	1.47 x 10 ⁻⁰²
FOREARM Right	1.38 x 10 ⁰²	1.55 x 10 ⁻⁰²	4.36 x 10 ⁻⁰³	1.70 x 10 ⁻⁰³	1.46 x 10 ⁻⁰³	3.41 x 10 ⁻⁰¹	1.79 x 10 ⁻⁰²
HAND Left	1.15 x 10 ⁰²	3.45 x 10 ⁻⁰²	6.96 x 10 ⁻⁰³	1.17 x 10 ⁻⁰³	2.04 x 10 ⁻⁰³	3.70 x 10 ⁻⁰¹	2.09 x 10 ⁻⁰²
HAND Right	1.13 x 10 ⁰²	2.60 x 10 ⁻⁰²	5.33 x 10 ⁻⁰³	4.13 x 10 ⁻⁰³	2.66 x 10 ⁻⁰³	4.49 x 10 ⁻⁰¹	2.43 x 10 ⁻⁰²
HEAD	9.63 x 10 ⁰²	7.62 x 10 ⁻⁰³	2.08 x 10 ⁻⁰³	1.18 x 10 ⁻⁰³	6.26 x 10 ⁻⁰⁴	2.51 x 10 ⁻⁰¹	1.02 x 10 ⁻⁰²
THIGH Left	6.70 x 10 ⁰²	9.55 x 10 ⁻⁰³	1.44 x 10 ⁻⁰³	5.00 x 10 ⁻⁰⁴	3.50 x 10 ⁻⁰⁴	1.22 x 10 ⁻⁰¹	5.32 x 10 ⁻⁰³
THIGH Right	4.40 x 10 ⁰²	9.47 x 10 ⁻⁰³	2.04 x 10 ⁻⁰³	-2.33 x 10 ⁻⁰⁴	7.78 x 10 ⁻⁰⁴	1.42 x 10 ⁻⁰¹	7.58 x 10 ⁻⁰³
THORACIC # 1	3.68 x 10 ⁰²	1.09 x 10 ⁻⁰²	2.09 x 10 ⁻⁰³	3.67 x 10 ⁻⁰⁴	7.33 x 10 ⁻⁰⁴	1.28 x 10 ⁻⁰¹	7.25 x 10 ⁻⁰³
THORACIC # 2	4.63 x 10 ⁰²	9.08 x 10 ⁻⁰³	1.73 x 10 ⁻⁰³	1.08 x 10 ⁻⁰³	7.94 x 10 ⁻⁰⁴	1.75 x 10 ⁻⁰¹	7.78 x 10 ⁻⁰³
THORACIC # 3	4.63 x 10 ⁰²	1.07 x 10 ⁻⁰²	2.09 x 10 ⁻⁰³	1.43 x 10 ⁻⁰³	1.36 x 10 ⁻⁰³	1.59 x 10 ⁻⁰¹	8.56 x 10 ⁻⁰³
THORACIC # 4	5.43 x 10 ⁰²	8.23 x 10 ⁻⁰³	1.66 x 10 ⁻⁰³	1.23 x 10 ⁻⁰³	8.63 x 10 ⁻⁰⁴	1.53 x 10 ⁻⁰¹	6.76 x 10 ⁻⁰³
UPPER ARM Left	3.51 x 10 ⁰²	8.37 x 10 ⁻⁰³	2.09 x 10 ⁻⁰³	1.00 x 10 ⁻⁰⁴	7.00 x 10 ⁻⁰⁴	1.52 x 10 ⁻⁰¹	8.37 x 10 ⁻⁰³
UPPER ARM Right	2.07 x 10 ⁰²	6.45 x 10 ⁻⁰³	3.39 x 10 ⁻⁰³	2.42 x 10 ⁻⁰³	1.93 x 10 ⁻⁰³	2.49 x 10 ⁻⁰¹	1.35 x 10 ⁻⁰²

CASE 0212 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
CALCANEUS	1.16 x 10 ⁰²	2.69 x 10 ⁰¹	1.41 x 10 ⁰¹	6.46 x 10 ⁻⁰¹	7.26 x 10 ⁻⁰¹	1.09 x 10 ⁻⁰¹	3.31 x 10 ⁰¹	1.13 x 10 ⁰⁰
CANINE Right Lower 3	8.2 x 10 ⁻⁰¹	6.2 x 10 ⁻⁰¹	3.20 x 10 ⁰⁰	5.29 x 10 ⁻⁰¹	1.85 x 10 ⁻⁰¹	2.91 x 10 ⁻⁰¹	1.04 x 10 ⁰¹	1.03 x 10 ⁰⁰
CAPITATE	8.90 x 10 ⁰⁰	2.76 x 10 ⁰⁰	1.36 x 10 ⁰¹	8.70 x 10 ⁻⁰¹	7.47 x 10 ⁻⁰¹	1.84 x 10 ⁻⁰¹	3.68 x 10 ⁰¹	1.54 x 10 ⁰⁰
CLAVICLE Acromial End	1.36 x 10 ⁰¹	4.27 x 10 ⁰⁰	1.49 x 10 ⁰¹	7.42 x 10 ⁻⁰¹	5.82 x 10 ⁻⁰¹	1.18 x 10 ⁻⁰¹	3.96 x 10 ⁰¹	1.35 x 10 ⁰⁰
CLAVICLE Shaft	2.40 x 10 ⁰¹	1.00 x 10 ⁰¹	7.49 x 10 ⁰⁰	3.85 x 10 ⁻⁰¹	3.15 x 10 ⁻⁰¹	5.98 x 10 ⁻⁰²	1.67 x 10 ⁰¹	6.01 x 10 ⁻⁰¹
CLAVICLE Sternal End	1.88 x 10 ⁰¹	4.28 x 10 ⁰⁰	1.38 x 10 ⁰¹	7.31 x 10 ⁻⁰¹	7.82 x 10 ⁻⁰¹	1.41 x 10 ⁻⁰¹	4.22 x 10 ⁰¹	1.48 x 10 ⁰⁰
COCCYX	1.18 x 10 ⁰¹	1.06 x 10 ⁰⁰	2.09 x 10 ⁰¹	1.54 x 10 ⁰⁰	8.48 x 10 ⁻⁰¹	3.92 x 10 ⁻⁰¹	6.34 x 10 ⁰¹	2.94 x 10 ⁰⁰
CUBOID	2.36 x 10 ⁰¹	5.91 x 10 ⁰⁰	1.38 x 10 ⁰¹	6.81 x 10 ⁻⁰¹	7.94 x 10 ⁻⁰¹	1.24 x 10 ⁻⁰¹	4.08 x 10 ⁰¹	1.40 x 10 ⁰⁰
CUNEIFORM Lateral	9.96 x 10 ⁰⁰	2.55 x 10 ⁰⁰	1.46 x 10 ⁰¹	9.00 x 10 ⁻⁰¹	4.84 x 10 ⁻⁰¹	1.44 x 10 ⁻⁰¹	3.78 x 10 ⁰¹	1.56 x 10 ⁰⁰
CUNEIFORM Medial	1.96 x 10 ⁰¹	5.87 x 10 ⁰⁰	1.20 x 10 ⁰¹	5.94 x 10 ⁻⁰¹	9.53 x 10 ⁻⁰¹	1.37 x 10 ⁻⁰¹	3.62 x 10 ⁰¹	1.30 x 10 ⁰⁰
CUNEIFORM Intermediate	7.98 x 10 ⁰⁰	2.21 x 10 ⁰⁰	1.27 x 10 ⁰¹	8.71 x 10 ⁻⁰¹	5.71 x 10 ⁻⁰¹	1.95 x 10 ⁻⁰¹	3.75 x 10 ⁰¹	1.71 x 10 ⁰⁰
FEMUR Distal End	2.61 x 10 ⁰²	6.06 x 10 ⁰¹	1.23 x 10 ⁰¹	5.42 x 10 ⁻⁰¹	5.23 x 10 ⁻⁰¹	9.36 x 10 ⁻⁰²	2.72 x 10 ⁰¹	9.53 x 10 ⁻⁰¹
FEMUR Distal Shaft	1.36 x 10 ⁰²	5.48 x 10 ⁰¹	6.32 x 10 ⁰⁰	3.32 x 10 ⁻⁰¹	2.56 x 10 ⁻⁰¹	9.75 x 10 ⁻⁰²	1.18 x 10 ⁰¹	5.67 x 10 ⁻⁰¹
FEMUR Medial Shaft	1.38 x 10 ⁰²	7.62 x 10 ⁰¹	6.89 x 10 ⁰⁰	3.02 x 10 ⁻⁰¹	2.84 x 10 ⁻⁰¹	7.00 x 10 ⁻⁰²	1.74 x 10 ⁰¹	6.73 x 10 ⁻⁰¹
FEMUR Proximal End	2.31 x 10 ⁰²	5.28 x 10 ⁰¹	1.55 x 10 ⁰¹	6.65 x 10 ⁻⁰¹	7.72 x 10 ⁻⁰¹	1.17 x 10 ⁻⁰¹	4.43 x 10 ⁰¹	1.59 x 10 ⁰⁰
FEMUR Proximal Shaft	1.39 x 10 ⁰²	6.41 x 10 ⁰¹	9.45 x 10 ⁰⁰	4.19 x 10 ⁻⁰¹	4.76 x 10 ⁻⁰¹	9.11 x 10 ⁻⁰²	2.39 x 10 ⁰¹	9.76 x 10 ⁻⁰¹
FIBULA Distal End	1.74 x 10 ⁰¹	4.91 x 10 ⁰⁰	1.33 x 10 ⁰¹	1.28 x 10 ⁰⁰	4.34 x 10 ⁻⁰¹	1.63 x 10 ⁻⁰¹	3.52 x 10 ⁰¹	1.53 x 10 ⁰⁰
FIBULA Distal Shaft	3.68 x 10 ⁰¹	1.94 x 10 ⁰¹	2.91 x 10 ⁰⁰	1.85 x 10 ⁻⁰¹	1.85 x 10 ⁻⁰¹	6.87 x 10 ⁻⁰²	6.97 x 10 ⁰⁰	4.26 x 10 ⁻⁰¹

Right side of body was analyzed, unless note as left.
Concentrations for bone are per kg of ash.

CASE 0212 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
FIBULA	1.93 x 10 ⁰¹	3.40 x 10 ⁰⁰	1.58 x 10 ⁰¹	1.10 x 10 ⁰⁰	6.67 x 10 ⁻⁰¹	1.96 x 10 ⁻⁰¹	3.83 x 10 ⁰¹	1.73 x 10 ⁰⁰
Proximal End								
FIBULA	3.77 x 10 ⁰¹	1.93 x 10 ⁰¹	4.16 x 10 ⁰⁰	2.49 x 10 ⁻⁰¹	8.29 x 10 ⁻⁰²	5.53 x 10 ⁻⁰²	9.88 x 10 ⁰⁰	5.80 x 10 ⁻⁰¹
Proximal Shaft								
FOOT PHALANGE	4.36 x 10 ⁰⁰	1.04 x 10 ⁰⁰	1.86 x 10 ⁰¹	1.45 x 10 ⁰⁰	2.34 x 10 ⁰⁰	6.78 x 10 ⁻⁰¹	4.80 x 10 ⁰¹	3.02 x 10 ⁰⁰
Distal - 1								
FOOT PHALANGE	7.9 x 10 ⁻⁰¹	1.4 x 10 ⁻⁰¹	2.1 x 10 ⁰¹	3.2 x 10 ⁰⁰	-5.1 x 10 ⁻⁰¹	6.8 x 10 ⁻⁰¹	4.1 x 10 ⁰¹	4.3 x 10 ⁰⁰
Distal - 2								
FOOT PHALANGE	9.2 x 10 ⁻⁰¹	1.7 x 10 ⁻⁰¹	2.4 x 10 ⁰¹	4.6 x 10 ⁰⁰	1.4 x 10 ⁰⁰	2.3 x 10 ⁰⁰	6.9 x 10 ⁰¹	7.4 x 10 ⁰⁰
Distal - 3								
FOOT PHALANGE	5.8 x 10 ⁻⁰¹	1.1 x 10 ⁻⁰¹	1.6 x 10 ⁰¹	4.7 x 10 ⁰⁰	-2.5 x 10 ⁰⁰	2.5 x 10 ⁰⁰	5.8 x 10 ⁰¹	7.4 x 10 ⁰⁰
Distal - 4								
FOOT PHALANGE	1.26 x 10 ⁰⁰	3.4 x 10 ⁻⁰¹	1.2 x 10 ⁰¹	1.9 x 10 ⁰⁰	-4.3 x 10 ⁻⁰¹	6.9 x 10 ⁻⁰¹	3.8 x 10 ⁰¹	3.3 x 10 ⁰⁰
Medial - 2								
FOOT PHALANGE	9.4 x 10 ⁻⁰¹	2.5 x 10 ⁻⁰¹	2.1 x 10 ⁰¹	3.4 x 10 ⁰⁰	1.8 x 10 ⁰⁰	1.8 x 10 ⁰⁰	6.0 x 10 ⁰¹	5.6 x 10 ⁰⁰
Medial - 3								
FOOT PHALANGE	5.8 x 10 ⁻⁰¹	1.4 x 10 ⁻⁰¹	1.3 x 10 ⁰¹	3.1 x 10 ⁰⁰	-5.1 x 10 ⁻⁰¹	1.7 x 10 ⁰⁰	3.6 x 10 ⁰¹	4.3 x 10 ⁰⁰
Medial - 4								
FOOT PHALANGE	1.02 x 10 ⁰⁰	1.9 x 10 ⁻⁰¹	2.4 x 10 ⁰¹	3.7 x 10 ⁰⁰	1.3 x 10 ⁰⁰	1.3 x 10 ⁰⁰	6.1 x 10 ⁰¹	5.7 x 10 ⁰⁰
Medial - 5								
FOOT PHALANGE	9.89 x 10 ⁰⁰	2.85 x 10 ⁰⁰	1.31 x 10 ⁰¹	8.04 x 10 ⁻⁰¹	9.42 x 10 ⁻⁰¹	1.84 x 10 ⁻⁰¹	3.74 x 10 ⁰¹	1.45 x 10 ⁰⁰
Proximal - 1								
FOOT PHALANGE	3.30 x 10 ⁰⁰	1.04 x 10 ⁰⁰	1.25 x 10 ⁰¹	1.14 x 10 ⁰⁰	2.47 x 10 ⁻⁰¹	2.16 x 10 ⁻⁰¹	3.40 x 10 ⁰¹	1.97 x 10 ⁰⁰
Proximal - 2								
FOOT PHALANGE	2.64 x 10 ⁰⁰	7.6 x 10 ⁻⁰¹	1.4 x 10 ⁰¹	1.4 x 10 ⁰⁰	8.8 x 10 ⁻⁰¹	4.2 x 10 ⁻⁰¹	4.0 x 10 ⁰¹	2.5 x 10 ⁰⁰
Proximal - 3								
FOOT PHALANGE	2.00 x 10 ⁰⁰	6.0 x 10 ⁻⁰¹	1.4 x 10 ⁰¹	1.6 x 10 ⁰⁰	1.0 x 10 ⁰⁰	5.0 x 10 ⁻⁰¹	3.7 x 10 ⁰¹	2.7 x 10 ⁰⁰
Proximal - 4								
FOOT PHALANGE	2.06 x 10 ⁰⁰	6.2 x 10 ⁻⁰¹	1.2 x 10 ⁰¹	1.4 x 10 ⁰⁰	3.1 x 10 ⁻⁰¹	3.1 x 10 ⁻⁰¹	3.5 x 10 ⁰¹	2.5 x 10 ⁰⁰
Proximal - 5								
FRONTAL # 1	5.01 x 10 ⁰¹	2.82 x 10 ⁰¹	9.26 x 10 ⁰⁰	4.05 x 10 ⁻⁰¹	5.87 x 10 ⁻⁰¹	6.39 x 10 ⁻⁰²	2.39 x 10 ⁰¹	7.50 x 10 ⁻⁰¹
FRONTAL # 2	8.02 x 10 ⁰⁰	4.72 x 10 ⁰⁰	9.51 x 10 ⁰⁰	7.03 x 10 ⁻⁰¹	3.23 x 10 ⁻⁰¹	1.27 x 10 ⁻⁰¹	2.13 x 10 ⁰¹	1.04 x 10 ⁰⁰
FRONTAL # 3	2.52 x 10 ⁰¹	1.07 x 10 ⁰¹	1.16 x 10 ⁰¹	5.90 x 10 ⁻⁰¹	5.03 x 10 ⁻⁰¹	9.31 x 10 ⁻⁰²	3.07 x 10 ⁰¹	1.08 x 10 ⁰⁰

Right side of body was analyzed, unless note as left.
Concentrations for bone are per kg of ash.

CASE 0212 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
HAMATE	6.60 x 10 ⁰⁰	1.71 x 10 ⁰⁰	1.28 x 10 ⁰¹	9.30 x 10 ⁻⁰¹	8.33 x 10 ⁻⁰¹	2.33 x 10 ⁻⁰¹	4.73 x 10 ⁰¹	2.03 x 10 ⁰⁰
HAND PHALANGE Distal - 1	3.00 x 10 ⁰⁰	6.9 x 10 ⁻⁰¹	1.38 x 10 ⁰¹	1.42 x 10 ⁰⁰	1.32 x 10 ⁰⁰	4.90 x 10 ⁻⁰¹	4.89 x 10 ⁰¹	3.09 x 10 ⁰⁰
HAND PHALANGE Distal - 2	1.50 x 10 ⁰⁰	3.6 x 10 ⁻⁰¹	1.5 x 10 ⁰¹	2.5 x 10 ⁰⁰	-9.3 x 10 ⁻⁰¹	9.3 x 10 ⁻⁰¹	4.4 x 10 ⁰¹	3.9 x 10 ⁰⁰
HAND PHALANGE Distal - 3	1.80 x 10 ⁰⁰	3.9 x 10 ⁻⁰¹	1.3 x 10 ⁰¹	2.0 x 10 ⁰⁰	-4.4 x 10 ⁻⁰¹	6.1 x 10 ⁻⁰¹	4.5 x 10 ⁰¹	3.5 x 10 ⁰⁰
HAND PHALANGE Distal - 4	1.80 x 10 ⁰⁰	3.1 x 10 ⁻⁰¹	1.5 x 10 ⁰¹	2.3 x 10 ⁰⁰			5.2 x 10 ⁰¹	4.2 x 10 ⁰⁰
HAND PHALANGE Distal - 5	1.10 x 10 ⁰⁰	2.3 x 10 ⁻⁰¹	1.3 x 10 ⁰¹	2.5 x 10 ⁰⁰	1.4 x 10 ⁰⁰	1.5 x 10 ⁰⁰	4.3 x 10 ⁰¹	4.2 x 10 ⁰⁰
HAND PHALANGE Medial - 2	2.90 x 10 ⁰⁰	1.06 x 10 ⁰⁰	8.94 x 10 ⁰⁰	1.01 x 10 ⁰⁰	9.79 x 10 ⁻⁰¹	3.59 x 10 ⁻⁰¹	3.56 x 10 ⁰¹	2.15 x 10 ⁰⁰
HAND PHALANGE Medial - 3	4.10 x 10 ⁰⁰	1.51 x 10 ⁰⁰	1.06 x 10 ⁰¹	8.99 x 10 ⁻⁰¹	2.41 x 10 ⁻⁰¹	1.75 x 10 ⁻⁰¹	2.85 x 10 ⁰¹	1.49 x 10 ⁰⁰
HAND PHALANGE Medial - 4	3.20 x 10 ⁰⁰	1.09 x 10 ⁰⁰	1.07 x 10 ⁰¹	1.11 x 10 ⁰⁰	6.48 x 10 ⁻⁰¹	3.09 x 10 ⁻⁰¹	3.19 x 10 ⁰¹	1.91 x 10 ⁰⁰
HAND PHALANGE Medial - 5	1.60 x 10 ⁰⁰	5.3 x 10 ⁻⁰¹	1.0 x 10 ⁰¹	1.4 x 10 ⁰⁰	4.8 x 10 ⁻⁰¹	3.6 x 10 ⁻⁰¹	3.4 x 10 ⁰¹	2.6 x 10 ⁰⁰
HAND PHALANGE Proximal - 1	5.40 x 10 ⁰⁰	1.62 x 10 ⁰⁰	1.35 x 10 ⁰¹	9.75 x 10 ⁻⁰¹	7.61 x 10 ⁻⁰¹	1.23 x 10 ⁻⁰¹	3.68 x 10 ⁰¹	1.13 x 10 ⁰⁰
HAND PHALANGE Proximal - 2	7.20 x 10 ⁰⁰	2.72 x 10 ⁰⁰	8.86 x 10 ⁰⁰	6.20 x 10 ⁻⁰¹	3.53 x 10 ⁻⁰¹	1.22 x 10 ⁻⁰¹	2.33 x 10 ⁰¹	1.06 x 10 ⁰⁰
HAND PHALANGE Proximal - 3	9.10 x 10 ⁰⁰	3.26 x 10 ⁰⁰	8.95 x 10 ⁰⁰	5.90 x 10 ⁻⁰¹	6.93 x 10 ⁻⁰¹	1.55 x 10 ⁻⁰¹	2.42 x 10 ⁰¹	1.05 x 10 ⁰⁰
HAND PHALANGE Proximal - 4	6.60 x 10 ⁰⁰	2.46 x 10 ⁰⁰	8.96 x 10 ⁰⁰	6.20 x 10 ⁻⁰¹	4.68 x 10 ⁻⁰¹	1.38 x 10 ⁻⁰¹	2.57 x 10 ⁰¹	1.13 x 10 ⁰⁰
HAND PHALANGE Proximal - 5	3.90 x 10 ⁰⁰	1.22 x 10 ⁰⁰	9.73 x 10 ⁰⁰	9.41 x 10 ⁻⁰¹	8.06 x 10 ⁻⁰¹	2.69 x 10 ⁻⁰¹	3.08 x 10 ⁰¹	1.69 x 10 ⁰⁰
HUMERUS Distal End	8.38 x 10 ⁰¹	2.89 x 10 ⁰¹	9.30 x 10 ⁰⁰	5.08 x 10 ⁻⁰¹	5.78 x 10 ⁻⁰¹	1.10 x 10 ⁻⁰¹	2.68 x 10 ⁰¹	1.00 x 10 ⁰⁰
HUMERUS Distal Shaft	6.76 x 10 ⁰¹	3.46 x 10 ⁰¹	7.07 x 10 ⁰⁰	4.09 x 10 ⁻⁰¹	1.64 x 10 ⁻⁰¹	1.35 x 10 ⁻⁰¹	1.88 x 10 ⁰¹	1.23 x 10 ⁰⁰

Right side of body was analyzed, unless note as left.
Concentrations for bone are per kg of ash.

CASE 0212 BONE

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TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
HUMERUS Proximal End	1.17 x 10 ⁰²	2.17 x 10 ⁰¹	1.74 x 10 ⁰¹	8.24 x 10 ⁻⁰¹	1.21 x 10 ⁰⁰	1.66 x 10 ⁻⁰¹	5.69 x 10 ⁰¹	1.91 x 10 ⁰⁰
HUMERUS Proximal Shaft	7.63 x 10 ⁰¹	3.15 x 10 ⁰¹	8.31 x 10 ⁰⁰	4.55 x 10 ⁻⁰¹	4.75 x 10 ⁻⁰¹	1.00 x 10 ⁻⁰¹	2.53 x 10 ⁰¹	9.93 x 10 ⁻⁰¹
HYOID	4.30 x 10 ⁰⁰	7.1 x 10 ⁻⁰¹	2.5 x 10 ⁰¹	1.9 x 10 ⁰⁰	1.6 x 10 ⁰⁰	5.1 x 10 ⁻⁰¹	9.0 x 10 ⁰¹	4.1 x 10 ⁰⁰
ILIUM Body	2.10 x 10 ⁰²	5.00 x 10 ⁰¹	1.75 x 10 ⁰¹	7.73 x 10 ⁻⁰¹	9.06 x 10 ⁻⁰¹	1.20 x 10 ⁻⁰¹	6.15 x 10 ⁰¹	1.86 x 10 ⁰⁰
ILIUM Crest	7.47 x 10 ⁰¹	1.74 x 10 ⁰¹	1.68 x 10 ⁰¹	7.06 x 10 ⁻⁰¹	1.01 x 10 ⁰⁰	1.07 x 10 ⁻⁰¹	6.66 x 10 ⁰¹	1.93 x 10 ⁰⁰
INCISOR Right Lower 1	5.8 x 10 ⁻⁰¹	4.4 x 10 ⁻⁰¹	1.8 x 10 ⁰⁰	6.0 x 10 ⁻⁰¹				
INCISOR Right Lower 2	6.4 x 10 ⁻⁰¹	4.8 x 10 ⁻⁰¹	3.5 x 10 ⁰⁰	6.5 x 10 ⁻⁰¹				
ISCHIUM	2.87 x 10 ⁰²	6.42 x 10 ⁰¹	1.72 x 10 ⁰¹	7.42 x 10 ⁻⁰¹	1.14 x 10 ⁰⁰	1.35 x 10 ⁻⁰¹	5.72 x 10 ⁰¹	1.75 x 10 ⁰⁰
LUNATE	5.20 x 10 ⁰⁰	1.49 x 10 ⁰⁰	1.25 x 10 ⁰¹	9.91 x 10 ⁻⁰¹	3.15 x 10 ⁻⁰¹	1.58 x 10 ⁻⁰¹	3.31 x 10 ⁰¹	1.69 x 10 ⁰⁰
MANDIBLE	3.97 x 10 ⁰¹	1.97 x 10 ⁰¹	6.72 x 10 ⁰⁰	3.41 x 10 ⁻⁰¹	4.35 x 10 ⁻⁰¹	6.75 x 10 ⁻⁰²	1.67 x 10 ⁰¹	6.01 x 10 ⁻⁰¹
MAXILLA	4.55 x 10 ⁰¹	1.32 x 10 ⁰¹	1.22 x 10 ⁰¹	5.15 x 10 ⁻⁰¹	6.09 x 10 ⁻⁰¹	7.32 x 10 ⁻⁰²	2.81 x 10 ⁰¹	9.17 x 10 ⁻⁰¹
METACARPAL # 1	1.28 x 10 ⁰¹	3.29 x 10 ⁰⁰	1.12 x 10 ⁰¹	7.22 x 10 ⁻⁰¹	4.57 x 10 ⁻⁰¹	1.83 x 10 ⁻⁰¹	2.84 x 10 ⁰¹	1.29 x 10 ⁰⁰
METACARPAL # 2	1.58 x 10 ⁰¹	5.19 x 10 ⁰⁰	9.26 x 10 ⁰⁰	5.08 x 10 ⁻⁰¹	4.63 x 10 ⁻⁰¹	1.09 x 10 ⁻⁰¹	2.51 x 10 ⁰¹	9.59 x 10 ⁻⁰¹
METACARPAL # 3	1.56 x 10 ⁰¹	4.95 x 10 ⁰⁰	9.87 x 10 ⁰⁰	5.33 x 10 ⁻⁰¹	4.58 x 10 ⁻⁰¹	1.08 x 10 ⁻⁰¹	2.96 x 10 ⁰¹	1.08 x 10 ⁰⁰
METACARPAL # 4	9.80 x 10 ⁰⁰	2.88 x 10 ⁰⁰	1.11 x 10 ⁰¹	6.76 x 10 ⁻⁰¹	3.85 x 10 ⁻⁰¹	1.28 x 10 ⁻⁰¹	2.73 x 10 ⁰¹	1.17 x 10 ⁰⁰
METACARPAL # 5	7.90 x 10 ⁰⁰	2.24 x 10 ⁰⁰	9.87 x 10 ⁰⁰	6.87 x 10 ⁻⁰¹	5.41 x 10 ⁻⁰¹	1.75 x 10 ⁻⁰¹	2.62 x 10 ⁰¹	1.26 x 10 ⁰⁰
METATARSAL # 1	3.01 x 10 ⁰¹	9.59 x 10 ⁰⁰	9.84 x 10 ⁰⁰	4.59 x 10 ⁻⁰¹	6.47 x 10 ⁻⁰¹	9.05 x 10 ⁻⁰²	2.95 x 10 ⁰¹	1.01 x 10 ⁰⁰
METATARSAL # 2	1.44 x 10 ⁰¹	4.34 x 10 ⁰⁰	9.62 x 10 ⁰⁰	5.17 x 10 ⁻⁰¹	4.19 x 10 ⁻⁰¹	9.89 x 10 ⁻⁰²	2.60 x 10 ⁰¹	9.74 x 10 ⁻⁰¹
METATARSAL # 3	1.31 x 10 ⁰¹	3.60 x 10 ⁰⁰	1.07 x 10 ⁰¹	6.39 x 10 ⁻⁰¹	3.61 x 10 ⁻⁰¹	1.11 x 10 ⁻⁰¹	2.92 x 10 ⁰¹	1.20 x 10 ⁰⁰
METATARSAL # 4	1.25 x 10 ⁰¹	3.59 x 10 ⁰⁰	1.16 x 10 ⁰¹	7.08 x 10 ⁻⁰¹	3.91 x 10 ⁻⁰¹	1.40 x 10 ⁻⁰¹	3.01 x 10 ⁰¹	1.21 x 10 ⁰⁰
METATARSAL # 5	1.37 x 10 ⁰¹	3.96 x 10 ⁰⁰	1.34 x 10 ⁰¹	7.14 x 10 ⁻⁰¹	8.76 x 10 ⁻⁰¹	1.62 x 10 ⁻⁰¹	3.20 x 10 ⁰¹	1.20 x 10 ⁰⁰
NAVICULAR	2.18 x 10 ⁰¹	6.25 x 10 ⁰⁰	1.25 x 10 ⁰¹	6.18 x 10 ⁻⁰¹	6.40 x 10 ⁻⁰¹	1.08 x 10 ⁻⁰¹	3.74 x 10 ⁰¹	1.29 x 10 ⁰⁰
OCCIPITAL	5.71 x 10 ⁰¹	2.86 x 10 ⁰¹	9.95 x 10 ⁰⁰	4.45 x 10 ⁻⁰¹	4.34 x 10 ⁻⁰¹	5.36 x 10 ⁻⁰²	2.66 x 10 ⁰¹	8.09 x 10 ⁻⁰¹
PARIETAL # 1	6.27 x 10 ⁰¹	3.24 x 10 ⁰¹	1.14 x 10 ⁰¹	5.47 x 10 ⁻⁰¹	5.26 x 10 ⁻⁰¹	8.25 x 10 ⁻⁰²	3.46 x 10 ⁰¹	1.10 x 10 ⁰⁰
PARIETAL # 2	7.34 x 10 ⁰¹	3.76 x 10 ⁰¹	1.18 x 10 ⁰¹	5.42 x 10 ⁻⁰¹	5.73 x 10 ⁻⁰¹	7.99 x 10 ⁻⁰²	3.50 x 10 ⁰¹	1.10 x 10 ⁰⁰

Right side of body was analyzed, unless note as left.
Concentrations for bone are per kg of ash.

CASE 0212 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
PATELLA-Left	4.10 x 10 ⁰¹	1.13 x 10 ⁰¹	9.75 x 10 ⁰⁰	5.35 x 10 ⁻⁰¹	4.12 x 10 ⁻⁰¹	8.82 x 10 ⁻⁰²	2.42 x 10 ⁰¹	9.11 x 10 ⁻⁰¹
PATELLA-Right	4.17 x 10 ⁰¹	1.16 x 10 ⁰¹	9.67 x 10 ⁰⁰	5.36 x 10 ⁻⁰¹	3.76 x 10 ⁻⁰¹	8.68 x 10 ⁻⁰²	1.90 x 10 ⁰¹	7.58 x 10 ⁻⁰¹
PISIFORM	1.41 x 10 ⁰⁰	4.10 x 10 ⁻⁰¹	1.63 x 10 ⁰¹	2.05 x 10 ⁰⁰	1.19 x 10 ⁰⁰	6.35 x 10 ⁻⁰¹	4.10 x 10 ⁰¹	3.25 x 10 ⁰⁰
PREMOLAR Right Lower 4	6.00 x 10 ⁻⁰¹	3.90 x 10 ⁻⁰¹	6.22 x 10 ⁰⁰	1.01 x 10 ⁰⁰				
PREMOLAR Right Lower 5	5.40 x 10 ⁻⁰¹	3.60 x 10 ⁻⁰¹	6.22 x 10 ⁰⁰	9.77 x 10 ⁻⁰¹				
RADIUS Distal End	2.33 x 10 ⁰¹	5.48 x 10 ⁰⁰	1.34 x 10 ⁰¹	6.68 x 10 ⁻⁰¹	7.45 x 10 ⁻⁰¹	1.22 x 10 ⁻⁰¹	3.35 x 10 ⁰¹	1.19 x 10 ⁰⁰
RADIUS Distal Shaft	2.93 x 10 ⁰¹	1.48 x 10 ⁰¹	3.23 x 10 ⁰⁰	2.16 x 10 ⁻⁰¹	1.53 x 10 ⁻⁰¹	4.95 x 10 ⁻⁰²	7.03 x 10 ⁰⁰	3.24 x 10 ⁻⁰¹
RADIUS Proximal End	1.14 x 10 ⁰¹	3.35 x 10 ⁰⁰	1.27 x 10 ⁰¹	7.05 x 10 ⁻⁰¹	1.14 x 10 ⁰⁰	2.49 x 10 ⁻⁰¹	3.61 x 10 ⁰¹	1.71 x 10 ⁰⁰
RADIUS Proximal Shaft	3.42 x 10 ⁰¹	1.58 x 10 ⁰¹	6.23 x 10 ⁰⁰	3.71 x 10 ⁻⁰¹	3.38 x 10 ⁻⁰¹	9.72 x 10 ⁻⁰²	1.55 x 10 ⁰¹	7.69 x 10 ⁻⁰¹
RIB # 1	2.36 x 10 ⁰¹	6.18 x 10 ⁰⁰	1.62 x 10 ⁰¹	7.47 x 10 ⁻⁰¹	9.20 x 10 ⁻⁰¹	1.14 x 10 ⁻⁰¹	3.86 x 10 ⁰¹	1.22 x 10 ⁰⁰
RIB # 10	2.64 x 10 ⁰¹	7.89 x 10 ⁰⁰	1.62 x 10 ⁰¹	7.15 x 10 ⁻⁰¹	8.71 x 10 ⁻⁰¹	1.06 x 10 ⁻⁰¹	4.26 x 10 ⁰¹	1.35 x 10 ⁰⁰
RIB # 11	1.91 x 10 ⁰¹	6.26 x 10 ⁰⁰	1.45 x 10 ⁰¹	7.02 x 10 ⁻⁰¹	1.02 x 10 ⁰⁰	1.39 x 10 ⁻⁰¹	4.45 x 10 ⁰¹	1.48 x 10 ⁰⁰
RIB # 12	3.10 x 10 ⁰⁰	7.10 x 10 ⁻⁰¹	1.80 x 10 ⁰¹	1.85 x 10 ⁰⁰	1.39 x 10 ⁻⁰¹	5.55 x 10 ⁻⁰¹	5.28 x 10 ⁰¹	3.19 x 10 ⁰⁰
RIB # 2	2.46 x 10 ⁰¹	6.34 x 10 ⁰⁰	1.95 x 10 ⁰¹	8.20 x 10 ⁻⁰¹	1.20 x 10 ⁰⁰	1.36 x 10 ⁻⁰¹	5.97 x 10 ⁰¹	1.82 x 10 ⁰⁰
RIB # 3	2.52 x 10 ⁰¹	6.76 x 10 ⁰⁰	2.07 x 10 ⁰¹	9.08 x 10 ⁻⁰¹	9.62 x 10 ⁻⁰¹	1.24 x 10 ⁻⁰¹	4.76 x 10 ⁰¹	1.51 x 10 ⁰⁰
RIB # 4	3.16 x 10 ⁰¹	8.69 x 10 ⁰⁰	1.87 x 10 ⁰¹	7.26 x 10 ⁻⁰¹	1.01 x 10 ⁰⁰	9.97 x 10 ⁻⁰²	5.38 x 10 ⁰¹	1.54 x 10 ⁰⁰
RIB # 5	3.38 x 10 ⁰¹	1.08 x 10 ⁰¹	1.68 x 10 ⁰¹	6.88 x 10 ⁻⁰¹	7.06 x 10 ⁻⁰¹	9.60 x 10 ⁻⁰²	4.64 x 10 ⁰¹	1.52 x 10 ⁰⁰
RIB # 6	4.44 x 10 ⁰¹	1.23 x 10 ⁰¹	1.87 x 10 ⁰¹	7.46 x 10 ⁻⁰¹	1.10 x 10 ⁰⁰	1.11 x 10 ⁻⁰¹	5.20 x 10 ⁰¹	1.65 x 10 ⁰⁰
RIB # 7	4.59 x 10 ⁰¹	1.40 x 10 ⁰¹	1.56 x 10 ⁰¹	6.36 x 10 ⁻⁰¹	8.50 x 10 ⁻⁰¹	1.47 x 10 ⁻⁰¹	4.90 x 10 ⁰¹	1.82 x 10 ⁰⁰
RIB # 8	3.79 x 10 ⁰¹	1.12 x 10 ⁰¹	1.70 x 10 ⁰¹	7.23 x 10 ⁻⁰¹	8.96 x 10 ⁻⁰¹	1.13 x 10 ⁻⁰¹	5.54 x 10 ⁰¹	1.85 x 10 ⁰⁰
RIB # 9	3.33 x 10 ⁰¹	9.91 x 10 ⁰⁰	1.74 x 10 ⁰¹	7.29 x 10 ⁻⁰¹	1.03 x 10 ⁰⁰	2.02 x 10 ⁻⁰¹	5.12 x 10 ⁰¹	1.94 x 10 ⁰⁰
SACRUM	2.31 x 10 ⁰²	3.78 x 10 ⁰¹	2.00 x 10 ⁰¹	9.26 x 10 ⁻⁰¹	1.47 x 10 ⁰⁰	1.85 x 10 ⁻⁰¹	7.12 x 10 ⁰¹	2.20 x 10 ⁰⁰
SCAPHOID	6.50 x 10 ⁰⁰	1.81 x 10 ⁰⁰	1.30 x 10 ⁰¹	8.97 x 10 ⁻⁰¹	9.89 x 10 ⁻⁰¹	2.38 x 10 ⁻⁰¹	3.54 x 10 ⁰¹	1.61 x 10 ⁰⁰

Right side of body was analyzed, unless note as left.
Concentrations for bone are per kg of ash.

CASE 0212 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
SCAPULA Spine	8.53 x 10 ⁰¹	2.47 x 10 ⁰¹	1.61 x 10 ⁰¹	7.83 x 10 ⁻⁰¹	9.45 x 10 ⁻⁰¹	1.42 x 10 ⁻⁰¹	5.15 x 10 ⁰¹	1.65 x 10 ⁰⁰
SCAPULA Distal End	4.83 x 10 ⁰¹	1.67 x 10 ⁰¹	1.54 x 10 ⁰¹	6.77 x 10 ⁻⁰¹	8.58 x 10 ⁻⁰¹	5.24 x 10 ⁻⁰¹	4.16 x 10 ⁰¹	3.77 x 10 ⁰⁰
SCAPULA Proximal End	2.61 x 10 ⁰¹	7.88 x 10 ⁰⁰	1.61 x 10 ⁰¹	7.24 x 10 ⁻⁰¹	1.17 x 10 ⁰⁰	1.19 x 10 ⁻⁰¹	5.03 x 10 ⁰¹	1.53 x 10 ⁰⁰
STERNUM	1.36 x 10 ⁰²	1.92 x 10 ⁰¹	2.42 x 10 ⁰¹	1.11 x 10 ⁰⁰	1.11 x 10 ⁰⁰	2.96 x 10 ⁻⁰¹	7.49 x 10 ⁰¹	3.14 x 10 ⁰⁰
TALUS	7.64 x 10 ⁰¹	2.31 x 10 ⁰¹	2.16 x 10 ⁰¹	9.21 x 10 ⁻⁰¹	1.15 x 10 ⁰⁰	1.13 x 10 ⁻⁰¹	6.37 x 10 ⁰¹	1.92 x 10 ⁰⁰
TEMPORAL # 1	1.21 x 10 ⁰¹	6.71 x 10 ⁰⁰	7.90 x 10 ⁰⁰	5.56 x 10 ⁻⁰¹	3.17 x 10 ⁻⁰¹	1.39 x 10 ⁻⁰¹	1.94 x 10 ⁰¹	9.13 x 10 ⁻⁰¹
TEMPORAL # 2	6.18 x 10 ⁰¹	2.48 x 10 ⁰¹	8.64 x 10 ⁰⁰	4.07 x 10 ⁻⁰¹	3.50 x 10 ⁻⁰¹	1.75 x 10 ⁻⁰¹	2.58 x 10 ⁰¹	1.41 x 10 ⁰⁰
TEMPORAL # 3	4.63 x 10 ⁰¹	1.26 x 10 ⁰¹	1.27 x 10 ⁰¹	5.81 x 10 ⁻⁰¹	5.39 x 10 ⁻⁰¹	8.98 x 10 ⁻⁰²	3.60 x 10 ⁰¹	1.17 x 10 ⁰⁰
TIBIA Distal End	8.01 x 10 ⁰¹	2.18 x 10 ⁰¹	1.05 x 10 ⁰¹	5.99 x 10 ⁻⁰¹	7.06 x 10 ⁻⁰¹	2.00 x 10 ⁻⁰¹	2.79 x 10 ⁰¹	1.35 x 10 ⁰⁰
TIBIA Distal Shaft	1.08 x 10 ⁰²	5.78 x 10 ⁰¹	3.51 x 10 ⁰⁰	2.16 x 10 ⁻⁰¹	6.34 x 10 ⁻⁰²	5.77 x 10 ⁻⁰²	7.90 x 10 ⁰⁰	5.07 x 10 ⁻⁰¹
TIBIA Proximal End	2.02 x 10 ⁰²	4.33 x 10 ⁰¹	1.24 x 10 ⁰¹	5.66 x 10 ⁻⁰¹	6.69 x 10 ⁻⁰¹	9.23 x 10 ⁻⁰²	3.36 x 10 ⁰¹	1.11 x 10 ⁰⁰
TIBIA Proximal Shaft	1.63 x 10 ⁰²	6.53 x 10 ⁰¹	5.85 x 10 ⁰⁰	2.91 x 10 ⁻⁰¹	2.96 x 10 ⁻⁰¹	1.53 x 10 ⁻⁰¹	1.09 x 10 ⁰¹	8.43 x 10 ⁻⁰¹
TRAPEZIUM	5.50 x 10 ⁰⁰	1.37 x 10 ⁰⁰	1.58 x 10 ⁰¹	1.59 x 10 ⁰⁰	6.22 x 10 ⁻⁰¹	2.49 x 10 ⁻⁰¹	3.88 x 10 ⁰¹	1.84 x 10 ⁰⁰
TRAPEZOIDE	3.30 x 10 ⁰⁰	9.3 x 10 ⁻⁰¹	1.53 x 10 ⁰¹	1.28 x 10 ⁰⁰	7.28 x 10 ⁻⁰¹	3.12 x 10 ⁻⁰¹	3.88 x 10 ⁰¹	2.12 x 10 ⁰⁰
TRIANGULAR	4.40 x 10 ⁰⁰	1.18 x 10 ⁰⁰	1.49 x 10 ⁰¹	1.35 x 10 ⁰⁰	-5.08 x 10 ⁻⁰¹	1.36 x 10 ⁰⁰	2.22 x 10 ⁰¹	2.56 x 10 ⁰⁰
ULNA Distal End Left	1.40 x 10 ⁰⁰	1.40 x 10 ⁰⁰	1.15 x 10 ⁰¹	1.34 x 10 ⁰⁰				
ULNA Distal Shaft Right	2.54 x 10 ⁰¹	1.21 x 10 ⁰¹	3.96 x 10 ⁰⁰	2.98 x 10 ⁻⁰¹	1.43 x 10 ⁻⁰¹	5.51 x 10 ⁻⁰²	8.40 x 10 ⁰⁰	4.30 x 10 ⁻⁰¹
ULNA Proximal End Right	4.13 x 10 ⁰¹	1.37 x 10 ⁰¹	1.10 x 10 ⁰¹	5.03 x 10 ⁻⁰¹	3.42 x 10 ⁻⁰¹	1.27 x 10 ⁻⁰¹	2.83 x 10 ⁰¹	1.16 x 10 ⁰⁰
ULNA Proximal Shaft Right	3.64 x 10 ⁰¹	1.91 x 10 ⁰¹	3.56 x 10 ⁰⁰	2.31 x 10 ⁻⁰¹	1.19 x 10 ⁻⁰¹	1.33 x 10 ⁻⁰¹	8.59 x 10 ⁰⁰	5.73 x 10 ⁻⁰¹
VERTEBRA Thoracic-11 Arch	2.09 x 10 ⁰¹	5.52 x 10 ⁰⁰	2.00 x 10 ⁰¹	1.10 x 10 ⁰⁰	1.06 x 10 ⁰⁰	2.17 x 10 ⁻⁰¹	6.48 x 10 ⁰¹	2.24 x 10 ⁰⁰

Right side of body was analyzed, unless note as left.
Concentrations for bone are per kg of ash.

CASE 0212 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
VERTEBRA Thoracic-11 Body	4.40 x 10 ⁰¹	7.96 x 10 ⁰⁰	2.70 x 10 ⁰¹	1.16 x 10 ⁰⁰	1.87 x 10 ⁰⁰	2.02 x 10 ⁻⁰¹	9.34 x 10 ⁰¹	2.79 x 10 ⁰⁰
VERTEBRA Cervical- 1	2.93 x 10 ⁰¹	8.63 x 10 ⁰⁰	1.89 x 10 ⁰¹	9.08 x 10 ⁻⁰¹	1.04 x 10 ⁰⁰	1.62 x 10 ⁻⁰¹	5.91 x 10 ⁰¹	1.94 x 10 ⁰⁰
VERTEBRA Cervical- 3 Arch	1.11 x 10 ⁰¹	3.13 x 10 ⁰⁰	2.20 x 10 ⁰¹	1.33 x 10 ⁰⁰	1.16 x 10 ⁰⁰	3.16 x 10 ⁻⁰¹	6.58 x 10 ⁰¹	2.64 x 10 ⁰⁰
VERTEBRA Cervical- 3 Body	7.92 x 10 ⁰⁰	1.94 x 10 ⁰⁰	2.03 x 10 ⁰¹	1.58 x 10 ⁰⁰	9.42 x 10 ⁻⁰¹	4.71 x 10 ⁻⁰¹	8.16 x 10 ⁰¹	3.60 x 10 ⁰⁰
VERTEBRA Cervical- 5 Arch	1.09 x 10 ⁰¹	3.27 x 10 ⁰⁰	1.89 x 10 ⁰¹	1.17 x 10 ⁰⁰	8.44 x 10 ⁻⁰¹	2.67 x 10 ⁻⁰¹	6.69 x 10 ⁰¹	2.63 x 10 ⁰⁰
VERTEBRA Cervical- 5 Body	8.33 x 10 ⁰⁰	2.26 x 10 ⁰⁰	2.28 x 10 ⁰¹	1.56 x 10 ⁰⁰	1.56 x 10 ⁰⁰	3.60 x 10 ⁻⁰¹	7.37 x 10 ⁰¹	3.06 x 10 ⁰⁰
VERTEBRA Cervical- 7 Arch	1.80 x 10 ⁰¹	5.33 x 10 ⁰⁰	1.64 x 10 ⁰¹	8.83 x 10 ⁻⁰¹	1.26 x 10 ⁰⁰	2.24 x 10 ⁻⁰¹	5.86 x 10 ⁰¹	2.11 x 10 ⁰⁰
VERTEBRA Cervical- 7 Body	1.05 x 10 ⁰¹	2.30 x 10 ⁰⁰	2.08 x 10 ⁰¹	1.54 x 10 ⁰⁰	1.62 x 10 ⁰⁰	4.35 x 10 ⁻⁰¹	7.83 x 10 ⁰¹	3.36 x 10 ⁰⁰
VERTEBRA Lumbar- 1 Arch	3.47 x 10 ⁰¹	1.04 x 10 ⁰¹	1.69 x 10 ⁰¹	7.66 x 10 ⁻⁰¹	1.19 x 10 ⁰⁰	1.42 x 10 ⁻⁰¹	5.50 x 10 ⁰¹	1.68 x 10 ⁰⁰
VERTEBRA Lumbar- 1 Body	5.37 x 10 ⁰¹	9.70 x 10 ⁰⁰	2.33 x 10 ⁰¹	1.02 x 10 ⁰⁰	1.63 x 10 ⁰⁰	1.86 x 10 ⁻⁰¹	8.11 x 10 ⁰¹	2.48 x 10 ⁰⁰
VERTEBRA Lumbar- 3 Arch	4.40 x 10 ⁰¹	1.27 x 10 ⁰¹	1.59 x 10 ⁰¹	6.85 x 10 ⁻⁰¹	7.30 x 10 ⁻⁰¹	9.97 x 10 ⁻⁰²	5.21 x 10 ⁰¹	1.55 x 10 ⁰⁰
VERTEBRA Lumbar- 3 Body	5.41 x 10 ⁰¹	1.12 x 10 ⁰¹	2.27 x 10 ⁰¹	9.70 x 10 ⁻⁰¹	1.82 x 10 ⁰⁰	2.86 x 10 ⁻⁰¹	7.53 x 10 ⁰¹	2.73 x 10 ⁰⁰
VERTEBRA Lumbar- 5 Arch	1.14 x 10 ⁰¹	2.48 x 10 ⁰⁰	1.77 x 10 ⁰¹	1.40 x 10 ⁰⁰	1.03 x 10 ⁰⁰	4.34 x 10 ⁻⁰¹	5.96 x 10 ⁰¹	2.79 x 10 ⁰⁰
VERTEBRA Lumbar- 5 Body	8.63 x 10 ⁰¹	1.59 x 10 ⁰¹	2.09 x 10 ⁰¹	8.57 x 10 ⁻⁰¹	1.32 x 10 ⁰⁰	1.25 x 10 ⁻⁰¹	6.71 x 10 ⁰¹	1.96 x 10 ⁰⁰
VERTEBRA Thoracic-1 Arch	2.35 x 10 ⁰¹	7.25 x 10 ⁰⁰	1.76 x 10 ⁰¹	8.33 x 10 ⁻⁰¹	1.39 x 10 ⁰⁰	1.94 x 10 ⁻⁰¹	5.55 x 10 ⁰¹	1.87 x 10 ⁰⁰
VERTEBRA Thoracic-1 Body	1.47 x 10 ⁰¹	2.92 x 10 ⁰⁰	2.12 x 10 ⁰¹	1.36 x 10 ⁰⁰	1.41 x 10 ⁰⁰	3.17 x 10 ⁻⁰¹	8.11 x 10 ⁰¹	3.11 x 10 ⁰⁰
VERTEBRA Thoracic-2 Arch	2.14 x 10 ⁰¹	5.80 x 10 ⁰⁰	1.97 x 10 ⁰¹	9.80 x 10 ⁻⁰¹	1.29 x 10 ⁰⁰	2.08 x 10 ⁻⁰¹	6.44 x 10 ⁰¹	2.25 x 10 ⁰⁰

Right side of body was analyzed, unless note as left.
Concentrations for bone are per kg of ash.

CASE 0212 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
VERTEBRA	1.67 x 10 ⁰¹	2.70 x 10 ⁰⁰	2.21 x 10 ⁰¹	1.38 x 10 ⁰⁰	1.58 x 10 ⁰⁰	4.94 x 10 ⁻⁰¹	8.53 x 10 ⁰¹	3.80 x 10 ⁰⁰
Thoracic-2 Body								
VERTEBRA	2.06 x 10 ⁰¹	5.89 x 10 ⁰⁰	1.94 x 10 ⁰¹	1.07 x 10 ⁰⁰	1.43 x 10 ⁰⁰	2.38 x 10 ⁻⁰¹	6.23 x 10 ⁰¹	2.27 x 10 ⁰⁰
Thoracic-3 Arch								
VERTEBRA	1.84 x 10 ⁰¹	3.11 x 10 ⁰⁰	2.54 x 10 ⁰¹	1.52 x 10 ⁰⁰	1.41 x 10 ⁰⁰	3.21 x 10 ⁻⁰¹	7.81 x 10 ⁰¹	3.03 x 10 ⁰⁰
Thoracic-3 Body								
VERTEBRA	2.08 x 10 ⁰¹	6.21 x 10 ⁰⁰	1.73 x 10 ⁰¹	1.02 x 10 ⁰⁰	8.79 x 10 ⁻⁰¹	1.82 x 10 ⁻⁰¹	6.00 x 10 ⁰¹	2.15 x 10 ⁰⁰
Thoracic-5 Arch								
VERTEBRA	2.05 x 10 ⁰¹	3.55 x 10 ⁰⁰	2.56 x 10 ⁰¹	1.44 x 10 ⁰⁰	1.37 x 10 ⁰⁰	2.96 x 10 ⁻⁰¹	6.67 x 10 ⁰¹	2.72 x 10 ⁰⁰
Thoracic-5 Body								
VERTEBRA	2.31 x 10 ⁰¹	6.42 x 10 ⁰⁰	2.09 x 10 ⁰¹	1.12 x 10 ⁰⁰	1.38 x 10 ⁰⁰	2.38 x 10 ⁻⁰¹	6.70 x 10 ⁰¹	2.34 x 10 ⁰⁰
Thoracic-7 Arch								
VERTEBRA	3.03 x 10 ⁰¹	4.55 x 10 ⁰⁰	2.46 x 10 ⁰¹	1.39 x 10 ⁰⁰	1.41 x 10 ⁰⁰	2.96 x 10 ⁻⁰¹	9.16 x 10 ⁰¹	3.21 x 10 ⁰⁰
Thoracic-7 Body								
VERTEBRA	2.43 x 10 ⁰¹	6.26 x 10 ⁰⁰	2.03 x 10 ⁰¹	1.05 x 10 ⁰⁰	1.16 x 10 ⁰⁰	2.04 x 10 ⁻⁰¹	7.54 x 10 ⁰¹	2.50 x 10 ⁰⁰
Thoracic-9 Arch								
VERTEBRA	3.86 x 10 ⁰¹	5.79 x 10 ⁰⁰	2.23 x 10 ⁰¹	1.10 x 10 ⁰⁰	1.20 x 10 ⁰⁰	2.19 x 10 ⁻⁰¹	8.68 x 10 ⁰¹	2.81 x 10 ⁰⁰
Thoracic-9 Body								

Right side of body was analyzed, unless note as left.
Concentrations for bone are per kg of ash.

CASE 0212 VISCERA AND MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ADRENALS	2.29 x 10 ⁰¹	3.35 x 10 ⁻⁰²	1.75 x 10 ⁻⁰²	-2.92 x 10 ⁻⁰³	1.17 x 10 ⁻⁰²	6.65 x 10 ⁻⁰¹	5.53 x 10 ⁻⁰²
BLADDER	1.74 x 10 ⁰²	3.10 x 10 ⁻⁰²	4.59 x 10 ⁻⁰³	5.67 x 10 ⁻⁰⁴	1.13 x 10 ⁻⁰³	4.88 x 10 ⁻⁰²	5.16 x 10 ⁻⁰³
CARTILAGE Costal Right # 1	9.0 x 10 ⁻⁰¹	3.3 x 10 ⁰⁰	6.5 x 10 ⁻⁰¹	0.0 x 10 ⁰⁰	0.0 x 10 ⁰⁰	8.1 x 10 ⁰⁰	9.7 x 10 ⁻⁰¹
CARTILAGE Costal Right # 2	5.30 x 10 ⁰⁰	1.56 x 10 ⁰¹	7.48 x 10 ⁻⁰¹	9.00 x 10 ⁻⁰¹	1.39 x 10 ⁻⁰¹	4.50 x 10 ⁰¹	1.49 x 10 ⁰⁰
CARTILAGE Costal Right # 3	2.10 x 10 ⁰⁰	1.29 x 10 ⁰¹	1.17 x 10 ⁰⁰	6.15 x 10 ⁻⁰¹	2.59 x 10 ⁻⁰¹	3.28 x 10 ⁰¹	1.88 x 10 ⁰⁰
CEREBELLUM	1.50 x 10 ⁰²	1.02 x 10 ⁻⁰¹	8.73 x 10 ⁻⁰³	1.14 x 10 ⁻⁰²	2.89 x 10 ⁻⁰³	3.03 x 10 ⁻⁰¹	1.56 x 10 ⁻⁰²
CEREBRUM	7.45 x 10 ⁰²	5.30 x 10 ⁻⁰²	3.44 x 10 ⁻⁰³	4.38 x 10 ⁻⁰³	1.79 x 10 ⁻⁰³	1.69 x 10 ⁻⁰¹	9.67 x 10 ⁻⁰³
COLON Descending	7.23 x 10 ⁰²	1.56 x 10 ⁻⁰²	1.66 x 10 ⁻⁰³	1.70 x 10 ⁻⁰³	5.05 x 10 ⁻⁰⁴	6.33 x 10 ⁻⁰²	3.27 x 10 ⁻⁰³
DUODENUM	5.76 x 10 ⁰²	1.75 x 10 ⁻⁰²	1.79 x 10 ⁻⁰³	3.35 x 10 ⁻⁰³	8.09 x 10 ⁻⁰⁴	1.05 x 10 ⁻⁰¹	4.98 x 10 ⁻⁰³
EAR-Left	2.38 x 10 ⁰¹	1.29 x 10 ⁻⁰¹	2.66 x 10 ⁻⁰²	-2.80 x 10 ⁻⁰³	1.12 x 10 ⁻⁰²	2.41 x 10 ⁻⁰¹	3.08 x 10 ⁻⁰²
EAR-Right	3.12 x 10 ⁰¹	1.51 x 10 ⁻⁰¹	2.56 x 10 ⁻⁰²	-1.39 x 10 ⁻⁰²	8.54 x 10 ⁻⁰³	2.19 x 10 ⁻⁰¹	2.78 x 10 ⁻⁰²
EPIDURA	3.88 x 10 ⁰¹	8.40 x 10 ⁻⁰¹	5.58 x 10 ⁻⁰²	1.89 x 10 ⁻⁰²	7.73 x 10 ⁻⁰³	4.62 x 10 ⁻⁰¹	3.61 x 10 ⁻⁰²
ESOPHAGUS	2.46 x 10 ⁰¹	6.91 x 10 ⁻⁰²	2.30 x 10 ⁻⁰²	2.72 x 10 ⁻⁰³	1.36 x 10 ⁻⁰²	1.45 x 10 ⁻⁰¹	2.44 x 10 ⁻⁰²
EYES	1.01 x 10 ⁰¹	9.57 x 10 ⁻⁰²	4.29 x 10 ⁻⁰²	-1.98 x 10 ⁻⁰²	2.64 x 10 ⁻⁰²	3.66 x 10 ⁻⁰¹	5.94 x 10 ⁻⁰²
FAT-Mesenteric	1.12 x 10 ⁰³			1.46 x 10 ⁻⁰²	1.64 x 10 ⁻⁰³		
FAT-Pelvic	9.31 x 10 ⁰²	3.75 x 10 ⁻⁰²	3.08 x 10 ⁻⁰³	1.00 x 10 ⁻⁰³	5.71 x 10 ⁻⁰⁴	8.11 x 10 ⁻⁰²	4.65 x 10 ⁻⁰³
FINGERNAIL	1.00 x 10 ⁰⁰	1.28 x 10 ⁻⁰¹	1.92 x 10 ⁻⁰¹	3.21 x 10 ⁻⁰²	1.92 x 10 ⁻⁰¹	3.21 x 10 ⁻⁰²	1.28 x 10 ⁻⁰¹
GALL BLADDER	4.08 x 10 ⁰¹	3.43 x 10 ⁻⁰²	8.99 x 10 ⁻⁰³	2.45 x 10 ⁻⁰³	3.27 x 10 ⁻⁰³	1.05 x 10 ⁻⁰¹	1.47 x 10 ⁻⁰²
HAIR-Head	3.10 x 10 ⁰¹	3.98 x 10 ⁻⁰¹	3.98 x 10 ⁻⁰²	3.23 x 10 ⁻⁰³	8.62 x 10 ⁻⁰³	2.03 x 10 ⁻⁰¹	2.69 x 10 ⁻⁰²
HEART	5.22 x 10 ⁰²	5.43 x 10 ⁻⁰²	4.73 x 10 ⁻⁰³	6.97 x 10 ⁻⁰³	1.09 x 10 ⁻⁰³	2.65 x 10 ⁻⁰¹	9.20 x 10 ⁻⁰³
INTESTINE - Large	2.67 x 10 ⁰²			2.25 x 10 ⁻⁰³	1.25 x 10 ⁻⁰³		
KIDNEY-Left	2.36 x 10 ⁰²	5.96 x 10 ⁻⁰²	5.50 x 10 ⁻⁰³	5.37 x 10 ⁻⁰³	1.55 x 10 ⁻⁰³	3.75 x 10 ⁻⁰¹	1.57 x 10 ⁻⁰²
KIDNEY-Right	2.24 x 10 ⁰²	6.63 x 10 ⁻⁰²	6.39 x 10 ⁻⁰³	5.65 x 10 ⁻⁰³	1.78 x 10 ⁻⁰³	3.71 x 10 ⁻⁰¹	1.60 x 10 ⁻⁰²
LARYNX	5.77 x 10 ⁰¹	1.30 x 10 ⁰⁰	6.41 x 10 ⁻⁰²	5.20 x 10 ⁻⁰²	9.24 x 10 ⁻⁰³	3.39 x 10 ⁰⁰	1.15 x 10 ⁻⁰¹
LIVER	2.38 x 10 ⁰³	2.18 x 10 ⁰⁰	2.07 x 10 ⁻⁰¹	5.85 x 10 ⁻⁰¹	8.41 x 10 ⁻⁰²	3.37 x 10 ⁰¹	1.08 x 10 ⁰⁰

CASE 0212 VISCERA AND MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
LUNG-Left	7.04 x 10 ⁰²	1.47 x 10 ⁻⁰¹	6.63 x 10 ⁻⁰²	4.65 x 10 ⁻⁰³	1.52 x 10 ⁻⁰³	3.65 x 10 ⁻⁰¹	1.43 x 10 ⁻⁰²
LUNG-Right	8.51 x 10 ⁰²	8.83 x 10 ⁻⁰²	5.64 x 10 ⁻⁰³	5.02 x 10 ⁻⁰³	1.18 x 10 ⁻⁰³	3.69 x 10 ⁻⁰¹	1.36 x 10 ⁻⁰²
LYMPH NODE	2.59 x 10 ⁰¹	2.57 x 10 ⁻⁰²	6.43 x 10 ⁻⁰²	2.57 x 10 ⁻⁰²	7.08 x 10 ⁻⁰²	6.05 x 10 ⁻⁰¹	1.22 x 10 ⁻⁰¹
MESENTERY	6.87 x 10 ⁰²	4.22 x 10 ⁻⁰³	7.75 x 10 ⁻⁰⁴	1.45 x 10 ⁻⁰³	5.32 x 10 ⁻⁰⁴	2.72 x 10 ⁻⁰²	1.94 x 10 ⁻⁰³
MESENTERY Large intestine	2.83 x 10 ⁰³	3.32 x 10 ⁻⁰³	3.42 x 10 ⁻⁰⁴	1.25 x 10 ⁻⁰²	9.68 x 10 ⁻⁰⁴		
PANCREAS	7.66 x 10 ⁰¹	2.70 x 10 ⁻⁰²	6.53 x 10 ⁻⁰³	4.35 x 10 ⁻⁰³	3.48 x 10 ⁻⁰³	1.91 x 10 ⁻⁰¹	1.61 x 10 ⁻⁰²
PENIS	6.49 x 10 ⁰¹	1.50 x 10 ⁻⁰¹	1.64 x 10 ⁻⁰²	2.05 x 10 ⁻⁰³	3.59 x 10 ⁻⁰³	1.74 x 10 ⁻⁰¹	1.64 x 10 ⁻⁰²
PITUITARY	2.00 x 10 ⁻⁰¹	2.63 x 10 ⁻⁰¹	1.14 x 10 ⁰⁰	-8.77 x 10 ⁻⁰²	1.05 x 10 ⁰⁰	2.19 x 10 ⁰⁰	8.77 x 10 ⁻⁰¹
PROSTATE	5.25 x 10 ⁰¹	8.76 x 10 ⁻⁰²	1.33 x 10 ⁻⁰²	2.53 x 10 ⁻⁰³	3.80 x 10 ⁻⁰³	1.75 x 10 ⁻⁰¹	1.78 x 10 ⁻⁰²
SCROTUM	8.22 x 10 ⁰¹	5.64 x 10 ⁻⁰²	8.52 x 10 ⁻⁰³	5.68 x 10 ⁻⁰³	3.65 x 10 ⁻⁰³	1.50 x 10 ⁻⁰¹	1.42 x 10 ⁻⁰²
SPINAL CHORD	4.16 x 10 ⁰¹	6.74 x 10 ⁻⁰²	1.28 x 10 ⁻⁰²	-2.40 x 10 ⁻⁰³	2.40 x 10 ⁻⁰³	1.14 x 10 ⁻⁰¹	1.52 x 10 ⁻⁰²
SPLEEN	2.43 x 10 ⁰²	9.24 x 10 ⁻⁰²	6.31 x 10 ⁻⁰³	2.71 x 10 ⁻⁰²	3.01 x 10 ⁻⁰³	1.33 x 10 ⁰⁰	3.97 x 10 ⁻⁰²
STOMACH	4.20 x 10 ⁰²	1.98 x 10 ⁻⁰²	2.23 x 10 ⁻⁰³	7.17 x 10 ⁻⁰⁴	5.57 x 10 ⁻⁰⁴	5.70 x 10 ⁻⁰²	3.97 x 10 ⁻⁰³
TESTIS-Left	2.95 x 10 ⁰¹	7.57 x 10 ⁻⁰²	1.69 x 10 ⁻⁰²	1.81 x 10 ⁻⁰²	5.65 x 10 ⁻⁰³	1.03 x 10 ⁰⁰	3.95 x 10 ⁻⁰²
TESTIS-Right	3.11 x 10 ⁰¹	7.18 x 10 ⁻⁰²	1.61 x 10 ⁻⁰²	8.57 x 10 ⁻⁰³	7.50 x 10 ⁻⁰³	9.96 x 10 ⁻⁰¹	6.00 x 10 ⁻⁰²
THYROID	1.21 x 10 ⁰¹	2.45 x 10 ⁻⁰¹	4.41 x 10 ⁻⁰²	2.76 x 10 ⁻⁰²	2.20 x 10 ⁻⁰²	6.47 x 10 ⁻⁰¹	6.89 x 10 ⁻⁰²
TOENAILS	9.0 x 10 ⁻⁰¹	3.9 x 10 ⁻⁰¹	2.5 x 10 ⁻⁰¹	1.8 x 10 ⁻⁰¹	2.1 x 10 ⁻⁰¹	-1.1 x 10 ⁰¹	1.1 x 10 ⁻⁰¹
TONGUE	9.55 x 10 ⁰¹	5.15 x 10 ⁻⁰²	7.69 x 10 ⁻⁰³	1.75 x 10 ⁻⁰³	2.80 x 10 ⁻⁰³	2.84 x 10 ⁻⁰¹	1.78 x 10 ⁻⁰²
TRACHEA	5.60 x 10 ⁰¹	2.40 x 10 ⁻⁰¹	3.33 x 10 ⁻⁰²	-7.15 x 10 ⁻⁰³	9.53 x 10 ⁻⁰³	2.00 x 10 ⁻⁰¹	2.98 x 10 ⁻⁰²

CASE 0212 MUSCLE

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ABDOMINAL Scrap # 2	1.23 x 10 ⁰²	4.31 x 10 ⁻⁰¹	2.27 x 10 ⁻⁰²	6.71 x 10 ⁻⁰²	7.52 x 10 ⁻⁰³	3.30 x 10 ⁰⁰	1.02 x 10 ⁻⁰¹
ABDOMINAL Scrap # 1	1.26 x 10 ⁰³	2.17 x 10 ⁻⁰³	6.45 x 10 ⁻⁰⁴	3.17 x 10 ⁻⁰⁴	3.22 x 10 ⁻⁰⁴	8.67 x 10 ⁻⁰³	1.11 x 10 ⁻⁰³
ABDOMINAL # 1	5.58 x 10 ⁰²	2.69 x 10 ⁻⁰²	3.50 x 10 ⁻⁰³	1.79 x 10 ⁻⁰³	9.68 x 10 ⁻⁰⁴	7.00 x 10 ⁻⁰²	5.21 x 10 ⁻⁰³
ABDOMINAL # 2	6.48 x 10 ⁰²	3.06 x 10 ⁻⁰²	3.27 x 10 ⁻⁰³	1.44 x 10 ⁻⁰³	7.10 x 10 ⁻⁰⁴	7.09 x 10 ⁻⁰²	4.60 x 10 ⁻⁰³
ABDOMINAL # 3	1.54 x 10 ⁰³	1.98 x 10 ⁻⁰²	1.68 x 10 ⁻⁰³	2.07 x 10 ⁻⁰³	5.40 x 10 ⁻⁰⁴	8.49 x 10 ⁻⁰²	3.96 x 10 ⁻⁰³
ABDOMINAL # 4	1.55 x 10 ⁰³	1.54 x 10 ⁻⁰²	1.47 x 10 ⁻⁰³	2.15 x 10 ⁻⁰³	5.02 x 10 ⁻⁰⁴	7.91 x 10 ⁻⁰²	3.60 x 10 ⁻⁰³
CALF Left	1.55 x 10 ⁰³	2.67 x 10 ⁻⁰²	2.02 x 10 ⁻⁰³	4.67 x 10 ⁻⁰⁴	2.55 x 10 ⁻⁰⁴	6.83 x 10 ⁻⁰²	3.31 x 10 ⁻⁰³
CALF Right	1.58 x 10 ⁰³	3.23 x 10 ⁻⁰²	2.19 x 10 ⁻⁰³	1.58 x 10 ⁻⁰³	3.38 x 10 ⁻⁰⁴	6.85 x 10 ⁻⁰²	2.89 x 10 ⁻⁰³
FOOT Left	3.87 x 10 ⁰²	7.83 x 10 ⁻⁰²	6.90 x 10 ⁻⁰³	2.42 x 10 ⁻⁰³	1.21 x 10 ⁻⁰³	9.92 x 10 ⁻⁰²	7.24 x 10 ⁻⁰³
FOOT Right	2.80 x 10 ⁰²	1.05 x 10 ⁻⁰¹	6.78 x 10 ⁻⁰³	2.85 x 10 ⁻⁰³	1.07 x 10 ⁻⁰³	1.41 x 10 ⁻⁰¹	7.50 x 10 ⁻⁰³
FOREARM Left	8.11 x 10 ⁰²	2.64 x 10 ⁻⁰²	2.38 x 10 ⁻⁰³	1.23 x 10 ⁻⁰³	6.58 x 10 ⁻⁰⁴	6.95 x 10 ⁻⁰²	4.19 x 10 ⁻⁰³
FOREARM Right	8.60 x 10 ⁰²	3.08 x 10 ⁻⁰²	2.71 x 10 ⁻⁰³	1.32 x 10 ⁻⁰³	6.97 x 10 ⁻⁰⁴	7.77 x 10 ⁻⁰²	4.34 x 10 ⁻⁰³
HAND Left	1.94 x 10 ⁰²	6.11 x 10 ⁰⁰	1.98 x 10 ⁻⁰¹	7.03 x 10 ⁻⁰¹	1.37 x 10 ⁻⁰¹	6.73 x 10 ⁰¹	2.22 x 10 ⁰⁰
HAND Right	1.92 x 10 ⁰²	6.24 x 10 ⁻⁰²	7.63 x 10 ⁻⁰³	7.00 x 10 ⁻⁰⁴	1.75 x 10 ⁻⁰³	1.28 x 10 ⁻⁰¹	1.11 x 10 ⁻⁰²
HEAD	1.32 x 10 ⁰³	6.60 x 10 ⁻⁰²	3.74 x 10 ⁻⁰³	3.68 x 10 ⁻⁰³	7.06 x 10 ⁻⁰⁴	2.02 x 10 ⁻⁰¹	7.13 x 10 ⁻⁰³
SCRAP Right	2.16 x 10 ⁰³			7.17 x 10 ⁻⁰⁴	2.49 x 10 ⁻⁰⁴	5.93 x 10 ⁻⁰²	2.59 x 10 ⁻⁰³
THIGH Left # 1	2.84 x 10 ⁰³	1.80 x 10 ⁻⁰²	1.27 x 10 ⁻⁰³	4.46 x 10 ⁻⁰⁴	2.21 x 10 ⁻⁰⁴	4.75 x 10 ⁻⁰²	2.54 x 10 ⁻⁰³
THIGH Left # 2	2.33 x 10 ⁰³	2.03 x 10 ⁻⁰²	1.47 x 10 ⁻⁰³	6.57 x 10 ⁻⁰⁴	2.17 x 10 ⁻⁰⁴	5.49 x 10 ⁻⁰²	2.39 x 10 ⁻⁰³
THIGH Right # 1	2.52 x 10 ⁰³	2.18 x 10 ⁻⁰²	1.41 x 10 ⁻⁰³	1.08 x 10 ⁻⁰³	3.17 x 10 ⁻⁰⁴	5.60 x 10 ⁻⁰²	2.55 x 10 ⁻⁰³
THIGH Right # 2	2.65 x 10 ⁰³	2.43 x 10 ⁻⁰²	1.52 x 10 ⁻⁰³	1.13 x 10 ⁻⁰³	2.95 x 10 ⁻⁰⁴	6.97 x 10 ⁻⁰²	2.85 x 10 ⁻⁰³
THORACIC # 1	9.09 x 10 ⁰²	3.17 x 10 ⁻⁰²	2.85 x 10 ⁻⁰³	9.53 x 10 ⁻⁰⁴	7.63 x 10 ⁻⁰⁴	9.98 x 10 ⁻⁰²	5.05 x 10 ⁻⁰³
THORACIC # 2	2.24 x 10 ⁰³	5.19 x 10 ⁻⁰²	2.53 x 10 ⁻⁰³	2.38 x 10 ⁻⁰³	5.56 x 10 ⁻⁰⁴	1.52 x 10 ⁻⁰¹	5.95 x 10 ⁻⁰³
THORACIC # 3	1.64 x 10 ⁰³	2.27 x 10 ⁻⁰²	1.79 x 10 ⁻⁰³	1.71 x 10 ⁻⁰³	4.26 x 10 ⁻⁰⁴	7.75 x 10 ⁻⁰²	3.32 x 10 ⁻⁰³
THORACIC # 4	2.77 x 10 ⁰³	2.91 x 10 ⁻⁰²	1.60 x 10 ⁻⁰³	1.83 x 10 ⁻⁰³	4.07 x 10 ⁻⁰⁴	1.08 x 10 ⁻⁰¹	4.26 x 10 ⁻⁰³
UPPER ARM Left	1.69 x 10 ⁰³	2.48 x 10 ⁻⁰²	1.81 x 10 ⁻⁰³	3.38 x 10 ⁻⁰³	7.08 x 10 ⁻⁰⁴	7.22 x 10 ⁻⁰²	3.20 x 10 ⁻⁰³
UPPER ARM Right	1.44 x 10 ⁰³	2.05 x 10 ⁻⁰²	1.63 x 10 ⁻⁰³	1.77 x 10 ⁻⁰³	4.65 x 10 ⁻⁰⁴	7.22 x 10 ⁻⁰²	3.25 x 10 ⁻⁰³

CASE 0212 SKIN

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ABDOMINAL #1	1.04 x 10 ⁰³	1.38 x 10 ⁻⁰²	1.19 x 10 ⁻⁰³	5.83 x 10 ⁻⁰⁴	2.92 x 10 ⁻⁰⁴	3.22 x 10 ⁻⁰²	1.99 x 10 ⁻⁰³
ABDOMINAL #2	1.36 x 10 ⁰³	1.35 x 10 ⁻⁰²	1.32 x 10 ⁻⁰³	1.03 x 10 ⁻⁰³	3.94 x 10 ⁻⁰⁴	3.37 x 10 ⁻⁰²	2.06 x 10 ⁻⁰³
ABDOMINAL #3	1.66 x 10 ⁰³	2.53 x 10 ⁻⁰²	1.81 x 10 ⁻⁰³	5.17 x 10 ⁻⁰⁴	3.18 x 10 ⁻⁰⁴	3.48 x 10 ⁻⁰²	2.25 x 10 ⁻⁰³
ABDOMINAL #4	2.30 x 10 ⁰³	2.01 x 10 ⁻⁰²	1.39 x 10 ⁻⁰³	9.33 x 10 ⁻⁰⁴	2.92 x 10 ⁻⁰⁴	3.82 x 10 ⁻⁰²	1.94 x 10 ⁻⁰³
CALF Left	6.14 x 10 ⁰²	2.53 x 10 ⁻⁰²	2.12 x 10 ⁻⁰³	1.47 x 10 ⁻⁰³	4.89 x 10 ⁻⁰⁴	1.02 x 10 ⁻⁰¹	4.62 x 10 ⁻⁰³
CALF Right	6.67 x 10 ⁰²	5.78 x 10 ⁻⁰²	3.45 x 10 ⁻⁰³	1.90 x 10 ⁻⁰³	5.50 x 10 ⁻⁰⁴	8.64 x 10 ⁻⁰²	3.95 x 10 ⁻⁰³
FOOT Left	3.70 x 10 ⁰²	5.95 x 10 ⁻⁰²	4.32 x 10 ⁻⁰³	1.62 x 10 ⁻⁰³	6.29 x 10 ⁻⁰⁴	1.02 x 10 ⁻⁰¹	5.49 x 10 ⁻⁰³
FOOT Right	4.31 x 10 ⁰²	6.44 x 10 ⁻⁰²	5.57 x 10 ⁻⁰³	1.23 x 10 ⁻⁰³	9.25 x 10 ⁻⁰⁴	1.01 x 10 ⁻⁰¹	6.96 x 10 ⁻⁰³
FOREARM Left	3.25 x 10 ⁰²	5.00 x 10 ⁻⁰²	5.12 x 10 ⁻⁰³	4.10 x 10 ⁻⁰³	1.64 x 10 ⁻⁰³	2.04 x 10 ⁻⁰¹	1.09 x 10 ⁻⁰²
FOREARM Right	3.10 x 10 ⁰²	6.48 x 10 ⁻⁰²	4.74 x 10 ⁻⁰³	3.55 x 10 ⁻⁰³	1.18 x 10 ⁻⁰³	1.43 x 10 ⁻⁰¹	7.32 x 10 ⁻⁰³
HAND Left	1.62 x 10 ⁰²	1.76 x 10 ⁰⁰	6.60 x 10 ⁻⁰²	2.55 x 10 ⁻⁰¹	1.42 x 10 ⁻⁰²	1.43 x 10 ⁰¹	3.97 x 10 ⁻⁰¹
HAND Right	1.85 x 10 ⁰²	1.05 x 10 ⁻⁰¹	7.59 x 10 ⁻⁰³	3.25 x 10 ⁻⁰³	1.44 x 10 ⁻⁰³	2.22 x 10 ⁻⁰¹	1.10 x 10 ⁻⁰²
HEAD	9.48 x 10 ⁰²	3.84 x 10 ⁻⁰²	3.16 x 10 ⁻⁰³	2.82 x 10 ⁻⁰³	8.45 x 10 ⁻⁰⁴	1.77 x 10 ⁻⁰¹	7.31 x 10 ⁻⁰³
THIGH Left	2.22 x 10 ⁰³	2.58 x 10 ⁻⁰²	1.62 x 10 ⁻⁰³	8.17 x 10 ⁻⁰⁴	2.72 x 10 ⁻⁰⁴	6.02 x 10 ⁻⁰²	2.62 x 10 ⁻⁰³
THIGH Right	2.13 x 10 ⁰³	2.22 x 10 ⁻⁰²	1.63 x 10 ⁻⁰³	1.10 x 10 ⁻⁰³	3.77 x 10 ⁻⁰⁴	4.87 x 10 ⁻⁰²	2.66 x 10 ⁻⁰³
THORACIC #1	1.74 x 10 ⁰³	1.17 x 10 ⁻⁰²	8.46 x 10 ⁻⁰⁴	9.17 x 10 ⁻⁰⁴	2.48 x 10 ⁻⁰⁴	4.09 x 10 ⁻⁰²	2.00 x 10 ⁻⁰³
THORACIC #2	2.05 x 10 ⁰³	6.45 x 10 ⁻⁰²	2.71 x 10 ⁻⁰³	9.60 x 10 ⁻⁰³	7.46 x 10 ⁻⁰⁴	5.22 x 10 ⁻⁰¹	1.51 x 10 ⁻⁰²
THORACIC #3	2.14 x 10 ⁰³	1.91 x 10 ⁻⁰²	1.46 x 10 ⁻⁰³	9.00 x 10 ⁻⁰⁴	3.10 x 10 ⁻⁰⁴	6.44 x 10 ⁻⁰²	2.86 x 10 ⁻⁰³
THORACIC #4	1.70 x 10 ⁰³	1.74 x 10 ⁻⁰²	1.57 x 10 ⁻⁰³	7.50 x 10 ⁻⁰⁴	4.34 x 10 ⁻⁰⁴	5.21 x 10 ⁻⁰²	2.62 x 10 ⁻⁰³
UPPER ARM Left	5.51 x 10 ⁰²	2.74 x 10 ⁻⁰²	2.30 x 10 ⁻⁰³	1.70 x 10 ⁻⁰³	5.46 x 10 ⁻⁰⁴	7.73 x 10 ⁻⁰²	3.87 x 10 ⁻⁰³
UPPER ARM Right	6.41 x 10 ⁰²	2.42 x 10 ⁻⁰²	2.13 x 10 ⁻⁰³	6.17 x 10 ⁻⁰⁴	4.63 x 10 ⁻⁰⁴	6.82 x 10 ⁻⁰²	3.85 x 10 ⁻⁰³

CASE 0213 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
CALCANEUS	9.14 x 10 ⁰¹	2.81 x 10 ⁰¹	4.28 x 10 ⁰⁰	2.30 x 10 ⁻⁰¹	2.39 x 10 ⁰⁰	1.40 x 10 ⁻⁰¹	4.61 x 10 ⁰¹	1.50 x 10 ⁰⁰
CANINE Right Lower 3	1.15 x 10 ⁰⁰	8.2 x 10 ⁻⁰¹	4.1 x 10 ⁻⁰¹	2.2 x 10 ⁻⁰¹	4.9 x 10 ⁻⁰¹	2.0 x 10 ⁻⁰¹	8.0 x 10 ⁰⁰	7.7 x 10 ⁻⁰¹
CAPITATE	6.38 x 10 ⁰⁰	1.83 x 10 ⁰⁰	4.48 x 10 ⁰⁰	5.28 x 10 ⁻⁰¹	4.28 x 10 ⁰⁰	4.74 x 10 ⁻⁰¹	7.38 x 10 ⁰¹	2.65 x 10 ⁰⁰
CLAVICLE Acromial End	1.27 x 10 ⁰¹	3.30 x 10 ⁰⁰	4.95 x 10 ⁰⁰	4.65 x 10 ⁻⁰¹	9.27 x 10 ⁰⁰	6.57 x 10 ⁻⁰¹	7.76 x 10 ⁰¹	2.82 x 10 ⁰⁰
CLAVICLE Shaft	1.39 x 10 ⁰¹	6.11 x 10 ⁰⁰	4.26 x 10 ⁰⁰	3.66 x 10 ⁻⁰¹	5.45 x 10 ⁰⁰	3.44 x 10 ⁻⁰¹	5.74 x 10 ⁰¹	1.86 x 10 ⁰⁰
CLAVICLE Sternal End	1.09 x 10 ⁰¹	3.45 x 10 ⁰⁰	4.55 x 10 ⁰⁰	4.35 x 10 ⁻⁰¹	9.40 x 10 ⁰⁰	6.18 x 10 ⁻⁰¹	7.57 x 10 ⁰¹	2.63 x 10 ⁰⁰
COCCYX	6.20 x 10 ⁰⁰	6.9 x 10 ⁻⁰¹	8.8 x 10 ⁰⁰	1.4 x 10 ⁰⁰	1.1 x 10 ⁰¹	1.4 x 10 ⁰⁰	1.2 x 10 ⁰²	5.4 x 10 ⁰⁰
CUBOID	1.94 x 10 ⁰¹	5.69 x 10 ⁰⁰	4.52 x 10 ⁰⁰	3.98 x 10 ⁻⁰¹	4.14 x 10 ⁰⁰	2.93 x 10 ⁻⁰¹	6.47 x 10 ⁰¹	1.89 x 10 ⁰⁰
CUNEIFORM Intermediate	5.85 x 10 ⁰⁰	1.63 x 10 ⁰⁰	4.13 x 10 ⁰⁰	5.93 x 10 ⁻⁰¹	2.76 x 10 ⁰⁰	4.09 x 10 ⁻⁰¹	3.84 x 10 ⁰¹	1.75 x 10 ⁰⁰
CUNEIFORM Lateral	8.40 x 10 ⁰⁰	2.50 x 10 ⁰⁰	5.04 x 10 ⁰⁰	5.60 x 10 ⁻⁰¹	3.23 x 10 ⁰⁰	4.00 x 10 ⁻⁰¹	6.33 x 10 ⁰¹	2.44 x 10 ⁰⁰
CUNEIFORM Medial	1.40 x 10 ⁰¹	4.25 x 10 ⁰⁰	4.56 x 10 ⁰⁰	4.31 x 10 ⁻⁰¹	4.16 x 10 ⁰⁰	3.61 x 10 ⁻⁰¹	6.24 x 10 ⁰¹	2.16 x 10 ⁰⁰
FEMUR Distal End	2.42 x 10 ⁰²	6.13 x 10 ⁰¹	4.47 x 10 ⁰⁰	2.77 x 10 ⁻⁰¹	3.80 x 10 ⁰⁰	2.69 x 10 ⁻⁰¹	5.21 x 10 ⁰¹	1.86 x 10 ⁰⁰
FEMUR Distal Shaft	1.10 x 10 ⁰²	4.46 x 10 ⁰¹	2.66 x 10 ⁰⁰	2.10 x 10 ⁻⁰¹	2.09 x 10 ⁰⁰	1.57 x 10 ⁻⁰¹	3.20 x 10 ⁰¹	1.03 x 10 ⁰⁰
FEMUR Medial Shaft	1.21 x 10 ⁰²	6.41 x 10 ⁰¹	2.67 x 10 ⁰⁰	2.00 x 10 ⁻⁰¹	2.16 x 10 ⁰⁰	1.48 x 10 ⁻⁰¹	3.26 x 10 ⁰¹	1.03 x 10 ⁰⁰
FEMUR Proximal End	2.06 x 10 ⁰²	5.42 x 10 ⁰¹	6.05 x 10 ⁰⁰	3.60 x 10 ⁻⁰¹	8.03 x 10 ⁰⁰	3.44 x 10 ⁻⁰¹	9.37 x 10 ⁰¹	2.68 x 10 ⁰⁰
FEMUR Proximal Shaft	1.03 x 10 ⁰²	5.38 x 10 ⁰¹	2.76 x 10 ⁰⁰	2.20 x 10 ⁻⁰¹	2.37 x 10 ⁰⁰	1.77 x 10 ⁻⁰¹	3.64 x 10 ⁰¹	1.20 x 10 ⁰⁰
FIBULA Distal End	1.59 x 10 ⁰¹	4.38 x 10 ⁰⁰	3.97 x 10 ⁰⁰	3.58 x 10 ⁻⁰¹	3.71 x 10 ⁰⁰	3.20 x 10 ⁻⁰¹	5.89 x 10 ⁰¹	2.01 x 10 ⁰⁰
FIBULA Distal Shaft	3.54 x 10 ⁰¹	1.64 x 10 ⁰¹	2.33 x 10 ⁰⁰	2.03 x 10 ⁻⁰¹	1.89 x 10 ⁰⁰	2.52 x 10 ⁻⁰¹	2.61 x 10 ⁰¹	1.16 x 10 ⁰⁰

Right side of Body was Analyzed.
Concentrations for bone are per kg of ash.

CASE 0213 BONES

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TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
FIBULA Proximal End	2.15 x 10 ⁰¹	3.96 x 10 ⁰⁰	5.59 x 10 ⁰⁰	4.46 x 10 ⁻⁰¹	4.81 x 10 ⁰⁰	3.87 x 10 ⁻⁰¹	6.28 x 10 ⁻⁰¹	2.14 x 10 ⁰⁰
FIBULA Proximal Shaft	3.19 x 10 ⁰¹	1.71 x 10 ⁰¹	2.41 x 10 ⁰⁰	1.99 x 10 ⁻⁰¹	1.66 x 10 ⁰⁰	2.02 x 10 ⁻⁰¹	2.64 x 10 ⁻⁰¹	1.04 x 10 ⁰⁰
FOOT PHALANGE Distal - 1	4.13 x 10 ⁰⁰	7.0 x 10 ⁻⁰¹	6.9 x 10 ⁰⁰	1.2 x 10 ⁰⁰	1.1 x 10 ⁰¹	1.4 x 10 ⁰⁰	1.3 x 10 ⁰²	5.7 x 10 ⁰⁰
FOOT PHALANGE Distal - 2	7.3 x 10 ⁻⁰¹	1.0 x 10 ⁻⁰¹	8.3 x 10 ⁰⁰	4.3 x 10 ⁰⁰	1.5 x 10 ⁰¹	5.0 x 10 ⁰⁰	1.9 x 10 ⁰²	1.6 x 10 ⁰¹
FOOT PHALANGE Distal - 3	6.9 x 10 ⁻⁰¹	1.0 x 10 ⁻⁰¹	9.7 x 10 ⁰⁰	4.3 x 10 ⁰⁰	1.8 x 10 ⁰¹	5.3 x 10 ⁰⁰	1.6 x 10 ⁰²	1.5 x 10 ⁰¹
FOOT PHALANGE Distal - 4	5.4 x 10 ⁻⁰¹	1.0 x 10 ⁻⁰¹	1.0 x 10 ⁰¹	4.0 x 10 ⁰⁰			1.2 x 10 ⁰²	1.2 x 10 ⁰¹
FOOT PHALANGE Distal - 5	4.2 x 10 ⁻⁰¹	7 x 10 ⁻⁰²	1 x 10 ⁰¹	6 x 10 ⁰⁰	1 x 10 ⁰¹	7 x 10 ⁰⁰	2 x 10 ⁰²	2 x 10 ⁰¹
FOOT PHALANGE Medial - 2	1.14 x 10 ⁰⁰	2.7 x 10 ⁻⁰¹	5.3 x 10 ⁰⁰	1.7 x 10 ⁰⁰	8.5 x 10 ⁰⁰	2.0 x 10 ⁰⁰	9.5 x 10 ⁰¹	7.0 x 10 ⁰⁰
FOOT PHALANGE Medial - 3	8.8 x 10 ⁻⁰¹	2.2 x 10 ⁻⁰¹	7.4 x 10 ⁰⁰	3.5 x 10 ⁰⁰	4.2 x 10 ⁰⁰	2.4 x 10 ⁰⁰	6.5 x 10 ⁰¹	5.8 x 10 ⁰⁰
FOOT PHALANGE Medial - 4	5.6 x 10 ⁻⁰¹	1.2 x 10 ⁻⁰¹	8.3 x 10 ⁰⁰	3.1 x 10 ⁰⁰	3.6 x 10 ⁰⁰	2.78 x 10 ⁰⁰	8.1 x 10 ⁰¹	7.4 x 10 ⁰⁰
FOOT PHALANGE Medial - 5	3.5 x 10 ⁻⁰¹	6 x 10 ⁻⁰²	2 x 10 ⁰¹	7 x 10 ⁰⁰	5 x 10 ⁰⁰	1 x 10 ⁰¹	2 x 10 ⁰²	3 x 10 ⁰¹
FOOT PHALANGE Proximal - 1	8.75 x 10 ⁰⁰	2.49 x 10 ⁰⁰	6.17 x 10 ⁰⁰	6.16 x 10 ⁻⁰¹	9.37 x 10 ⁰⁰	6.96 x 10 ⁻⁰¹	8.87 x 10 ⁻⁰¹	3.16 x 10 ⁰⁰
FOOT PHALANGE Proximal - 2	3.33 x 10 ⁰⁰	8.3 x 10 ⁻⁰¹	5.8 x 10 ⁰⁰	9.6 x 10 ⁻⁰¹	4.6 x 10 ⁰⁰	8.0 x 10 ⁻⁰¹	6.9 x 10 ⁻⁰¹	3.5 x 10 ⁰⁰
FOOT PHALANGE Proximal - 3	2.51 x 10 ⁰⁰	6.8 x 10 ⁻⁰¹	4.1 x 10 ⁰⁰	9.3 x 10 ⁻⁰¹	5.3 x 10 ⁰⁰	9.8 x 10 ⁻⁰¹	6.8 x 10 ⁻⁰¹	3.8 x 10 ⁰⁰
FOOT PHALANGE Proximal - 4	1.90 x 10 ⁰⁰	4.8 x 10 ⁻⁰¹	4.9 x 10 ⁰⁰	1.2 x 10 ⁰⁰	4.9 x 10 ⁰⁰	1.11 x 10 ⁰⁰	7.1 x 10 ⁻⁰¹	4.5 x 10 ⁰⁰
FOOT PHALANGE Proximal - 5	1.88 x 10 ⁰⁰	4.4 x 10 ⁻⁰¹	6.0 x 10 ⁰⁰	1.36 x 10 ⁰⁰	5.5 x 10 ⁰⁰	1.29 x 10 ⁰⁰	7.7 x 10 ⁻⁰¹	4.8 x 10 ⁰⁰
FRONTAL # 1	4.39 x 10 ⁰¹	2.54 x 10 ⁰¹	3.39 x 10 ⁰⁰	2.84 x 10 ⁻⁰¹	4.76 x 10 ⁰⁰	3.15 x 10 ⁻⁰¹	6.43 x 10 ⁻⁰¹	2.05 x 10 ⁰⁰
FRONTAL # 2	1.69 x 10 ⁰¹	1.08 x 10 ⁰¹	2.64 x 10 ⁰⁰	2.71 x 10 ⁻⁰¹	4.25 x 10 ⁰⁰	3.27 x 10 ⁻⁰¹	4.52 x 10 ⁻⁰¹	1.62 x 10 ⁰⁰

Right side of Body was Analyzed.
Concentrations for bone are per kg of ash.

CASE 0213 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
FRONTAL # 3	2.09 x 10 ⁰¹	1.12 x 10 ⁰¹	3.59 x 10 ⁰⁰	3.09 x 10 ⁻⁰¹	4.04 x 10 ⁰⁰	2.97 x 10 ⁻⁰¹	5.22 x 10 ⁰¹	1.74 x 10 ⁰⁰
HAMATE	5.28 x 10 ⁰⁰	1.42 x 10 ⁰⁰	4.77 x 10 ⁰⁰	7.04 x 10 ⁻⁰¹	4.39 x 10 ⁰⁰	6.57 x 10 ⁻⁰¹	7.22 x 10 ⁰¹	3.24 x 10 ⁰⁰
HAND PHALANGE Distal - 1	1.73 x 10 ⁰⁰	4.2 x 10 ⁻⁰¹	6.9 x 10 ⁰⁰	1.5 x 10 ⁰⁰	1.1 x 10 ⁰¹	1.8 x 10 ⁰⁰	9.3 x 10 ⁰¹	5.4 x 10 ⁰⁰
HAND PHALANGE Distal - 2	8.0 x 10 ⁻⁰¹	2.4 x 10 ⁻⁰¹	3.5 x 10 ⁰⁰	1.5 x 10 ⁰⁰	2.6 x 10 ⁰⁰	1.4 x 10 ⁰⁰	6.0 x 10 ⁰¹	4.8 x 10 ⁰⁰
HAND PHALANGE Distal - 3	1.22 x 10 ⁰⁰	3.0 x 10 ⁻⁰¹	6.8 x 10 ⁰⁰	2.0 x 10 ⁰⁰	4.8 x 10 ⁰⁰	1.6 x 10 ⁰⁰	7.0 x 10 ⁰¹	5.2 x 10 ⁰⁰
HAND PHALANGE Distal - 4	1.02 x 10 ⁰⁰	2.8 x 10 ⁻⁰¹	6.8 x 10 ⁰⁰	1.8 x 10 ⁰⁰	6 x 10 ⁰⁰	1.7 x 10 ⁰⁰	6.9 x 10 ⁰¹	5.5 x 10 ⁰⁰
HAND PHALANGE Distal - 5	7.2 x 10 ⁻⁰¹	1.9 x 10 ⁻⁰¹	2.1 x 10 ⁰⁰	5.1 x 10 ⁰⁰	4.7 x 10 ⁰⁰	2.1 x 10 ⁰⁰	8.1 x 10 ⁰¹	7.4 x 10 ⁰⁰
HAND PHALANGE Medial - 2	2.51 x 10 ⁰⁰	8.9 x 10 ⁻⁰¹	3.8 x 10 ⁰⁰	9.0 x 10 ⁻⁰¹	4.5 x 10 ⁰⁰	7.9 x 10 ⁻⁰¹	6.3 x 10 ⁰¹	3.2 x 10 ⁰⁰
HAND PHALANGE Medial - 3	3.49 x 10 ⁰⁰	1.07 x 10 ⁰⁰	4.83 x 10 ⁰⁰	7.17 x 10 ⁻⁰¹	3.64 x 10 ⁰⁰	7.48 x 10 ⁻⁰¹	6.25 x 10 ⁰¹	3.17 x 10 ⁰⁰
HAND PHALANGE Medial - 4	2.71 x 10 ⁰⁰	1.05 x 10 ⁰⁰	2.29 x 10 ⁰⁰	6.67 x 10 ⁻⁰¹	3.68 x 10 ⁰⁰	6.67 x 10 ⁻⁰¹	4.86 x 10 ⁰¹	2.60 x 10 ⁰⁰
HAND PHALANGE Medial - 5	1.35 x 10 ⁰⁰	5.0 x 10 ⁻⁰¹	3.5 x 10 ⁰⁰	1.1 x 10 ⁰⁰	5.5 x 10 ⁰⁰	1.2 x 10 ⁰⁰	5.2 x 10 ⁰¹	3.7 x 10 ⁰⁰
HAND PHALANGE Proximal - 1	4.23 x 10 ⁰⁰	1.10 x 10 ⁰⁰	5.76 x 10 ⁰⁰	8.79 x 10 ⁻⁰¹	5.70 x 10 ⁰⁰	8.18 x 10 ⁻⁰¹	6.28 x 10 ⁰¹	3.09 x 10 ⁰⁰
HAND PHALANGE Proximal - 2	5.99 x 10 ⁰⁰	1.94 x 10 ⁰⁰	4.47 x 10 ⁰⁰	6.01 x 10 ⁻⁰¹	4.36 x 10 ⁰⁰	4.98 x 10 ⁻⁰¹	5.80 x 10 ⁰¹	2.27 x 10 ⁰⁰
HAND PHALANGE Proximal - 3	7.44 x 10 ⁰⁰	2.91 x 10 ⁰⁰	3.24 x 10 ⁰⁰	4.58 x 10 ⁻⁰¹	4.16 x 10 ⁰⁰	3.78 x 10 ⁻⁰¹	4.88 x 10 ⁰¹	1.78 x 10 ⁰⁰
HAND PHALANGE Proximal - 4	5.81 x 10 ⁰⁰	1.96 x 10 ⁰⁰	4.03 x 10 ⁰⁰	7.14 x 10 ⁻⁰¹	3.44 x 10 ⁰⁰	4.42 x 10 ⁻⁰¹	5.32 x 10 ⁰¹	2.20 x 10 ⁰⁰
HAND PHALANGE Proximal - 5	3.16 x 10 ⁰⁰	1.16 x 10 ⁰⁰	3.99 x 10 ⁰⁰	9.48 x 10 ⁻⁰¹	2.10 x 10 ⁰⁰	4.60 x 10 ⁻⁰¹	4.82 x 10 ⁰¹	2.50 x 10 ⁰⁰
HUMERUS Distal End	5.09 x 10 ⁰¹	1.94 x 10 ⁰¹	3.72 x 10 ⁰⁰	2.75 x 10 ⁻⁰¹	2.74 x 10 ⁰⁰	2.33 x 10 ⁻⁰¹	4.65 x 10 ⁰¹	1.52 x 10 ⁰⁰
HUMERUS Distal Shaft	5.17 x 10 ⁰¹	2.91 x 10 ⁰¹	2.36 x 10 ⁰⁰	2.52 x 10 ⁻⁰¹	1.58 x 10 ⁰⁰	2.18 x 10 ⁻⁰¹	2.92 x 10 ⁰¹	1.16 x 10 ⁰⁰

Right side of Body was Analyzed.
Concentrations for bone are per kg of ash.

CASE 0213 BONES

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TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
HUMERUS Proximal End	7.68 x 10 ⁰¹	1.49 x 10 ⁰¹	6.95 x 10 ⁰⁰	3.90 x 10 ⁻⁰¹	9.54 x 10 ⁰⁰	4.12 x 10 ⁻⁰¹	1.02 x 10 ⁰²	2.88 x 10 ⁰⁰
HUMERUS Proximal Shaft	7.77 x 10 ⁰¹	3.43 x 10 ⁰¹	2.48 x 10 ⁰⁰	2.43 x 10 ⁻⁰¹	1.90 x 10 ⁰⁰	2.23 x 10 ⁻⁰¹	3.12 x 10 ⁰¹	1.12 x 10 ⁰⁰
HYOID	3.51 x 10 ⁰⁰	3.0 x 10 ⁻⁰¹	1.6 x 10 ⁰¹	2.8 x 10 ⁰⁰	2.5 x 10 ⁰¹	3.2 x 10 ⁰⁰	2.7 x 10 ⁰²	1.2 x 10 ⁰¹
ILIUM Body	1.69 x 10 ⁰²	4.19 x 10 ⁰¹	6.44 x 10 ⁰⁰	3.74 x 10 ⁻⁰¹	1.13 x 10 ⁰¹	4.90 x 10 ⁻⁰¹	9.68 x 10 ⁰¹	2.88 x 10 ⁰⁰
ILIUM Crest	5.01 x 10 ⁰¹	1.08 x 10 ⁰¹	6.37 x 10 ⁰⁰	4.46 x 10 ⁻⁰¹	1.07 x 10 ⁰¹	5.39 x 10 ⁻⁰¹	9.07 x 10 ⁰¹	2.79 x 10 ⁰⁰
INCISOR Right Lower 1	6.2 x 10 ⁻⁰¹	4.3 x 10 ⁻⁰¹	2.1 x 10 ⁰⁰	5.8 x 10 ⁻⁰¹	9.7 x 10 ⁻⁰¹	3.9 x 10 ⁻⁰¹	2.0 x 10 ⁰¹	1.6 x 10 ⁰⁰
INCISOR Right Lower 2	7.2 x 10 ⁻⁰¹	5.2 x 10 ⁻⁰¹	1.4 x 10 ⁰⁰	4.2 x 10 ⁻⁰¹	9.6 x 10 ⁻⁰¹	3.5 x 10 ⁻⁰¹	2.3 x 10 ⁰¹	1.6 x 10 ⁰⁰
INCISOR Right Upper 2	7.5 x 10 ⁻⁰¹	5.0 x 10 ⁻⁰¹	1.7 x 10 ⁰⁰	5.0 x 10 ⁻⁰¹	1.5 x 10 ⁰⁰	4.3 x 10 ⁻⁰¹	2.8 x 10 ⁰¹	1.9 x 10 ⁰⁰
ISCHIUM	2.42 x 10 ⁰²	5.73 x 10 ⁰¹	6.42 x 10 ⁰⁰	3.93 x 10 ⁻⁰¹	1.22 x 10 ⁰¹	4.86 x 10 ⁻⁰¹	1.03 x 10 ⁰²	3.04 x 10 ⁰⁰
LUNATE	3.44 x 10 ⁰⁰	9.1 x 10 ⁻⁰¹	4.5 x 10 ⁰⁰	8.1 x 10 ⁻⁰¹	6.0 x 10 ⁰⁰	8.8 x 10 ⁻⁰¹	6.9 x 10 ⁰¹	3.4 x 10 ⁰⁰
MANDIBLE	4.29 x 10 ⁰¹	2.18 x 10 ⁰¹	2.16 x 10 ⁰⁰	1.83 x 10 ⁻⁰¹	2.82 x 10 ⁰⁰	2.52 x 10 ⁻⁰¹	3.78 x 10 ⁰¹	1.29 x 10 ⁰⁰
MAXILLA	4.38 x 10 ⁰¹	1.59 x 10 ⁰¹	4.95 x 10 ⁰⁰	3.20 x 10 ⁻⁰¹	5.97 x 10 ⁰⁰	4.37 x 10 ⁻⁰¹	7.01 x 10 ⁰¹	2.36 x 10 ⁰⁰
METACARPAL # 1	9.17 x 10 ⁰⁰	2.58 x 10 ⁰⁰	4.38 x 10 ⁰⁰	4.65 x 10 ⁻⁰¹	5.81 x 10 ⁰⁰	5.04 x 10 ⁻⁰¹	6.25 x 10 ⁰¹	2.29 x 10 ⁰⁰
METACARPAL # 2	1.30 x 10 ⁰¹	4.13 x 10 ⁰⁰	4.53 x 10 ⁰⁰	4.28 x 10 ⁻⁰¹	3.75 x 10 ⁰⁰	3.55 x 10 ⁻⁰¹	5.17 x 10 ⁰¹	1.91 x 10 ⁰⁰
METACARPAL # 3	1.34 x 10 ⁰¹	4.41 x 10 ⁰⁰	3.38 x 10 ⁰⁰	3.17 x 10 ⁻⁰¹	3.88 x 10 ⁰⁰	3.17 x 10 ⁻⁰¹	5.43 x 10 ⁰¹	1.84 x 10 ⁰⁰
METACARPAL # 4	6.56 x 10 ⁰⁰	3.90 x 10 ⁰⁰	1.56 x 10 ⁰⁰	2.31 x 10 ⁻⁰¹	1.80 x 10 ⁰⁰	2.48 x 10 ⁻⁰¹	2.52 x 10 ⁰¹	1.11 x 10 ⁰⁰
METACARPAL # 5	7.66 x 10 ⁰⁰	2.38 x 10 ⁰⁰	4.02 x 10 ⁰⁰	5.04 x 10 ⁻⁰¹	3.18 x 10 ⁰⁰	4.34 x 10 ⁻⁰¹	5.07 x 10 ⁰¹	2.19 x 10 ⁰⁰
METATARSAL # 1	2.70 x 10 ⁰¹	7.81 x 10 ⁰⁰	2.13 x 10 ⁰⁰	1.62 x 10 ⁻⁰¹	5.83 x 10 ⁰⁰	2.99 x 10 ⁻⁰¹	6.47 x 10 ⁰¹	1.90 x 10 ⁰⁰
METATARSAL # 2	1.23 x 10 ⁰¹	4.50 x 10 ⁰⁰	3.22 x 10 ⁰⁰	3.41 x 10 ⁻⁰¹	3.13 x 10 ⁰⁰	2.89 x 10 ⁻⁰¹	4.63 x 10 ⁰¹	1.61 x 10 ⁰⁰
METATARSAL # 3	1.09 x 10 ⁰¹	4.22 x 10 ⁰⁰	3.78 x 10 ⁰⁰	3.79 x 10 ⁻⁰¹	2.87 x 10 ⁰⁰	2.92 x 10 ⁻⁰¹	4.78 x 10 ⁰¹	1.69 x 10 ⁰⁰
METATARSAL # 4	1.03 x 10 ⁰¹	3.73 x 10 ⁰⁰	3.91 x 10 ⁰⁰	3.84 x 10 ⁻⁰¹	2.64 x 10 ⁰⁰	2.59 x 10 ⁻⁰¹	4.80 x 10 ⁰¹	1.62 x 10 ⁰⁰
METATARSAL # 5	1.18 x 10 ⁰¹	4.48 x 10 ⁰⁰	3.68 x 10 ⁰⁰	3.42 x 10 ⁻⁰¹	3.60 x 10 ⁰⁰	2.98 x 10 ⁻⁰¹	5.13 x 10 ⁰¹	1.70 x 10 ⁰⁰
NAVICULAR	1.81 x 10 ⁰¹	5.93 x 10 ⁰⁰	4.00 x 10 ⁰⁰	4.05 x 10 ⁻⁰¹	2.97 x 10 ⁰⁰	2.47 x 10 ⁻⁰¹	5.32 x 10 ⁰¹	1.75 x 10 ⁰⁰
OCCIPITAL	2.36 x 10 ⁰¹	1.22 x 10 ⁰¹	3.47 x 10 ⁰⁰	2.88 x 10 ⁻⁰¹	3.64 x 10 ⁰⁰	5.16 x 10 ⁻⁰¹	5.19 x 10 ⁰¹	2.31 x 10 ⁰⁰

Right side of Body was Analyzed.
Concentrations for bone are per kg of ash.

CASE 0213 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
PARIETAL # 1	4.45 x 10 ⁰¹	2.36 x 10 ⁰¹	4.63 x 10 ⁰⁰	3.39 x 10 ⁻⁰¹	5.43 x 10 ⁰⁰	3.50 x 10 ⁻⁰¹	6.33 x 10 ⁰¹	2.05 x 10 ⁰⁰
PARIETAL # 2	7.02 x 10 ⁰¹	4.05 x 10 ⁰¹	4.40 x 10 ⁰⁰	3.13 x 10 ⁻⁰¹	5.29 x 10 ⁰⁰	4.45 x 10 ⁻⁰¹	7.29 x 10 ⁰¹	2.56 x 10 ⁰⁰
PATELLA-Right	3.70 x 10 ⁰¹	1.01 x 10 ⁰¹	4.30 x 10 ⁰⁰	3.36 x 10 ⁻⁰¹	4.33 x 10 ⁰⁰	3.22 x 10 ⁻⁰¹	5.19 x 10 ⁰¹	1.75 x 10 ⁰⁰
PISIFORM	2.04 x 10 ⁰⁰	4.00 x 10 ⁻⁰¹	6.83 x 10 ⁰⁰	1.50 x 10 ⁰⁰	3.58 x 10 ⁰⁰	1.17 x 10 ⁰⁰	7.46 x 10 ⁰¹	5.17 x 10 ⁰⁰
PREMOLAR Right Lower 4	9.2 x 10 ⁻⁰¹	2.5 x 10 ⁻⁰¹	3.4 x 10 ⁰⁰	9.3 x 10 ⁻⁰¹	4.0 x 10 ⁰⁰	9.3 x 10 ⁻⁰¹	8.6 x 10 ⁰¹	4.8 x 10 ⁰⁰
RADIUS Distal End	1.86 x 10 ⁰¹	4.65 x 10 ⁰⁰	3.52 x 10 ⁰⁰	3.15 x 10 ⁻⁰¹	2.84 x 10 ⁰⁰	2.58 x 10 ⁻⁰¹	5.05 x 10 ⁰¹	1.70 x 10 ⁰⁰
RADIUS Distal Shaft	2.59 x 10 ⁰¹	1.38 x 10 ⁰¹	1.30 x 10 ⁰⁰	1.55 x 10 ⁻⁰¹	1.11 x 10 ⁰⁰	1.41 x 10 ⁻⁰¹	1.88 x 10 ⁰¹	7.68 x 10 ⁻⁰¹
RADIUS Proximal End	7.36 x 10 ⁰⁰	2.42 x 10 ⁰⁰	4.71 x 10 ⁰⁰	4.96 x 10 ⁻⁰¹	4.64 x 10 ⁰⁰	4.68 x 10 ⁻⁰¹	6.16 x 10 ⁰¹	2.31 x 10 ⁰⁰
RADIUS Proximal Shaft	2.24 x 10 ⁰¹	1.19 x 10 ⁰¹	2.28 x 10 ⁰⁰	2.35 x 10 ⁻⁰¹	1.98 x 10 ⁰⁰	1.91 x 10 ⁻⁰¹	2.64 x 10 ⁰¹	9.60 x 10 ⁻⁰¹
RIB # 1	1.79 x 10 ⁰¹	5.32 x 10 ⁰⁰	6.10 x 10 ⁰⁰	5.76 x 10 ⁻⁰¹	9.00 x 10 ⁰⁰	5.01 x 10 ⁻⁰¹	7.84 x 10 ⁰¹	2.50 x 10 ⁰⁰
RIB # 2	1.37 x 10 ⁰¹	3.41 x 10 ⁰⁰	7.19 x 10 ⁰⁰	7.14 x 10 ⁻⁰¹	8.95 x 10 ⁰⁰	5.77 x 10 ⁻⁰¹	8.53 x 10 ⁰¹	2.84 x 10 ⁰⁰
RIB # 3	2.29 x 10 ⁰¹	5.06 x 10 ⁰⁰	7.00 x 10 ⁰⁰	4.37 x 10 ⁻⁰¹	1.10 x 10 ⁰¹	5.01 x 10 ⁻⁰¹	9.32 x 10 ⁰¹	2.68 x 10 ⁰⁰
RIB # 4	3.02 x 10 ⁰¹	7.62 x 10 ⁰⁰	6.78 x 10 ⁰⁰	6.45 x 10 ⁻⁰¹	1.06 x 10 ⁰¹	5.95 x 10 ⁻⁰¹	9.87 x 10 ⁰¹	3.41 x 10 ⁰⁰
RIB # 5	3.10 x 10 ⁰¹	5.20 x 10 ⁰⁰	7.24 x 10 ⁰⁰	5.77 x 10 ⁻⁰¹	1.13 x 10 ⁰¹	5.90 x 10 ⁻⁰¹	1.03 x 10 ⁰²	3.22 x 10 ⁰⁰
RIB # 6	2.96 x 10 ⁰¹	8.55 x 10 ⁰⁰	6.46 x 10 ⁰⁰	4.05 x 10 ⁻⁰¹	9.79 x 10 ⁰⁰	4.29 x 10 ⁻⁰¹	9.12 x 10 ⁰¹	2.67 x 10 ⁰⁰
RIB # 7	3.28 x 10 ⁰¹	9.44 x 10 ⁰⁰	6.27 x 10 ⁰⁰	3.50 x 10 ⁻⁰¹	9.74 x 10 ⁰⁰	3.99 x 10 ⁻⁰¹	8.59 x 10 ⁰¹	2.44 x 10 ⁰⁰
RIB # 8	3.05 x 10 ⁰¹	8.77 x 10 ⁰⁰	5.43 x 10 ⁰⁰	3.31 x 10 ⁻⁰¹	8.51 x 10 ⁰⁰	3.80 x 10 ⁻⁰¹	8.37 x 10 ⁰¹	2.42 x 10 ⁰⁰
RIB # 9	1.99 x 10 ⁰¹	6.42 x 10 ⁰⁰	6.82 x 10 ⁰⁰	4.47 x 10 ⁻⁰¹	9.96 x 10 ⁰⁰	4.67 x 10 ⁻⁰¹	8.89 x 10 ⁰¹	2.63 x 10 ⁰⁰
RIB # 10	2.19 x 10 ⁰¹	5.50 x 10 ⁰⁰	5.13 x 10 ⁰⁰	3.94 x 10 ⁻⁰¹	8.44 x 10 ⁰⁰	4.73 x 10 ⁻⁰¹	7.94 x 10 ⁰¹	2.53 x 10 ⁰⁰
RIB # 11	1.51 x 10 ⁰¹	5.65 x 10 ⁰⁰	4.45 x 10 ⁰⁰	3.48 x 10 ⁻⁰¹	7.08 x 10 ⁰⁰	3.95 x 10 ⁻⁰¹	5.73 x 10 ⁰¹	1.83 x 10 ⁰⁰
RIB # 12	2.17 x 10 ⁰⁰	5.2 x 10 ⁻⁰¹	6.47 x 10 ⁰⁰	1.28 x 10 ⁰⁰	6.60 x 10 ⁰⁰	1.28 x 10 ⁰⁰	7.51 x 10 ⁰¹	4.62 x 10 ⁰⁰
SACRUM	1.66 x 10 ⁰²	3.00 x 10 ⁰¹	8.03 x 10 ⁰⁰	5.27 x 10 ⁻⁰¹	1.58 x 10 ⁰¹	7.21 x 10 ⁻⁰¹	1.26 x 10 ⁰²	3.91 x 10 ⁰⁰
SCAPHOID	5.77 x 10 ⁰⁰	1.64 x 10 ⁰⁰	4.61 x 10 ⁰⁰	6.50 x 10 ⁻⁰¹	2.87 x 10 ⁰⁰	4.88 x 10 ⁻⁰¹	6.22 x 10 ⁰¹	2.72 x 10 ⁰⁰

Right side of Body was Analyzed.
Concentrations for bone are per kg of ash.

CASE 0213 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
SCAPULA	8.65 x 10 ⁰¹	2.95 x 10 ⁰¹	3.82 x 10 ⁰⁰	3.22 x 10 ⁻⁰¹	6.34 x 10 ⁰⁰	3.79 x 10 ⁻⁰¹	5.85 x 10 ⁰¹	1.89 x 10 ⁰⁰
Spine								
SCAPULA	3.85 x 10 ⁰¹	1.19 x 10 ⁰¹	5.20 x 10 ⁰⁰	3.83 x 10 ⁻⁰¹	6.26 x 10 ⁰⁰	3.83 x 10 ⁻⁰¹	7.01 x 10 ⁰¹	2.24 x 10 ⁰⁰
Distal End								
SCAPULA	1.69 x 10 ⁰¹	5.16 x 10 ⁰⁰	5.53 x 10 ⁰⁰	4.26 x 10 ⁻⁰¹	7.97 x 10 ⁰⁰	4.78 x 10 ⁻⁰¹	7.84 x 10 ⁰¹	2.56 x 10 ⁰⁰
Proximal End								
STERNUM	1.31 x 10 ⁰²	1.77 x 10 ⁰¹	8.70 x 10 ⁰⁰	4.37 x 10 ⁻⁰¹	1.64 x 10 ⁰¹	6.14 x 10 ⁻⁰¹	1.27 x 10 ⁰²	3.63 x 10 ⁰⁰
TALUS	5.77 x 10 ⁰¹	1.77 x 10 ⁰¹	4.21 x 10 ⁰⁰	2.51 x 10 ⁻⁰¹	3.01 x 10 ⁰⁰	1.59 x 10 ⁻⁰¹	5.46 x 10 ⁰¹	1.45 x 10 ⁰⁰
TEMPORAL # 1	3.28 x 10 ⁰¹	1.94 x 10 ⁰¹	3.37 x 10 ⁰⁰	2.71 x 10 ⁻⁰¹	4.47 x 10 ⁰⁰	2.95 x 10 ⁻⁰¹	5.17 x 10 ⁰¹	1.61 x 10 ⁰⁰
TEMPORAL # 2	3.64 x 10 ⁰¹	1.46 x 10 ⁰¹	3.10 x 10 ⁰⁰	2.38 x 10 ⁻⁰¹	4.55 x 10 ⁰⁰	2.66 x 10 ⁻⁰¹	5.49 x 10 ⁰¹	1.66 x 10 ⁰⁰
TEMPORAL # 3	5.09 x 10 ⁰¹	1.57 x 10 ⁰¹	5.66 x 10 ⁰⁰	3.36 x 10 ⁻⁰¹	7.13 x 10 ⁰⁰	3.36 x 10 ⁻⁰¹	8.95 x 10 ⁰¹	2.54 x 10 ⁰⁰
TIBIA	7.11 x 10 ⁰¹	2.01 x 10 ⁰¹	3.85 x 10 ⁰⁰	2.69 x 10 ⁻⁰¹	3.70 x 10 ⁰⁰	2.91 x 10 ⁻⁰¹	4.96 x 10 ⁰¹	1.64 x 10 ⁰⁰
Distal End								
TIBIA	9.88 x 10 ⁰¹	4.92 x 10 ⁰¹	2.08 x 10 ⁰⁰	1.83 x 10 ⁻⁰¹	2.53 x 10 ⁰⁰	2.98 x 10 ⁻⁰¹	2.82 x 10 ⁰¹	1.29 x 10 ⁰⁰
Distal Shaft								
TIBIA	1.84 x 10 ⁰²	4.20 x 10 ⁰¹	5.46 x 10 ⁰⁰	3.89 x 10 ⁻⁰¹	4.78 x 10 ⁰⁰	3.06 x 10 ⁻⁰¹	6.44 x 10 ⁰¹	2.10 x 10 ⁰⁰
Proximal End								
TIBIA	1.30 x 10 ⁰²	6.86 x 10 ⁰¹	2.33 x 10 ⁰⁰	1.90 x 10 ⁻⁰¹	1.80 x 10 ⁰⁰	4.08 x 10 ⁻⁰¹	2.69 x 10 ⁰¹	1.69 x 10 ⁰⁰
Proximal Shaft								
TRAPEZIUM	4.08 x 10 ⁰⁰	1.04 x 10 ⁰⁰	5.71 x 10 ⁰⁰	8.33 x 10 ⁻⁰¹	9.39 x 10 ⁰⁰	1.03 x 10 ⁰⁰	7.50 x 10 ⁰¹	3.33 x 10 ⁰⁰
TRAPEZOIDE	2.40 x 10 ⁰⁰	6.30 x 10 ⁻⁰¹	6.03 x 10 ⁰⁰	1.22 x 10 ⁰⁰	4.71 x 10 ⁰⁰	9.52 x 10 ⁻⁰¹	7.63 x 10 ⁰¹	4.13 x 10 ⁰⁰
TRIANGULAR	2.57 x 10 ⁰⁰	6.6 x 10 ⁻⁰¹	4.9 x 10 ⁰⁰	1.0 x 10 ⁰⁰	5.8 x 10 ⁰⁰	1.1 x 10 ⁰⁰	8.5 x 10 ⁰¹	4.7 x 10 ⁰⁰
ULNA	5.44 x 10 ⁰⁰	1.55 x 10 ⁰⁰	2.97 x 10 ⁰⁰	5.16 x 10 ⁻⁰¹	2.39 x 10 ⁰⁰	4.30 x 10 ⁻⁰¹	5.08 x 10 ⁰¹	2.34 x 10 ⁰⁰
Distal End								
ULNA	2.12 x 10 ⁰¹	1.09 x 10 ⁰¹	1.85 x 10 ⁰⁰	2.07 x 10 ⁻⁰¹	1.63 x 10 ⁰⁰	1.95 x 10 ⁻⁰¹	2.09 x 10 ⁰¹	8.82 x 10 ⁻⁰¹
Distal Shaft								
ULNA	3.63 x 10 ⁰¹	1.28 x 10 ⁰¹	3.38 x 10 ⁰⁰	2.50 x 10 ⁻⁰¹	3.24 x 10 ⁰⁰	1.87 x 10 ⁻⁰¹	5.06 x 10 ⁰¹	1.53 x 10 ⁰⁰
Proximal End								
ULNA	2.49 x 10 ⁰¹	1.37 x 10 ⁰¹	2.04 x 10 ⁰⁰	1.90 x 10 ⁻⁰¹	1.33 x 10 ⁰⁰	2.05 x 10 ⁻⁰¹	2.16 x 10 ⁰¹	9.66 x 10 ⁻⁰¹
Proximal Shaft								
VERTEBRA	2.58 x 10 ⁰¹	6.92 x 10 ⁰⁰	6.38 x 10 ⁰⁰	4.67 x 10 ⁻⁰¹	9.95 x 10 ⁰⁰	4.67 x 10 ⁻⁰¹	9.24 x 10 ⁰¹	2.75 x 10 ⁰⁰
Cervical-1								

Right side of Body was Analyzed.
Concentrations for bone are per kg of ash.

CASE 0213 BONES

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
VERTEBRA Cervical-3 Arch	9.92 x 10 ⁰⁰	3.40 x 10 ⁰⁰	4.41 x 10 ⁰⁰	4.71 x 10 ⁻⁰¹	9.27 x 10 ⁰⁰	5.98 x 10 ⁻⁰¹	6.87 x 10 ⁰¹	2.24 x 10 ⁰⁰
VERTEBRA Cervical-3 Body	4.92 x 10 ⁰⁰	1.74 x 10 ⁰⁰	6.78 x 10 ⁰⁰	8.62 x 10 ⁻⁰¹	1.06 x 10 ⁰¹	8.80 x 10 ⁻⁰¹	8.33 x 10 ⁰¹	3.09 x 10 ⁰⁰
VERTEBRA Cervical-5 Arch	7.90 x 10 ⁰⁰	3.90 x 10 ⁰⁰	3.61 x 10 ⁰⁰	4.96 x 10 ⁻⁰¹	5.97 x 10 ⁰⁰	5.81 x 10 ⁻⁰¹	4.69 x 10 ⁰¹	2.00 x 10 ⁰⁰
VERTEBRA Cervical-5 Body	1.63 x 10 ⁰¹	5.68 x 10 ⁰⁰	5.48 x 10 ⁰⁰	5.40 x 10 ⁻⁰¹	8.71 x 10 ⁰⁰	6.22 x 10 ⁻⁰¹	7.27 x 10 ⁰¹	2.59 x 10 ⁰⁰
VERTEBRA Cervical-7 Arch	1.59 x 10 ⁰¹	4.38 x 10 ⁰⁰	5.56 x 10 ⁰⁰	5.33 x 10 ⁻⁰¹	9.47 x 10 ⁰⁰	5.63 x 10 ⁻⁰¹	8.92 x 10 ⁰¹	2.90 x 10 ⁰⁰
VERTEBRA Cervical-7 Body	1.39 x 10 ⁰¹	3.50 x 10 ⁰⁰	5.72 x 10 ⁰⁰	5.43 x 10 ⁻⁰¹	1.02 x 10 ⁰¹	8.57 x 10 ⁻⁰¹	8.86 x 10 ⁰¹	3.62 x 10 ⁰⁰
VERTEBRA Lumbar-1 Arch	2.43 x 10 ⁰¹	6.22 x 10 ⁰⁰	6.89 x 10 ⁰⁰	5.14 x 10 ⁻⁰¹	1.13 x 10 ⁰¹	5.63 x 10 ⁻⁰¹	1.01 x 10 ⁰²	3.15 x 10 ⁰⁰
VERTEBRA Lumbar-3 Arch	2.95 x 10 ⁰¹	7.69 x 10 ⁰⁰	6.36 x 10 ⁰⁰	4.68 x 10 ⁻⁰¹	1.04 x 10 ⁰¹	4.77 x 10 ⁻⁰¹	9.69 x 10 ⁰¹	2.89 x 10 ⁰⁰
VERTEBRA Lumbar-3 Body	7.17 x 10 ⁰¹	1.15 x 10 ⁰¹	7.61 x 10 ⁰⁰	4.10 x 10 ⁻⁰¹	1.42 x 10 ⁰¹	6.46 x 10 ⁻⁰¹	1.04 x 10 ⁰²	3.47 x 10 ⁰⁰
VERTEBRA Lumbar-5 Arch	3.51 x 10 ⁰¹	1.03 x 10 ⁰¹	5.24 x 10 ⁰⁰	2.93 x 10 ⁻⁰¹	8.86 x 10 ⁰⁰	3.68 x 10 ⁻⁰¹	8.22 x 10 ⁰¹	2.34 x 10 ⁰⁰
VERTEBRA Lumbar-5 Body	5.18 x 10 ⁰¹	9.90 x 10 ⁰⁰	6.33 x 10 ⁰⁰	4.04 x 10 ⁻⁰¹	1.43 x 10 ⁰¹	5.52 x 10 ⁻⁰¹	1.05 x 10 ⁰²	3.07 x 10 ⁰⁰
VERTEBRA Thoracic -1 Arch	2.01 x 10 ⁰¹	5.92 x 10 ⁰⁰	6.42 x 10 ⁰⁰	5.12 x 10 ⁻⁰¹	1.11 x 10 ⁰¹	5.41 x 10 ⁻⁰¹	8.54 x 10 ⁰¹	2.63 x 10 ⁰⁰
VERTEBRA Thoracic -1 Body	1.47 x 10 ⁰¹	3.37 x 10 ⁰⁰	5.34 x 10 ⁰⁰	5.93 x 10 ⁻⁰¹	1.34 x 10 ⁰¹	7.52 x 10 ⁻⁰¹	9.49 x 10 ⁰¹	3.11 x 10 ⁰⁰
VERTEBRA Thoracic -3 Arch	1.68 x 10 ⁰¹	4.04 x 10 ⁰⁰	6.95 x 10 ⁰⁰	6.11 x 10 ⁻⁰¹	1.04 x 10 ⁰¹	5.94 x 10 ⁻⁰¹	9.90 x 10 ⁰¹	3.12 x 10 ⁰⁰
VERTEBRA Thoracic -3 Body	1.62 x 10 ⁰¹	2.76 x 10 ⁰⁰	8.10 x 10 ⁰⁰	7.25 x 10 ⁻⁰¹	1.52 x 10 ⁰¹	8.21 x 10 ⁻⁰¹	1.20 x 10 ⁰²	3.75 x 10 ⁰⁰
VERTEBRA Thoracic -5 Arch	1.76 x 10 ⁰¹	4.15 x 10 ⁰⁰	6.36 x 10 ⁰⁰	5.46 x 10 ⁻⁰¹	1.18 x 10 ⁰¹	6.10 x 10 ⁻⁰¹	1.00 x 10 ⁰²	3.11 x 10 ⁰⁰
VERTEBRA Thoracic -5 Body	2.02 x 10 ⁰¹	4.36 x 10 ⁰⁰	6.19 x 10 ⁰⁰	5.35 x 10 ⁻⁰¹	1.38 x 10 ⁰¹	6.73 x 10 ⁻⁰¹	1.00 x 10 ⁰²	3.09 x 10 ⁰⁰

Right side of Body was Analyzed.
Concentrations for bone are per kg of ash.

CASE 0213 BONES

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TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
VERTEBRA Thoracic -7 Arch	1.53 x 10 ⁰¹	3.99 x 10 ⁰⁰	7.52 x 10 ⁰⁰	6.18 x 10 ⁻⁰¹	1.08 x 10 ⁰¹	6.10 x 10 ⁻⁰¹	9.93 x 10 ⁰¹	3.14 x 10 ⁰⁰
VERTEBRA Thoracic -7 Body	2.32 x 10 ⁰¹	3.95 x 10 ⁰⁰	7.46 x 10 ⁰⁰	5.32 x 10 ⁻⁰¹	1.61 x 10 ⁰¹	7.43 x 10 ⁻⁰¹	1.22 x 10 ⁰²	3.62 x 10 ⁰⁰
VERTEBRA Thoracic -9 Arch	1.83 x 10 ⁰¹	4.74 x 10 ⁰⁰	7.66 x 10 ⁰⁰	6.19 x 10 ⁻⁰¹	1.14 x 10 ⁰¹	5.91 x 10 ⁻⁰¹	1.03 x 10 ⁰²	3.18 x 10 ⁰⁰
VERTEBRA Thoracic -9 Body	3.23 x 10 ⁰¹	5.40 x 10 ⁰⁰	6.77 x 10 ⁰⁰	5.25 x 10 ⁻⁰¹	1.65 x 10 ⁰¹	6.98 x 10 ⁻⁰¹	1.24 x 10 ⁰²	3.65 x 10 ⁰⁰
VERTEBRA Thoracic -11 Arch	1.77 x 10 ⁰¹	4.64 x 10 ⁰⁰	8.05 x 10 ⁰⁰	6.27 x 10 ⁻⁰¹	2.66 x 10 ⁰¹	1.87 x 10 ⁰⁰	2.29 x 10 ⁰²	1.03 x 10 ⁰¹
VERTEBRA Thoracic -11 Body	3.91 x 10 ⁰¹	7.01 x 10 ⁰⁰	8.11 x 10 ⁰⁰	4.66 x 10 ⁻⁰¹	1.52 x 10 ⁰¹	6.23 x 10 ⁻⁰¹	1.13 x 10 ⁰²	3.32 x 10 ⁰⁰

Right side of Body was Analyzed.
Concentrations for bone are per kg of ash.

CASE 0213 VISCERA and MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ADRENAL-Left	2.73 x 10 ⁰¹	3.18 x 10 ⁻⁰²	1.34 x 10 ⁻⁰²	1.10 x 10 ⁻⁰¹	2.08 x 10 ⁻⁰²	1.33 x 10 ⁰⁰	7.68 x 10 ⁻⁰²
ADRENAL-Right	1.64 x 10 ⁰¹	5.29 x 10 ⁻⁰²	2.44 x 10 ⁻⁰²	2.01 x 10 ⁻⁰¹	3.86 x 10 ⁻⁰²	2.31 x 10 ⁰⁰	1.36 x 10 ⁻⁰¹
AORTA Arch	4.53 x 10 ⁰¹	1.59 x 10 ⁰⁰	8.98 x 10 ⁻⁰²	6.56 x 10 ⁻⁰¹	4.78 x 10 ⁻⁰²	4.59 x 10 ⁰¹	1.37 x 10 ⁰⁰
AORTA Descending	1.77 x 10 ⁰²	1.62 x 10 ⁻⁰¹	1.17 x 10 ⁻⁰²	3.27 x 10 ⁻⁰¹	1.60 x 10 ⁻⁰²	3.31 x 10 ⁰⁰	9.83 x 10 ⁻⁰²
BLADDER	7.50 x 10 ⁰¹	7.69 x 10 ⁻⁰²	1.20 x 10 ⁻⁰²	6.13 x 10 ⁻⁰²	9.33 x 10 ⁻⁰³	3.73 x 10 ⁻⁰¹	2.44 x 10 ⁻⁰²
BLOOD	2.33 x 10 ⁰²	1.92 x 10 ⁻⁰²	3.30 x 10 ⁻⁰³	1.25 x 10 ⁻⁰¹	8.31 x 10 ⁻⁰³	8.75 x 10 ⁻⁰¹	3.11 x 10 ⁻⁰²
BODY Fluid	4.93 x 10 ⁰²	7.50 x 10 ⁻⁰⁴	5.45 x 10 ⁻⁰⁴	3.33 x 10 ⁻⁰⁴	4.67 x 10 ⁻⁰⁴	7.10 x 10 ⁻⁰³	1.15 x 10 ⁻⁰³
CARTILAGE Costal Right	1.88 x 10 ⁰²	1.05 x 10 ⁻⁰¹	1.24 x 10 ⁻⁰²	7.72 x 10 ⁻⁰²	6.92 x 10 ⁻⁰³	6.45 x 10 ⁻⁰¹	2.57 x 10 ⁻⁰²
CEREBELLUM	1.26 x 10 ⁰²	5.24 x 10 ⁻⁰²	8.47 x 10 ⁻⁰³	8.15 x 10 ⁻⁰²	9.26 x 10 ⁻⁰³	1.09 x 10 ⁰⁰	4.29 x 10 ⁻⁰²
CEREBRUM	9.56 x 10 ⁰²	1.73 x 10 ⁻⁰²	1.50 x 10 ⁻⁰³	3.64 x 10 ⁻⁰²	2.72 x 10 ⁻⁰³	5.06 x 10 ⁻⁰¹	1.63 x 10 ⁻⁰²
DIAPHRAGM	1.84 x 10 ⁰²	4.29 x 10 ⁻⁰²	5.43 x 10 ⁻⁰³	6.32 x 10 ⁻⁰²	6.34 x 10 ⁻⁰³	7.72 x 10 ⁻⁰¹	3.01 x 10 ⁻⁰²
DIAPHRAGM-Left	2.18 x 10 ⁰²	2.60 x 10 ⁻⁰²	3.52 x 10 ⁻⁰³	5.20 x 10 ⁻⁰²	4.90 x 10 ⁻⁰³	5.99 x 10 ⁻⁰¹	2.25 x 10 ⁻⁰²
DUODENUM	1.06 x 10 ⁰²	6.84 x 10 ⁻⁰²	1.01 x 10 ⁻⁰²	7.25 x 10 ⁻⁰²	8.83 x 10 ⁻⁰³	1.27 x 10 ⁰⁰	4.98 x 10 ⁻⁰²
EAR-Left	2.38 x 10 ⁰¹	2.06 x 10 ⁻⁰¹	3.78 x 10 ⁻⁰²	4.76 x 10 ⁻⁰²	2.24 x 10 ⁻⁰²	8.88 x 10 ⁻⁰¹	6.99 x 10 ⁻⁰²
EAR-Right	2.54 x 10 ⁰¹	1.18 x 10 ⁻⁰¹	2.62 x 10 ⁻⁰²	7.48 x 10 ⁻⁰²	2.10 x 10 ⁻⁰²	8.64 x 10 ⁻⁰¹	6.56 x 10 ⁻⁰²
EPIDURA	1.46 x 10 ⁰¹	1.03 x 10 ⁰⁰	1.05 x 10 ⁻⁰¹	1.46 x 10 ⁻⁰¹	4.34 x 10 ⁻⁰²	2.22 x 10 ⁰⁰	1.58 x 10 ⁻⁰¹
ESOPHAGUS	4.13 x 10 ⁰¹	3.72 x 10 ⁻⁰¹	3.47 x 10 ⁻⁰²	1.54 x 10 ⁻⁰¹	2.18 x 10 ⁻⁰²	9.66 x 10 ⁰⁰	3.17 x 10 ⁻⁰¹
ESOPHAGUS Scrap	1.40 x 10 ⁰¹	9.05 x 10 ⁻⁰²	3.33 x 10 ⁻⁰²	8.10 x 10 ⁻⁰²	2.86 x 10 ⁻⁰²	1.87 x 10 ⁰⁰	1.24 x 10 ⁻⁰¹
EYES	1.56 x 10 ⁰¹	1.28 x 10 ⁻⁰¹	4.06 x 10 ⁻⁰²	7.91 x 10 ⁻⁰²	2.99 x 10 ⁻⁰²	6.84 x 10 ⁻⁰¹	7.27 x 10 ⁻⁰²
FAT-Mesenteric	3.67 x 10 ⁰¹	5.18 x 10 ⁻⁰²	1.54 x 10 ⁻⁰²	4.72 x 10 ⁻⁰²	1.36 x 10 ⁻⁰²	3.49 x 10 ⁻⁰¹	3.45 x 10 ⁻⁰²
FAT-Stomach	6.68 x 10 ⁰¹	2.20 x 10 ⁻⁰²	6.49 x 10 ⁻⁰³	1.90 x 10 ⁻⁰²	5.99 x 10 ⁻⁰³	2.47 x 10 ⁻⁰¹	2.10 x 10 ⁻⁰²
FINGERNAIL	7.00 x 10 ⁻⁰¹	1.14 x 10 ⁰⁰	5.24 x 10 ⁻⁰¹	-1.90 x 10 ⁻⁰¹	1.43 x 10 ⁻⁰¹	7.76 x 10 ⁻⁰¹	3.20 x 10 ⁻⁰¹
HAIR	1.84 x 10 ⁰¹	1.90 x 10 ⁻⁰²	1.18 x 10 ⁻⁰²	3.62 x 10 ⁻⁰³	1.18 x 10 ⁻⁰²	2.19 x 10 ⁻⁰¹	3.26 x 10 ⁻⁰²
HEART	3.18 x 10 ⁰²	6.62 x 10 ⁻⁰²	6.49 x 10 ⁻⁰³	1.39 x 10 ⁻⁰¹	7.85 x 10 ⁻⁰³	1.32 x 10 ⁰⁰	4.20 x 10 ⁻⁰²
INTESTINE Small	9.29 x 10 ⁰²	4.61 x 10 ⁻⁰²	2.83 x 10 ⁻⁰³	4.77 x 10 ⁻⁰²	4.45 x 10 ⁻⁰³	3.60 x 10 ⁻⁰¹	1.59 x 10 ⁻⁰²
INTESTINES Large	8.27 x 10 ⁰²	1.74 x 10 ⁻⁰²	1.69 x 10 ⁻⁰³	3.50 x 10 ⁻⁰²	5.00 x 10 ⁻⁰³	2.09 x 10 ⁻⁰¹	1.35 x 10 ⁻⁰²

CASE 0213 VISCERA and MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
KIDNEY-Left	3.64 x 10 ⁰²	3.36 x 10 ⁻⁰²	3.11 x 10 ⁻⁰³	7.92 x 10 ⁻⁰²	5.03 x 10 ⁻⁰³	6.08 x 10 ⁻⁰¹	2.04 x 10 ⁻⁰²
KIDNEY-Right	3.06 x 10 ⁰²	4.16 x 10 ⁻⁰²	4.14 x 10 ⁻⁰³	9.59 x 10 ⁻⁰²	6.44 x 10 ⁻⁰³	8.28 x 10 ⁻⁰¹	2.85 x 10 ⁻⁰²
LIVER	2.60 x 10 ⁰³	1.63 x 10 ⁻⁰¹	7.04 x 10 ⁻⁰²	2.79 x 10 ⁰⁰	1.82 x 10 ⁻⁰¹	1.84 x 10 ⁰¹	6.50 x 10 ⁻⁰¹
LUNG-Left	6.43 x 10 ⁰²	1.46 x 10 ⁰⁰	1.92 x 10 ⁻⁰¹	7.36 x 10 ⁻⁰¹	1.24 x 10 ⁻⁰¹	2.48 x 10 ⁰¹	9.38 x 10 ⁻⁰¹
LUNG-Right	8.67 x 10 ⁰²	8.96 x 10 ⁻⁰¹	1.38 x 10 ⁻⁰¹	4.96 x 10 ⁻⁰¹	9.23 x 10 ⁻⁰²	1.65 x 10 ⁰¹	6.42 x 10 ⁻⁰¹
LYMPH NODE	3.60 x 10 ⁰⁰	6.23 x 10 ⁰¹	9.03 x 10 ⁰⁰	1.74 x 10 ⁰¹	4.17 x 10 ⁰⁰	2.24 x 10 ⁰³	7.54 x 10 ⁰¹
Tracheobronchial # 1							
LYMPH NODE	2.20 x 10 ⁰⁰	7.54 x 10 ⁰¹	1.14 x 10 ⁰¹	1.36 x 10 ⁰¹	4.92 x 10 ⁰⁰	2.27 x 10 ⁰³	8.64 x 10 ⁰¹
Tracheobronchial # 2							
LYMPH NODE	5.00 x 10 ⁰⁰	4.47 x 10 ⁰¹	6.00 x 10 ⁰⁰	9.17 x 10 ⁰⁰	2.67 x 10 ⁰⁰	1.45 x 10 ⁰³	4.99 x 10 ⁰¹
Tracheobronchial # 3							
MENINGES	3.14 x 10 ⁰¹	6.39 x 10 ⁻⁰¹	5.31 x 10 ⁻⁰²	2.58 x 10 ⁻⁰¹	3.18 x 10 ⁻⁰²	2.39 x 10 ⁰⁰	1.13 x 10 ⁻⁰¹
PANCREAS	1.71 x 10 ⁰²	2.81 x 10 ⁻⁰²	4.88 x 10 ⁻⁰³	4.14 x 10 ⁻⁰²	5.46 x 10 ⁻⁰³	3.41 x 10 ⁻⁰¹	1.72 x 10 ⁻⁰²
PENIS	4.78 x 10 ⁰¹	3.49 x 10 ⁻⁰²	9.76 x 10 ⁻⁰³	3.35 x 10 ⁻⁰²	9.76 x 10 ⁻⁰³	3.18 x 10 ⁻⁰¹	3.00 x 10 ⁻⁰²
PITUITARY	3.00 x 10 ⁻⁰¹	8.33 x 10 ⁻⁰¹	5.56 x 10 ⁻⁰¹	2.22 x 10 ⁻⁰¹	3.89 x 10 ⁻⁰¹	5.50 x 10 ⁰⁰	1.00 x 10 ⁰⁰
PROSTATE	2.04 x 10 ⁰¹	1.13 x 10 ⁻⁰¹	2.78 x 10 ⁻⁰²	9.31 x 10 ⁻⁰²	2.45 x 10 ⁻⁰²	8.79 x 10 ⁻⁰¹	7.19 x 10 ⁻⁰²
SALIVARY GLAND	1.45 x 10 ⁰¹	5.75 x 10 ⁻⁰²	2.53 x 10 ⁻⁰²	7.82 x 10 ⁻⁰²	2.53 x 10 ⁻⁰²	1.05 x 10 ⁰⁰	8.49 x 10 ⁻⁰²
SCROTUM	1.47 x 10 ⁰²	6.16 x 10 ⁻⁰²	6.79 x 10 ⁻⁰³	3.69 x 10 ⁻⁰²	5.43 x 10 ⁻⁰³	3.73 x 10 ⁻⁰¹	1.95 x 10 ⁻⁰²
SPINAL CHORD	2.94 x 10 ⁰¹	1.46 x 10 ⁻⁰¹	2.49 x 10 ⁻⁰²	1.13 x 10 ⁻⁰¹	2.27 x 10 ⁻⁰²	8.17 x 10 ⁻⁰¹	6.11 x 10 ⁻⁰²
SPLEEN	2.36 x 10 ⁰²	8.82 x 10 ⁻⁰²	1.48 x 10 ⁻⁰²	8.55 x 10 ⁻⁰¹	5.01 x 10 ⁻⁰²	6.75 x 10 ⁰⁰	2.24 x 10 ⁻⁰¹
STOMACH	2.26 x 10 ⁰²	4.51 x 10 ⁻⁰²	4.72 x 10 ⁻⁰³	5.69 x 10 ⁻⁰²	6.04 x 10 ⁻⁰³	5.70 x 10 ⁻⁰¹	2.48 x 10 ⁻⁰²
STOMACH Scrap	7.76 x 10 ⁰¹	4.25 x 10 ⁻⁰²	8.59 x 10 ⁻⁰³	1.06 x 10 ⁻⁰¹	1.29 x 10 ⁻⁰²	1.21 x 10 ⁰⁰	5.37 x 10 ⁻⁰²
TESTIS-Left	1.73 x 10 ⁰¹	9.06 x 10 ⁻⁰²	2.89 x 10 ⁻⁰²	3.58 x 10 ⁻⁰¹	4.82 x 10 ⁻⁰²	4.14 x 10 ⁰⁰	1.95 x 10 ⁻⁰¹
TESTIS-Right	2.11 x 10 ⁰¹	6.16 x 10 ⁻⁰²	2.69 x 10 ⁻⁰²	2.50 x 10 ⁻⁰¹	4.27 x 10 ⁻⁰²	3.91 x 10 ⁰⁰	1.91 x 10 ⁻⁰¹
THYROID	2.37 x 10 ⁰¹	7.60 x 10 ⁻⁰²	2.25 x 10 ⁻⁰²	1.29 x 10 ⁻⁰¹	2.53 x 10 ⁻⁰²	1.62 x 10 ⁰⁰	9.71 x 10 ⁻⁰²
TOENAILS	1.20 x 10 ⁰⁰	1.94 x 10 ⁻⁰¹	2.78 x 10 ⁻⁰¹	-1.94 x 10 ⁻⁰¹	3.89 x 10 ⁻⁰¹	3.33 x 10 ⁻⁰¹	3.33 x 10 ⁻⁰¹
TONGUE	1.14 x 10 ⁰²	7.69 x 10 ⁻⁰²	9.61 x 10 ⁻⁰³	1.10 x 10 ⁻⁰¹	1.17 x 10 ⁻⁰²	1.15 x 10 ⁰⁰	4.78 x 10 ⁻⁰²
TRACHEA	1.28 x 10 ⁰²	6.04 x 10 ⁻⁰¹	3.20 x 10 ⁻⁰²	4.60 x 10 ⁻⁰¹	4.29 x 10 ⁻⁰²	1.40 x 10 ⁰¹	4.34 x 10 ⁻⁰¹

CASE 0213 VISCERA and MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
TRACHEA Scrap	4.87×10^{01}	2.85×10^{00}	2.22×10^{-01}	7.80×10^{-01}	1.06×10^{-01}	8.36×10^{01}	2.59×10^{00}

CASE 0213 MUSCLE

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
BACK Left # 1	5.43 x 10 ⁰²	3.05 x 10 ⁻⁰²	2.52 x 10 ⁻⁰³	6.64 x 10 ⁻⁰²	3.81 x 10 ⁻⁰³	5.88 x 10 ⁻⁰¹	1.86 x 10 ⁻⁰²
BACK Left # 2	3.27 x 10 ⁰²	1.25 x 10 ⁻⁰¹	8.78 x 10 ⁻⁰³	1.14 x 10 ⁻⁰¹	6.94 x 10 ⁻⁰³	1.16 x 10 ⁰⁰	3.78 x 10 ⁻⁰²
BACK Left # 3	7.05 x 10 ⁰²	5.45 x 10 ⁻⁰²	4.49 x 10 ⁻⁰³	5.57 x 10 ⁻⁰²	3.17 x 10 ⁻⁰³	1.14 x 10 ⁰⁰	3.33 x 10 ⁻⁰²
BACK Left # 4	1.63 x 10 ⁰³	3.67 x 10 ⁻⁰²	2.19 x 10 ⁻⁰³	3.60 x 10 ⁻⁰²	1.88 x 10 ⁻⁰³	4.03 x 10 ⁻⁰¹	1.24 x 10 ⁻⁰²
BACK Right # 1	7.22 x 10 ⁰²	3.64 x 10 ⁻⁰²	3.05 x 10 ⁻⁰³	5.88 x 10 ⁻⁰²	3.46 x 10 ⁻⁰³	5.87 x 10 ⁻⁰¹	1.89 x 10 ⁻⁰²
BACK Right # 2	5.63 x 10 ⁰²	1.13 x 10 ⁻⁰¹	6.69 x 10 ⁻⁰³	1.57 x 10 ⁻⁰¹	1.04 x 10 ⁻⁰²	1.46 x 10 ⁰⁰	4.81 x 10 ⁻⁰²
BACK Right # 3	6.18 x 10 ⁰²	3.49 x 10 ⁻⁰²	3.35 x 10 ⁻⁰³	5.12 x 10 ⁻⁰²	3.13 x 10 ⁻⁰³	5.44 x 10 ⁻⁰¹	1.72 x 10 ⁻⁰²
BACK Right # 4	1.15 x 10 ⁰³	3.63 x 10 ⁻⁰²	2.23 x 10 ⁻⁰³	3.47 x 10 ⁻⁰²	2.49 x 10 ⁻⁰³	4.66 x 10 ⁻⁰¹	1.50 x 10 ⁻⁰²
CALF-Left # 1	4.70 x 10 ⁰²	4.83 x 10 ⁻⁰²	4.18 x 10 ⁻⁰³	3.15 x 10 ⁻⁰²	2.84 x 10 ⁻⁰³	3.87 x 10 ⁻⁰¹	1.43 x 10 ⁻⁰²
CALF-Left # 2	6.35 x 10 ⁰²	4.76 x 10 ⁻⁰²	3.78 x 10 ⁻⁰³	3.39 x 10 ⁻⁰²	2.63 x 10 ⁻⁰³	4.04 x 10 ⁻⁰¹	1.41 x 10 ⁻⁰²
CALF-Right # 1	1.03 x 10 ⁰³	3.82 x 10 ⁻⁰²	4.25 x 10 ⁻⁰³	2.65 x 10 ⁻⁰²	2.38 x 10 ⁻⁰³	2.36 x 10 ⁻⁰¹	9.22 x 10 ⁻⁰³
CALF-Right # 2	1.15 x 10 ⁰³	4.00 x 10 ⁻⁰²	2.68 x 10 ⁻⁰³	2.91 x 10 ⁻⁰²	1.78 x 10 ⁻⁰³	2.85 x 10 ⁻⁰¹	9.11 x 10 ⁻⁰³
FOOT Left	3.03 x 10 ⁰²	7.50 x 10 ⁻⁰²	6.26 x 10 ⁻⁰³	4.55 x 10 ⁻⁰²	4.50 x 10 ⁻⁰³	5.01 x 10 ⁻⁰¹	1.99 x 10 ⁻⁰²
FOOT Right	3.63 x 10 ⁰²	8.29 x 10 ⁻⁰²	5.78 x 10 ⁻⁰³	3.78 x 10 ⁻⁰²	3.12 x 10 ⁻⁰³	4.64 x 10 ⁻⁰¹	1.59 x 10 ⁻⁰²
FOREARM Left	5.29 x 10 ⁰²	4.52 x 10 ⁻⁰²	3.84 x 10 ⁻⁰³	4.29 x 10 ⁻⁰²	3.09 x 10 ⁻⁰³	4.42 x 10 ⁻⁰¹	1.50 x 10 ⁻⁰²
FOREARM Right	5.75 x 10 ⁰²	4.60 x 10 ⁻⁰²	3.71 x 10 ⁻⁰³	4.27 x 10 ⁻⁰²	3.19 x 10 ⁻⁰³	4.60 x 10 ⁻⁰¹	1.60 x 10 ⁻⁰²
FRONT Left # 1	5.28 x 10 ⁰²	3.20 x 10 ⁻⁰²	2.46 x 10 ⁻⁰³	4.76 x 10 ⁻⁰²	3.09 x 10 ⁻⁰³	5.17 x 10 ⁻⁰¹	1.63 x 10 ⁻⁰²
FRONT Left # 2	3.70 x 10 ⁰²	3.92 x 10 ⁻⁰²	3.87 x 10 ⁻⁰³	3.54 x 10 ⁻⁰²	3.60 x 10 ⁻⁰³	4.85 x 10 ⁻⁰¹	1.86 x 10 ⁻⁰²
FRONT Left # 3	3.43 x 10 ⁰²	4.82 x 10 ⁻⁰²	4.56 x 10 ⁻⁰³	5.71 x 10 ⁻⁰²	4.66 x 10 ⁻⁰³	5.53 x 10 ⁻⁰¹	2.04 x 10 ⁻⁰²
FRONT Left # 4	4.17 x 10 ⁰²	7.50 x 10 ⁻⁰²	5.84 x 10 ⁻⁰³	7.78 x 10 ⁻⁰²	4.72 x 10 ⁻⁰³	7.46 x 10 ⁻⁰¹	2.38 x 10 ⁻⁰²
FRONT Right # 1	4.06 x 10 ⁰²	2.76 x 10 ⁻⁰²	2.88 x 10 ⁻⁰³	4.47 x 10 ⁻⁰²	3.53 x 10 ⁻⁰³	4.68 x 10 ⁻⁰¹	1.66 x 10 ⁻⁰²
FRONT Right # 2	1.08 x 10 ⁰³	3.73 x 10 ⁻⁰²	3.20 x 10 ⁻⁰³	5.70 x 10 ⁻⁰²	3.87 x 10 ⁻⁰³	6.24 x 10 ⁻⁰¹	2.10 x 10 ⁻⁰²
FRONT Right # 3	4.88 x 10 ⁰¹	1.25 x 10 ⁻⁰¹	2.12 x 10 ⁻⁰²	6.49 x 10 ⁻⁰²	1.23 x 10 ⁻⁰²	8.94 x 10 ⁻⁰¹	4.92 x 10 ⁻⁰²
FRONT Right # 4	1.65 x 10 ⁰²	1.36 x 10 ⁻⁰²	3.24 x 10 ⁻⁰³	2.61 x 10 ⁻⁰²	4.25 x 10 ⁻⁰³	2.93 x 10 ⁻⁰¹	1.54 x 10 ⁻⁰²
HAND Left	1.65 x 10 ⁰²	7.00 x 10 ⁻⁰²	6.88 x 10 ⁻⁰³	5.56 x 10 ⁻⁰²	6.07 x 10 ⁻⁰³	4.45 x 10 ⁻⁰¹	2.04 x 10 ⁻⁰²
HAND Right	1.85 x 10 ⁰²	7.91 x 10 ⁻⁰²	7.58 x 10 ⁻⁰³	4.51 x 10 ⁻⁰²	5.41 x 10 ⁻⁰³	4.97 x 10 ⁻⁰¹	2.20 x 10 ⁻⁰²
HEAD	5.64 x 10 ⁰²	7.87 x 10 ⁻⁰²	4.67 x 10 ⁻⁰³	8.46 x 10 ⁻⁰²	4.49 x 10 ⁻⁰³	8.59 x 10 ⁻⁰¹	2.62 x 10 ⁻⁰²

CASE 0213 MUSCLE

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
THIGH-Left # 1	1.26 x 10 ⁰³	3.90 x 10 ⁻⁰²	2.75 x 10 ⁻⁰³	3.68 x 10 ⁻⁰²	2.53 x 10 ⁻⁰³	4.47 x 10 ⁻⁰¹	1.43 x 10 ⁻⁰²
THIGH-Left # 2	1.53 x 10 ⁰³	4.29 x 10 ⁻⁰²	2.57 x 10 ⁻⁰³	3.79 x 10 ⁻⁰²	2.40 x 10 ⁻⁰³	4.43 x 10 ⁻⁰¹	1.39 x 10 ⁻⁰²
THIGH-Right # 1	2.09 x 10 ⁰³	3.31 x 10 ⁻⁰²	2.36 x 10 ⁻⁰³	3.65 x 10 ⁻⁰²	2.16 x 10 ⁻⁰³	3.90 x 10 ⁻⁰¹	1.23 x 10 ⁻⁰²
THIGH-Right # 2	1.77 x 10 ⁰³	4.35 x 10 ⁻⁰²	2.67 x 10 ⁻⁰³	3.77 x 10 ⁻⁰²	2.22 x 10 ⁻⁰³	4.69 x 10 ⁻⁰¹	1.42 x 10 ⁻⁰²
UPPER ARM Left	7.63 x 10 ⁰²	3.34 x 10 ⁻⁰²	2.62 x 10 ⁻⁰³	3.45 x 10 ⁻⁰²	3.06 x 10 ⁻⁰³	4.80 x 10 ⁻⁰¹	1.66 x 10 ⁻⁰²
UPPER ARM Right	8.69 x 10 ⁰²	3.08 x 10 ⁻⁰²	2.30 x 10 ⁻⁰³	3.68 x 10 ⁻⁰²	2.37 x 10 ⁻⁰³	3.94 x 10 ⁻⁰¹	1.29 x 10 ⁻⁰²

CASE 0213 SKIN

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
BACK Left # 1	1.63 x 10 ⁰³	4.09 x 10 ⁻⁰²	2.49 x 10 ⁻⁰³	2.34 x 10 ⁻⁰²	1.84 x 10 ⁻⁰³	1.89 x 10 ⁻⁰¹	7.06 x 10 ⁻⁰³
BACK Left # 2	4.63 x 10 ⁰²	4.69 x 10 ⁻⁰²	3.82 x 10 ⁻⁰³	4.80 x 10 ⁻⁰²	3.60 x 10 ⁻⁰³	3.93 x 10 ⁻⁰¹	1.44 x 10 ⁻⁰²
BACK Right # 2	4.92 x 10 ⁰²	4.36 x 10 ⁻⁰²	3.46 x 10 ⁻⁰³	2.97 x 10 ⁻⁰²	3.05 x 10 ⁻⁰³	3.02 x 10 ⁻⁰¹	1.29 x 10 ⁻⁰²
BACK Right # 3	2.15 x 10 ⁰³	3.17 x 10 ⁻⁰²	2.17 x 10 ⁻⁰³	2.26 x 10 ⁻⁰²	1.64 x 10 ⁻⁰³	2.01 x 10 ⁻⁰¹	7.14 x 10 ⁻⁰³
BACK Right # 4	5.58 x 10 ⁰²	3.94 x 10 ⁻⁰²	3.11 x 10 ⁻⁰³	2.49 x 10 ⁻⁰²	2.39 x 10 ⁻⁰³	2.03 x 10 ⁻⁰¹	8.48 x 10 ⁻⁰³
CALF Left # 1	3.55 x 10 ⁰²	5.39 x 10 ⁻⁰²	5.91 x 10 ⁻⁰³	3.75 x 10 ⁻⁰²	3.29 x 10 ⁻⁰³	3.27 x 10 ⁻⁰¹	1.27 x 10 ⁻⁰²
CALF Left # 2	2.05 x 10 ⁰²	4.49 x 10 ⁻⁰²	5.69 x 10 ⁻⁰³	3.63 x 10 ⁻⁰²	4.55 x 10 ⁻⁰³	3.46 x 10 ⁻⁰¹	1.63 x 10 ⁻⁰²
CALF Right # 1	1.03 x 10 ⁰³	1.91 x 10 ⁻⁰²	2.12 x 10 ⁻⁰³	2.65 x 10 ⁻⁰²	2.37 x 10 ⁻⁰³	2.36 x 10 ⁻⁰¹	9.22 x 10 ⁻⁰³
Includes some Muscle							
CALF Right # 2	1.15 x 10 ⁰³	7.99 x 10 ⁻⁰²	5.37 x 10 ⁻⁰³	2.91 x 10 ⁻⁰²	1.76 x 10 ⁻⁰³	2.85 x 10 ⁻⁰¹	9.11 x 10 ⁻⁰³
Includes some Muscle							
FOOT Left	2.84 x 10 ⁰²	1.01 x 10 ⁻⁰¹	8.46 x 10 ⁻⁰³	6.35 x 10 ⁻⁰²	6.35 x 10 ⁻⁰³	5.61 x 10 ⁻⁰¹	2.42 x 10 ⁻⁰²
FOOT Right	2.48 x 10 ⁰²	8.85 x 10 ⁻⁰²	7.67 x 10 ⁻⁰³	5.77 x 10 ⁻⁰²	5.79 x 10 ⁻⁰³	6.36 x 10 ⁻⁰¹	2.54 x 10 ⁻⁰²
FOREARM Left	1.66 x 10 ⁰²	7.52 x 10 ⁻⁰²	8.85 x 10 ⁻⁰³	7.36 x 10 ⁻⁰²	7.24 x 10 ⁻⁰³	6.58 x 10 ⁻⁰¹	2.71 x 10 ⁻⁰²
FOREARM Right	1.88 x 10 ⁰²	9.52 x 10 ⁻⁰²	1.07 x 10 ⁻⁰²	7.07 x 10 ⁻⁰²	7.11 x 10 ⁻⁰³	6.84 x 10 ⁻⁰¹	2.83 x 10 ⁻⁰²
FRONT Left # 1	3.17 x 10 ⁰²	3.22 x 10 ⁻⁰²	4.84 x 10 ⁻⁰³	2.84 x 10 ⁻⁰²	2.95 x 10 ⁻⁰³	2.41 x 10 ⁻⁰¹	1.04 x 10 ⁻⁰²
FRONT Left # 2	3.08 x 10 ⁰²	3.85 x 10 ⁻⁰²	4.11 x 10 ⁻⁰³	2.76 x 10 ⁻⁰²	2.92 x 10 ⁻⁰³	2.11 x 10 ⁻⁰¹	9.84 x 10 ⁻⁰³
FRONT Left # 3	4.23 x 10 ⁰²	1.96 x 10 ⁻⁰²	2.91 x 10 ⁻⁰³	1.59 x 10 ⁻⁰²	2.21 x 10 ⁻⁰³	1.52 x 10 ⁻⁰¹	7.33 x 10 ⁻⁰³
FRONT Right # 1	5.76 x 10 ⁰²	3.55 x 10 ⁻⁰²	4.16 x 10 ⁻⁰³	3.56 x 10 ⁻⁰²	2.83 x 10 ⁻⁰³	4.41 x 10 ⁻⁰¹	1.53 x 10 ⁻⁰²
FRONT Right # 2	3.64 x 10 ⁰²	3.50 x 10 ⁻⁰²	3.94 x 10 ⁻⁰³	2.07 x 10 ⁻⁰²	2.57 x 10 ⁻⁰³	1.72 x 10 ⁻⁰¹	8.53 x 10 ⁻⁰³
FRONT Right # 3	2.55 x 10 ⁰²	3.17 x 10 ⁻⁰²	5.50 x 10 ⁻⁰³	1.77 x 10 ⁻⁰²	2.88 x 10 ⁻⁰³	1.76 x 10 ⁻⁰¹	9.81 x 10 ⁻⁰³
HAND Left	1.73 x 10 ⁰²	8.17 x 10 ⁻⁰²	9.25 x 10 ⁻⁰³	7.23 x 10 ⁻⁰²	6.94 x 10 ⁻⁰³	6.62 x 10 ⁻⁰¹	2.70 x 10 ⁻⁰²
HAND Right	1.64 x 10 ⁰²	1.33 x 10 ⁻⁰¹	1.14 x 10 ⁻⁰²	5.95 x 10 ⁻⁰²	6.52 x 10 ⁻⁰³	1.03 x 10 ⁰⁰	3.85 x 10 ⁻⁰²
HEAD	8.12 x 10 ⁰²	5.54 x 10 ⁻⁰²	4.11 x 10 ⁻⁰³	7.10 x 10 ⁻⁰²	4.27 x 10 ⁻⁰³	6.54 x 10 ⁻⁰¹	2.07 x 10 ⁻⁰²
THIGH Left # 1	8.58 x 10 ⁰²	2.84 x 10 ⁻⁰²	1.98 x 10 ⁻⁰³	1.92 x 10 ⁻⁰²	1.55 x 10 ⁻⁰³	1.58 x 10 ⁻⁰¹	5.94 x 10 ⁻⁰³
THIGH Left # 2	9.13 x 10 ⁰²	3.07 x 10 ⁻⁰²	2.23 x 10 ⁻⁰³	1.78 x 10 ⁻⁰²	1.53 x 10 ⁻⁰³	1.53 x 10 ⁻⁰¹	5.88 x 10 ⁻⁰³
UPPER ARM Left	3.71 x 10 ⁰²	4.02 x 10 ⁻⁰²	5.31 x 10 ⁻⁰³	4.14 x 10 ⁻⁰²	3.60 x 10 ⁻⁰³	3.57 x 10 ⁻⁰¹	1.38 x 10 ⁻⁰²
UPPER ARM Right	3.00 x 10 ⁰²	4.59 x 10 ⁻⁰²	5.79 x 10 ⁻⁰³	4.07 x 10 ⁻⁰²	4.45 x 10 ⁻⁰³	3.34 x 10 ⁻⁰¹	1.54 x 10 ⁻⁰²

CASE 0242 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
CALCANEUS	1.02 x 10 ⁰²	2.58 x 10 ⁰¹	1.16 x 10 ⁰¹	7.25 x 10 ⁻⁰¹	8.29 x 10 ⁻⁰¹	2.33 x 10 ⁻⁰¹	1.20 x 10 ⁰²	4.30 x 10 ⁰⁰
CAPITATE	6.00 x 10 ⁰⁰	1.85 x 10 ⁰⁰	9.90 x 10 ⁰⁰	7.77 x 10 ⁻⁰¹	1.30 x 10 ⁰⁰	2.96 x 10 ⁻⁰¹	1.31 x 10 ⁰²	4.55 x 10 ⁰⁰
CLAVICLE Sternal End	1.08 x 10 ⁰¹	3.13 x 10 ⁰⁰	1.01 x 10 ⁰¹	1.33 x 10 ⁰⁰	1.32 x 10 ⁰⁰	6.33 x 10 ⁻⁰¹	1.67 x 10 ⁰²	6.70 x 10 ⁰⁰
CLAVICLE Acromial End	1.75 x 10 ⁰¹	5.49 x 10 ⁰⁰	9.74 x 10 ⁰⁰	1.03 x 10 ⁰⁰	5.47 x 10 ⁻⁰¹	4.56 x 10 ⁻⁰¹	1.23 x 10 ⁰²	5.17 x 10 ⁰⁰
CLAVICLE Shaft	2.05 x 10 ⁰¹	9.98 x 10 ⁰⁰	7.10 x 10 ⁰⁰	6.01 x 10 ⁻⁰¹	5.35 x 10 ⁻⁰¹	1.67 x 10 ⁻⁰¹	7.68 x 10 ⁰¹	2.73 x 10 ⁰⁰
COCCYX	1.00 x 10 ⁰¹	1.57 x 10 ⁰⁰	1.76 x 10 ⁰¹	1.56 x 10 ⁰⁰	1.38 x 10 ⁰⁰	4.33 x 10 ⁻⁰¹	2.06 x 10 ⁰²	7.31 x 10 ⁰⁰
CUBOID	2.05 x 10 ⁰¹	5.28 x 10 ⁰⁰	1.15 x 10 ⁰¹	9.84 x 10 ⁻⁰¹	4.82 x 10 ⁻⁰¹	2.53 x 10 ⁻⁰¹	1.06 x 10 ⁰²	3.93 x 10 ⁰⁰
CUNEIFORM Intermediate	6.50 x 10 ⁰⁰	2.00 x 10 ⁰⁰	9.67 x 10 ⁰⁰	1.04 x 10 ⁰⁰	1.07 x 10 ⁰⁰	3.67 x 10 ⁻⁰¹	1.04 x 10 ⁰²	4.10 x 10 ⁰⁰
CUNEIFORM Lateral	9.20 x 10 ⁰⁰	2.57 x 10 ⁰⁰	9.86 x 10 ⁰⁰	1.19 x 10 ⁰⁰	1.26 x 10 ⁰⁰	4.72 x 10 ⁻⁰¹	9.65 x 10 ⁰¹	4.57 x 10 ⁰⁰
CUNEIFORM Medial	1.62 x 10 ⁰¹	4.32 x 10 ⁰⁰	1.26 x 10 ⁰¹	1.14 x 10 ⁰⁰	1.32 x 10 ⁰⁰	4.92 x 10 ⁻⁰¹	1.40 x 10 ⁰²	5.68 x 10 ⁰⁰
FEMUR Distal End	2.61 x 10 ⁰²	7.03 x 10 ⁰¹	8.90 x 10 ⁰⁰	6.08 x 10 ⁻⁰¹	8.16 x 10 ⁻⁰¹	2.47 x 10 ⁻⁰¹	9.33 x 10 ⁰¹	3.59 x 10 ⁰⁰
FEMUR Distal Shaft	1.37 x 10 ⁰²	7.51 x 10 ⁰¹	6.01 x 10 ⁰⁰	3.28 x 10 ⁻⁰¹	4.79 x 10 ⁻⁰¹	3.73 x 10 ⁻⁰¹	6.63 x 10 ⁰¹	3.73 x 10 ⁰⁰
FEMUR Medial Shaft	1.51 x 10 ⁰²	6.39 x 10 ⁰¹	4.89 x 10 ⁰⁰	4.56 x 10 ⁻⁰¹	5.08 x 10 ⁻⁰¹	1.43 x 10 ⁻⁰¹	6.68 x 10 ⁰¹	2.33 x 10 ⁰⁰
FEMUR Proximal End	2.39 x 10 ⁰²	7.38 x 10 ⁰¹	1.49 x 10 ⁰¹	6.69 x 10 ⁻⁰¹	1.69 x 10 ⁰⁰	1.54 x 10 ⁻⁰¹	2.05 x 10 ⁰²	5.71 x 10 ⁰⁰
FEMUR Proximal Shaft	1.14 x 10 ⁰²	5.20 x 10 ⁰¹	6.05 x 10 ⁰⁰	4.03 x 10 ⁻⁰¹	5.38 x 10 ⁻⁰¹	1.02 x 10 ⁻⁰¹	6.31 x 10 ⁰¹	2.02 x 10 ⁰⁰
FIBULA Distal End	1.58 x 10 ⁰¹	2.94 x 10 ⁰⁰	1.23 x 10 ⁰¹	1.90 x 10 ⁰⁰	-1.12 x 10 ⁻⁰¹	5.59 x 10 ⁻⁰¹	1.00 x 10 ⁰²	5.78 x 10 ⁰⁰
FIBULA Distal Shaft	3.54 x 10 ⁰¹	1.10 x 10 ⁰¹	4.60 x 10 ⁰⁰	3.50 x 10 ⁻⁰¹	3.95 x 10 ⁻⁰¹	9.12 x 10 ⁻⁰²	4.72 x 10 ⁰¹	1.52 x 10 ⁰⁰
FIBULA Proximal End	2.18 x 10 ⁰¹	5.97 x 10 ⁰⁰	1.09 x 10 ⁰¹	1.29 x 10 ⁰⁰	1.40 x 10 ⁰⁰	4.49 x 10 ⁻⁰¹	9.70 x 10 ⁰¹	4.30 x 10 ⁰⁰

Right side of body was analyzed, unless noted otherwise.
Concentrations for bone are per kg of ash.

CASE 0242 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
FIBULA	3.13 x 10 ⁰¹	1.41 x 10 ⁰¹	3.76 x 10 ⁰⁰	3.22 x 10 ⁻⁰¹	5.31 x 10 ⁻⁰¹	1.23 x 10 ⁻⁰¹	4.01 x 10 ⁻⁰¹	1.43 x 10 ⁰⁰
Proximal Shaft								
FOOT PHALANGE	2.4 x 10 ⁰⁰	6.4 x 10 ⁻⁰¹	1.3 x 10 ⁰¹	1.4 x 10 ⁰⁰	6.8 x 10 ⁻⁰¹	3.9 x 10 ⁻⁰¹	1.6 x 10 ⁰²	6.3 x 10 ⁰⁰
Distal - 1								
FOOT PHALANGE	4 x 10 ⁻⁰¹	1 x 10 ⁻⁰¹	2 x 10 ⁰¹	4 x 10 ⁰⁰	6 x 10 ⁰⁰	3 x 10 ⁰⁰	2 x 10 ⁰²	1 x 10 ⁰¹
Distal - 2								
FOOT PHALANGE	1 x 10 ⁻⁰¹	6 x 10 ⁻⁰²	3 x 10 ⁰¹	1 x 10 ⁰¹	-4 x 10 ⁰⁰	5 x 10 ⁰⁰	4 x 10 ⁰²	3 x 10 ⁰¹
Distal - 3								
FOOT PHALANGE	2 x 10 ⁻⁰¹	9 x 10 ⁻⁰²	3 x 10 ⁰¹	7 x 10 ⁰⁰	8 x 10 ⁻⁰¹	3 x 10 ⁰⁰	1 x 10 ⁰²	1 x 10 ⁰¹
Distal - 4								
FOOT PHALANGE	2 x 10 ⁻⁰¹	6 x 10 ⁻⁰²	7 x 10 ⁰⁰	5 x 10 ⁰⁰	-3 x 10 ⁰⁰	3 x 10 ⁰⁰	1 x 10 ⁰²	1 x 10 ⁰¹
Distal - 5								
FOOT PHALANGE	8 x 10 ⁻⁰¹	3 x 10 ⁻⁰¹	1 x 10 ⁰¹	2 x 10 ⁰⁰	2 x 10 ⁰⁰	1 x 10 ⁰⁰	2 x 10 ⁰²	8 x 10 ⁰⁰
Medial - 2								
FOOT PHALANGE	5 x 10 ⁻⁰¹	1 x 10 ⁻⁰¹	2 x 10 ⁰¹	4 x 10 ⁰⁰	8 x 10 ⁻⁰¹	2 x 10 ⁰⁰	2 x 10 ⁰²	1 x 10 ⁰¹
Medial - 3								
FOOT PHALANGE	3 x 10 ⁻⁰¹	1 x 10 ⁻⁰¹	9 x 10 ⁰⁰	2 x 10 ⁰⁰	1 x 10 ⁰⁰	9 x 10 ⁻⁰¹	1 x 10 ⁰²	7 x 10 ⁰⁰
Medial - 4								
FOOT PHALANGE	2 x 10 ⁻⁰¹	8 x 10 ⁻⁰²	2 x 10 ⁰¹	8 x 10 ⁰⁰	-8 x 10 ⁰⁰	4 x 10 ⁰⁰	2 x 10 ⁰²	2 x 10 ⁰¹
Medial - 5								
FOOT PHALANGE	6.3 x 10 ⁰⁰	2.3 x 10 ⁰⁰	8.9 x 10 ⁰⁰	7.1 x 10 ⁻⁰¹	6.6 x 10 ⁻⁰¹	2.1 x 10 ⁻⁰¹	1.1 x 10 ⁰²	3.8 x 10 ⁰⁰
Proximal - 1								
FOOT PHALANGE	2 x 10 ⁰⁰	9 x 10 ⁻⁰¹	6 x 10 ⁰⁰	9 x 10 ⁻⁰¹	3 x 10 ⁻⁰¹	3 x 10 ⁻⁰¹	9 x 10 ⁰¹	4 x 10 ⁰⁰
Proximal - 2								
FOOT PHALANGE	1.3 x 10 ⁰⁰	4.4 x 10 ⁻⁰¹	1.2 x 10 ⁰¹	1.7 x 10 ⁰⁰	1.8 x 10 ⁰⁰	7.6 x 10 ⁻⁰¹	1.2 x 10 ⁰²	5.7 x 10 ⁰⁰
Proximal - 4								
FOOT PHALANGE	1.3 x 10 ⁰⁰	3.8 x 10 ⁻⁰¹	9.9 x 10 ⁰⁰	1.9 x 10 ⁰⁰	9.2 x 10 ⁻⁰¹	1.1 x 10 ⁰⁰	1.2 x 10 ⁰²	6.7 x 10 ⁰⁰
Proximal - 5								
FRONTAL # 1	3.79 x 10 ⁰¹	2.26 x 10 ⁰¹	4.09 x 10 ⁰⁰	3.39 x 10 ⁻⁰¹	3.99 x 10 ⁻⁰¹	1.48 x 10 ⁻⁰¹	4.82 x 10 ⁰¹	1.98 x 10 ⁰⁰
FRONTAL # 2	1.94 x 10 ⁰¹	1.18 x 10 ⁰¹	3.90 x 10 ⁰⁰	4.08 x 10 ⁻⁰¹	4.07 x 10 ⁻⁰¹	1.40 x 10 ⁻⁰¹	4.89 x 10 ⁰¹	1.87 x 10 ⁰⁰
FRONTAL # 3	1.55 x 10 ⁰¹	7.07 x 10 ⁰⁰	6.51 x 10 ⁰⁰	7.07 x 10 ⁻⁰¹	2.13 x 10 ⁻⁰¹	2.84 x 10 ⁻⁰¹	5.67 x 10 ⁰¹	2.65 x 10 ⁰⁰
HAMATE	4.70 x 10 ⁰⁰	1.32 x 10 ⁰⁰	1.12 x 10 ⁰¹	9.95 x 10 ⁻⁰¹	1.44 x 10 ⁰⁰	3.98 x 10 ⁻⁰¹	1.36 x 10 ⁰²	4.78 x 10 ⁰⁰

Right side of body was analyzed, unless noted otherwise.
Concentrations for bone are per kg of ash.

CASE 0242 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
HAND PHALANGE Distal - 1	2.20 x 10 ⁰⁰	5.7 x 10 ⁻⁰¹	1.57 x 10 ⁰¹	1.85 x 10 ⁰⁰	1.17 x 10 ⁰⁰	5.54 x 10 ⁻⁰¹	1.55 x 10 ⁰²	6.34 x 10 ⁰⁰
HAND PHALANGE Distal - 2	8.00 x 10 ⁻⁰¹	2.4 x 10 ⁻⁰¹	1.22 x 10 ⁰¹	2.31 x 10 ⁰⁰	9.26 x 10 ⁻⁰¹	6.94 x 10 ⁻⁰¹	1.17 x 10 ⁰²	6.60 x 10 ⁰⁰
HAND PHALANGE Distal - 3	1.10 x 10 ⁰⁰	2.9 x 10 ⁻⁰¹	1.3 x 10 ⁰¹	2.4 x 10 ⁰⁰	2.1 x 10 ⁰⁰	9.5 x 10 ⁻⁰¹	1.3 x 10 ⁰²	6.9 x 10 ⁰⁰
HAND PHALANGE Distal - 4	1.00 x 10 ⁰⁰	3.0 x 10 ⁻⁰¹	1.4 x 10 ⁰¹	2.2 x 10 ⁰⁰	2.6 x 10 ⁰⁰	1.0 x 10 ⁰⁰	1.3 x 10 ⁰²	7.2 x 10 ⁰⁰
HAND PHALANGE Distal - 5	8.0 x 10 ⁻⁰¹	2.1 x 10 ⁻⁰¹	1.1 x 10 ⁰¹	2.4 x 10 ⁰⁰	1.7 x 10 ⁰⁰	1.5 x 10 ⁰⁰	1.2 x 10 ⁰²	7.9 x 10 ⁰⁰
HAND PHALANGE Medial - 2	2.10 x 10 ⁰⁰	9.2 x 10 ⁻⁰¹	7.1 x 10 ⁰⁰	9.6 x 10 ⁻⁰¹	5.0 x 10 ⁻⁰¹	2.5 x 10 ⁻⁰¹	8.4 x 10 ⁰¹	3.5 x 10 ⁰⁰
HAND PHALANGE Medial - 3	3.20 x 10 ⁰⁰	1.27 x 10 ⁰⁰	9.62 x 10 ⁰⁰	9.40 x 10 ⁻⁰¹	9.13 x 10 ⁻⁰¹	2.96 x 10 ⁻⁰¹	8.95 x 10 ⁰¹	3.49 x 10 ⁰⁰
HAND PHALANGE Medial - 4	2.70 x 10 ⁰⁰	1.06 x 10 ⁰⁰	6.98 x 10 ⁰⁰	8.81 x 10 ⁻⁰¹	9.14 x 10 ⁻⁰¹	2.94 x 10 ⁻⁰¹	9.41 x 10 ⁰¹	3.72 x 10 ⁰⁰
HAND PHALANGE Medial - 5	1.6 x 10 ⁰⁰	5.3 x 10 ⁻⁰¹	9.1 x 10 ⁰⁰	1.3 x 10 ⁰⁰	7.7 x 10 ⁻⁰¹	4.2 x 10 ⁻⁰¹	1.2 x 10 ⁰²	5.0 x 10 ⁰⁰
HAND PHALANGE Proximal - 1	5.00 x 10 ⁰⁰	1.63 x 10 ⁰⁰	7.65 x 10 ⁰⁰	7.63 x 10 ⁻⁰¹	8.63 x 10 ⁻⁰¹	2.21 x 10 ⁻⁰¹	1.03 x 10 ⁰²	3.39 x 10 ⁰⁰
HAND PHALANGE Proximal - 2	5.90 x 10 ⁰⁰	2.09 x 10 ⁰⁰	8.08 x 10 ⁰⁰	8.49 x 10 ⁻⁰¹	8.97 x 10 ⁻⁰¹	1.92 x 10 ⁻⁰¹	9.22 x 10 ⁰¹	3.01 x 10 ⁰⁰
HAND PHALANGE Proximal - 3	7.10 x 10 ⁰⁰	2.57 x 10 ⁰⁰	7.72 x 10 ⁰⁰	6.56 x 10 ⁻⁰¹	7.35 x 10 ⁻⁰¹	2.10 x 10 ⁻⁰¹	9.82 x 10 ⁰¹	3.18 x 10 ⁰⁰
HAND PHALANGE Proximal - 4	5.80 x 10 ⁰⁰	1.93 x 10 ⁰⁰	7.43 x 10 ⁰⁰	7.48 x 10 ⁻⁰¹	1.05 x 10 ⁰⁰	2.38 x 10 ⁻⁰¹	9.30 x 10 ⁰¹	3.20 x 10 ⁰⁰
HAND PHALANGE Proximal - 5	3.90 x 10 ⁰⁰	1.19 x 10 ⁰⁰	9.80 x 10 ⁰⁰	1.05 x 10 ⁰⁰	7.34 x 10 ⁻⁰¹	2.82 x 10 ⁻⁰¹	1.06 x 10 ⁰²	3.79 x 10 ⁰⁰
HUMERUS Distal End	6.00 x 10 ⁰¹	2.09 x 10 ⁰¹	8.92 x 10 ⁰⁰	6.85 x 10 ⁻⁰¹	1.18 x 10 ⁰⁰	2.71 x 10 ⁻⁰¹	1.09 x 10 ⁰²	3.67 x 10 ⁰⁰
HUMERUS Distal Shaft	7.70 x 10 ⁰¹	2.83 x 10 ⁰¹	6.84 x 10 ⁰⁰	4.64 x 10 ⁻⁰¹	5.59 x 10 ⁻⁰¹	2.35 x 10 ⁻⁰¹	7.75 x 10 ⁰¹	3.24 x 10 ⁰⁰
HUMERUS Proximal End	9.35 x 10 ⁰¹	1.67 x 10 ⁰¹	1.83 x 10 ⁰¹	1.12 x 10 ⁰⁰	2.99 x 10 ⁰⁰	5.01 x 10 ⁻⁰¹	2.80 x 10 ⁰²	8.96 x 10 ⁰⁰

Right side of body was analyzed, unless noted otherwise.
Concentrations for bone are per kg of ash.

CASE 0242 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
HUMERUS Proximal Shaft	7.20 x 10 ⁰¹	3.24 x 10 ⁰¹	7.68 x 10 ⁰⁰	6.31 x 10 ⁻⁰¹	5.35 x 10 ⁻⁰¹	1.65 x 10 ⁻⁰¹	8.64 x 10 ⁰¹	3.05 x 10 ⁰⁰
HYOID	4.2 x 10 ⁰⁰	9.4 x 10 ⁻⁰¹	1.6 x 10 ⁰¹	2.1 x 10 ⁰⁰	7.6 x 10 ⁻⁰¹	5.9 x 10 ⁻⁰¹	2.3 x 10 ⁰²	1.0 x 10 ⁰¹
ILIUM Body	2.06 x 10 ⁰²	6.46 x 10 ⁰¹	1.38 x 10 ⁰¹	1.11 x 10 ⁰⁰	1.62 x 10 ⁰⁰	4.90 x 10 ⁻⁰¹	1.66 x 10 ⁰²	6.89 x 10 ⁰⁰
ILIUM Crest	5.75 x 10 ⁰¹	1.47 x 10 ⁰¹	1.44 x 10 ⁰¹	1.05 x 10 ⁰⁰	1.55 x 10 ⁰⁰	5.01 x 10 ⁻⁰¹	1.83 x 10 ⁰²	7.33 x 10 ⁰⁰
ISCHIUM	2.45 x 10 ⁰²	7.06 x 10 ⁰¹	1.56 x 10 ⁰¹	1.16 x 10 ⁰⁰	1.96 x 10 ⁰⁰	4.49 x 10 ⁻⁰¹	2.21 x 10 ⁰²	7.71 x 10 ⁰⁰
LUNATE	3.7 x 10 ⁰⁰	9.2 x 10 ⁻⁰¹	1.1 x 10 ⁰¹	1.2 x 10 ⁰⁰	1.5 x 10 ⁰⁰	4.3 x 10 ⁻⁰¹	1.5 x 10 ⁰²	5.6 x 10 ⁰⁰
MANDIBLE	2.85 x 10 ⁰¹	1.53 x 10 ⁰¹	4.81 x 10 ⁰⁰	4.03 x 10 ⁻⁰¹	4.58 x 10 ⁻⁰¹	3.05 x 10 ⁻⁰¹	6.89 x 10 ⁰¹	3.22 x 10 ⁰⁰
MAXILLA	5.33 x 10 ⁰¹	1.16 x 10 ⁰¹	1.08 x 10 ⁰¹	7.35 x 10 ⁻⁰¹	9.68 x 10 ⁻⁰¹	2.31 x 10 ⁻⁰¹	1.29 x 10 ⁰²	4.01 x 10 ⁰⁰
METACARPAL # 1	8.90 x 10 ⁰⁰	2.72 x 10 ⁰⁰	8.21 x 10 ⁰⁰	8.80 x 10 ⁻⁰¹	7.30 x 10 ⁻⁰¹	2.92 x 10 ⁻⁰¹	1.16 x 10 ⁰²	4.14 x 10 ⁰⁰
METACARPAL # 2	1.26 x 10 ⁰¹	4.29 x 10 ⁰⁰	8.24 x 10 ⁰⁰	7.32 x 10 ⁻⁰¹	7.16 x 10 ⁻⁰¹	2.34 x 10 ⁻⁰¹	9.75 x 10 ⁰¹	3.32 x 10 ⁰⁰
METACARPAL # 3	1.16 x 10 ⁰¹	3.96 x 10 ⁰⁰	8.80 x 10 ⁰⁰	6.90 x 10 ⁻⁰¹	9.69 x 10 ⁻⁰¹	2.04 x 10 ⁻⁰¹	1.08 x 10 ⁰²	3.45 x 10 ⁰⁰
METACARPAL # 4	7.30 x 10 ⁰⁰	2.54 x 10 ⁰⁰	7.68 x 10 ⁰⁰	7.86 x 10 ⁻⁰¹	5.43 x 10 ⁻⁰¹	2.33 x 10 ⁻⁰¹	9.24 x 10 ⁰¹	3.44 x 10 ⁰⁰
METACARPAL # 5	7.00 x 10 ⁰⁰	2.33 x 10 ⁰⁰	7.65 x 10 ⁰⁰	8.03 x 10 ⁻⁰¹	7.63 x 10 ⁻⁰¹	2.54 x 10 ⁻⁰¹	8.14 x 10 ⁰¹	3.19 x 10 ⁰⁰
METATARSAL # 1	2.43 x 10 ⁰¹	7.86 x 10 ⁰⁰	7.80 x 10 ⁰⁰	5.34 x 10 ⁻⁰¹	8.10 x 10 ⁻⁰¹	1.45 x 10 ⁻⁰¹	9.90 x 10 ⁰¹	3.02 x 10 ⁰⁰
METATARSAL # 2	1.23 x 10 ⁰¹	4.24 x 10 ⁰⁰	8.02 x 10 ⁰⁰	6.62 x 10 ⁻⁰¹	6.23 x 10 ⁻⁰¹	1.71 x 10 ⁻⁰¹	8.04 x 10 ⁰¹	2.79 x 10 ⁰⁰
METATARSAL # 3	1.03 x 10 ⁰¹	3.55 x 10 ⁰⁰	8.87 x 10 ⁰⁰	7.69 x 10 ⁻⁰¹	7.04 x 10 ⁻⁰¹	2.22 x 10 ⁻⁰¹	9.12 x 10 ⁰¹	3.17 x 10 ⁰⁰
METATARSAL # 4	1.17 x 10 ⁰¹	4.04 x 10 ⁰⁰	9.28 x 10 ⁰⁰	9.91 x 10 ⁻⁰¹	8.66 x 10 ⁻⁰¹	2.12 x 10 ⁻⁰¹	1.02 x 10 ⁰²	3.32 x 10 ⁰⁰
METATARSAL # 5	1.25 x 10 ⁰¹	4.56 x 10 ⁰⁰	9.54 x 10 ⁰⁰	7.32 x 10 ⁻⁰¹	6.78 x 10 ⁻⁰¹	2.06 x 10 ⁻⁰¹	1.04 x 10 ⁰²	3.41 x 10 ⁰⁰
NAVICULAR	1.73 x 10 ⁰¹	5.23 x 10 ⁰⁰	1.09 x 10 ⁰¹	8.92 x 10 ⁻⁰¹	1.12 x 10 ⁰⁰	2.79 x 10 ⁻⁰¹	1.01 x 10 ⁰²	3.57 x 10 ⁰⁰
OCCIPITAL	4.40 x 10 ⁰¹	1.96 x 10 ⁰¹	7.56 x 10 ⁰⁰	5.01 x 10 ⁻⁰¹	4.58 x 10 ⁻⁰¹	2.38 x 10 ⁻⁰¹	9.14 x 10 ⁰¹	3.38 x 10 ⁰⁰
PARIETAL # 1	4.52 x 10 ⁰¹	2.66 x 10 ⁰¹	4.54 x 10 ⁰⁰	3.07 x 10 ⁻⁰¹	3.76 x 10 ⁻⁰¹	1.63 x 10 ⁻⁰¹	5.49 x 10 ⁰¹	2.40 x 10 ⁰⁰
PARIETAL # 2	7.66 x 10 ⁰¹	4.33 x 10 ⁰¹	4.38 x 10 ⁰⁰	2.77 x 10 ⁻⁰¹	3.23 x 10 ⁻⁰¹	6.92 x 10 ⁻⁰²	5.36 x 10 ⁰¹	1.68 x 10 ⁰⁰
PATELLA-Right	3.43 x 10 ⁰¹	7.85 x 10 ⁰⁰	1.27 x 10 ⁰¹	9.55 x 10 ⁻⁰¹	1.29 x 10 ⁰⁰	3.16 x 10 ⁻⁰¹	1.44 x 10 ⁰²	4.94 x 10 ⁰⁰
PISIFORM	1.3 x 10 ⁰⁰	2.7 x 10 ⁻⁰¹	1.9 x 10 ⁰¹	3.0 x 10 ⁰⁰	1.1 x 10 ⁰⁰	9.6 x 10 ⁻⁰¹	1.7 x 10 ⁰²	9.6 x 10 ⁰⁰
RADIUS Distal End	1.96 x 10 ⁰¹	4.89 x 10 ⁰⁰	1.08 x 10 ⁰¹	7.68 x 10 ⁻⁰¹	7.68 x 10 ⁻⁰¹	1.88 x 10 ⁻⁰¹	1.15 x 10 ⁰²	3.72 x 10 ⁰⁰

Right side of body was analyzed, unless noted otherwise.
Concentrations for bone are per kg of ash.

CASE 0242 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
RADIUS Distal Shaft	2.50 x 10 ⁰¹	8.40 x 10 ⁰⁰	4.54 x 10 ⁰⁰	4.89 x 10 ⁻⁰¹	5.68 x 10 ⁻⁰¹	1.58 x 10 ⁻⁰¹	4.39 x 10 ⁰¹	1.77 x 10 ⁰⁰
RADIUS Proximal End	7.80 x 10 ⁰⁰	2.16 x 10 ⁰⁰	1.67 x 10 ⁰¹	2.51 x 10 ⁰⁰	7.86 x 10 ⁻⁰¹	7.86 x 10 ⁻⁰¹	1.30 x 10 ⁰²	7.41 x 10 ⁰⁰
RADIUS Proximal Shaft	3.63 x 10 ⁰¹	1.13 x 10 ⁰¹	5.83 x 10 ⁰⁰	5.14 x 10 ⁻⁰¹	4.26 x 10 ⁻⁰¹	2.35 x 10 ⁻⁰¹	6.16 x 10 ⁰¹	2.90 x 10 ⁰⁰
RIB # 1	1.83 x 10 ⁰¹	4.60 x 10 ⁰⁰	1.70 x 10 ⁰¹	1.25 x 10 ⁰⁰	1.45 x 10 ⁰⁰	4.06 x 10 ⁻⁰¹	1.81 x 10 ⁰²	6.14 x 10 ⁰⁰
RIB # 2	1.80 x 10 ⁰¹	5.10 x 10 ⁰⁰	1.54 x 10 ⁰¹	1.18 x 10 ⁰⁰	8.63 x 10 ⁻⁰¹	2.88 x 10 ⁻⁰¹	1.75 x 10 ⁰²	5.80 x 10 ⁰⁰
RIB # 3	2.17 x 10 ⁰¹	5.87 x 10 ⁰⁰	1.97 x 10 ⁰¹	1.34 x 10 ⁰⁰	2.53 x 10 ⁰⁰	4.57 x 10 ⁻⁰¹	2.08 x 10 ⁰²	6.67 x 10 ⁰⁰
RIB # 4	3.13 x 10 ⁰¹	8.21 x 10 ⁰⁰	1.97 x 10 ⁰¹	1.12 x 10 ⁰⁰	1.98 x 10 ⁰⁰	3.08 x 10 ⁻⁰¹	2.06 x 10 ⁰²	6.21 x 10 ⁰⁰
RIB # 5	3.24 x 10 ⁰¹	9.33 x 10 ⁰⁰	1.75 x 10 ⁰¹	1.09 x 10 ⁰⁰	1.67 x 10 ⁰⁰	3.03 x 10 ⁻⁰¹	2.00 x 10 ⁰²	5.98 x 10 ⁰⁰
RIB # 6	3.31 x 10 ⁰¹	1.03 x 10 ⁰¹	1.70 x 10 ⁰¹	1.05 x 10 ⁰⁰	1.61 x 10 ⁰⁰	2.73 x 10 ⁻⁰¹	1.95 x 10 ⁰²	5.82 x 10 ⁰⁰
RIB # 7	4.36 x 10 ⁰¹	1.25 x 10 ⁰¹	1.71 x 10 ⁰¹	9.60 x 10 ⁻⁰¹	1.57 x 10 ⁰⁰	2.40 x 10 ⁻⁰¹	2.05 x 10 ⁰²	6.08 x 10 ⁰⁰
RIB # 8	3.00 x 10 ⁰¹	9.19 x 10 ⁰⁰	1.72 x 10 ⁰¹	1.09 x 10 ⁰⁰	1.89 x 10 ⁰⁰	3.27 x 10 ⁻⁰¹	2.14 x 10 ⁰²	6.48 x 10 ⁰⁰
RIB # 9	2.78 x 10 ⁰¹	8.55 x 10 ⁰⁰	1.74 x 10 ⁰¹	1.13 x 10 ⁰⁰	2.61 x 10 ⁰⁰	4.31 x 10 ⁻⁰¹	2.19 x 10 ⁰²	6.78 x 10 ⁰⁰
RIB # 10	2.37 x 10 ⁰¹	7.81 x 10 ⁰⁰	1.58 x 10 ⁰¹	1.07 x 10 ⁰⁰	1.94 x 10 ⁰⁰	3.41 x 10 ⁻⁰¹	2.04 x 10 ⁰²	6.31 x 10 ⁰⁰
RIB # 11	1.57 x 10 ⁰¹	5.63 x 10 ⁰⁰	1.35 x 10 ⁰¹	1.12 x 10 ⁰⁰	8.24 x 10 ⁻⁰¹	2.94 x 10 ⁻⁰¹	1.86 x 10 ⁰²	6.39 x 10 ⁰⁰
RIB # 12	1.21 x 10 ⁰¹	4.07 x 10 ⁰⁰	2.00 x 10 ⁰¹	1.68 x 10 ⁰⁰	2.35 x 10 ⁰⁰	6.19 x 10 ⁻⁰¹	2.25 x 10 ⁰²	8.13 x 10 ⁰⁰
SACRUM	3.47 x 10 ⁰²	6.50 x 10 ⁰¹	2.14 x 10 ⁰¹	1.41 x 10 ⁰⁰	1.95 x 10 ⁰⁰	3.85 x 10 ⁻⁰¹	2.92 x 10 ⁰²	8.82 x 10 ⁰⁰
SCAPHOID	5.50 x 10 ⁰⁰	1.66 x 10 ⁰⁰	1.00 x 10 ⁰¹	9.05 x 10 ⁻⁰¹	1.38 x 10 ⁰⁰	3.08 x 10 ⁻⁰¹	1.35 x 10 ⁰²	4.69 x 10 ⁰⁰
SCAPULA Spine	4.36 x 10 ⁰¹	1.37 x 10 ⁰¹	1.21 x 10 ⁰¹	9.48 x 10 ⁻⁰¹	1.29 x 10 ⁰⁰	3.16 x 10 ⁻⁰¹	1.51 x 10 ⁰²	5.10 x 10 ⁰⁰
SCAPULA Distal End	6.05 x 10 ⁰¹	2.59 x 10 ⁰¹	1.06 x 10 ⁰¹	7.33 x 10 ⁻⁰¹	6.81 x 10 ⁻⁰¹	2.18 x 10 ⁻⁰¹	1.13 x 10 ⁰²	4.07 x 10 ⁰⁰
SCAPULA Proximal End	3.82 x 10 ⁰¹	1.03 x 10 ⁰¹	1.46 x 10 ⁰¹	9.71 x 10 ⁻⁰¹	1.72 x 10 ⁰⁰	4.53 x 10 ⁻⁰¹	2.41 x 10 ⁰²	7.83 x 10 ⁰⁰
STERNUM	1.18 x 10 ⁰²	1.47 x 10 ⁰¹	2.52 x 10 ⁰¹	1.59 x 10 ⁰⁰	2.34 x 10 ⁰⁰	4.31 x 10 ⁻⁰¹	3.61 x 10 ⁰²	1.12 x 10 ⁰¹
TALUS	5.67 x 10 ⁰¹	1.68 x 10 ⁰¹	7.16 x 10 ⁰⁰	6.56 x 10 ⁻⁰¹	9.56 x 10 ⁻⁰¹	2.39 x 10 ⁻⁰¹	9.73 x 10 ⁰¹	3.35 x 10 ⁰⁰
TEMPORAL # 1	1.23 x 10 ⁰¹	6.72 x 10 ⁰⁰	5.63 x 10 ⁰⁰	6.70 x 10 ⁻⁰¹	6.68 x 10 ⁻⁰¹	3.46 x 10 ⁻⁰¹	6.16 x 10 ⁰¹	2.77 x 10 ⁰⁰

Right side of body was analyzed, unless noted otherwise.
Concentrations for bone are per kg of ash.

CASE 0242 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
TEMPORAL # 2	4.03 x 10 ⁰¹	1.71 x 10 ⁰¹	4.38 x 10 ⁰⁰	3.51 x 10 ⁻⁰¹	7.03 x 10 ⁻⁰¹	2.73 x 10 ⁻⁰¹	5.01 x 10 ⁰¹	2.36 x 10 ⁰⁰
TEMPORAL # 3	2.80 x 10 ⁰¹	8.66 x 10 ⁰⁰	8.64 x 10 ⁰⁰	6.93 x 10 ⁻⁰¹	9.47 x 10 ⁻⁰¹	2.51 x 10 ⁻⁰¹	1.02 x 10 ⁰²	3.52 x 10 ⁰⁰
TIBIA Distal End	7.35 x 10 ⁰¹	1.92 x 10 ⁰¹	8.73 x 10 ⁰⁰	7.10 x 10 ⁻⁰¹	9.36 x 10 ⁻⁰¹	2.25 x 10 ⁻⁰¹	9.73 x 10 ⁰¹	3.41 x 10 ⁰⁰
TIBIA Distal Shaft	1.22 x 10 ⁰²	6.17 x 10 ⁰¹	4.28 x 10 ⁰⁰	3.89 x 10 ⁻⁰¹	2.92 x 10 ⁻⁰¹	9.73 x 10 ⁻⁰²	4.54 x 10 ⁰¹	1.62 x 10 ⁰⁰
TIBIA Proximal End	2.19 x 10 ⁰²	5.07 x 10 ⁰¹	6.41 x 10 ⁰⁰	5.59 x 10 ⁻⁰¹	8.05 x 10 ⁻⁰¹	2.14 x 10 ⁻⁰¹	8.00 x 10 ⁰¹	2.83 x 10 ⁰⁰
TIBIA Proximal Shaft	1.30 x 10 ⁰²	4.42 x 10 ⁰¹	5.10 x 10 ⁰⁰	3.77 x 10 ⁻⁰¹	5.65 x 10 ⁻⁰¹	1.21 x 10 ⁻⁰¹	5.61 x 10 ⁰¹	1.91 x 10 ⁰⁰
TRAPEZIUM	4.00 x 10 ⁰⁰	9.7 x 10 ⁻⁰¹	1.4 x 10 ⁰¹	1.2 x 10 ⁰⁰	1.7 x 10 ⁰⁰	4.3 x 10 ⁻⁰¹	1.4 x 10 ⁰²	5.1 x 10 ⁰⁰
TRAPEZOIDE	2.60 x 10 ⁰⁰	8.5 x 10 ⁻⁰¹	1.2 x 10 ⁰¹	1.2 x 10 ⁰⁰	1.2 x 10 ⁰⁰	4.2 x 10 ⁻⁰¹	1.3 x 10 ⁰²	5.0 x 10 ⁰⁰
TRIANGULAR	2.70 x 10 ⁰⁰	7.2 x 10 ⁻⁰¹	1.1 x 10 ⁰¹	1.3 x 10 ⁰⁰	1.5 x 10 ⁰⁰	5.4 x 10 ⁻⁰¹	1.5 x 10 ⁰²	6.2 x 10 ⁰⁰
ULNA Distal End	6.20 x 10 ⁰⁰	1.24 x 10 ⁰⁰	1.27 x 10 ⁰¹	1.07 x 10 ⁰⁰	1.51 x 10 ⁰⁰	3.38 x 10 ⁻⁰¹	1.61 x 10 ⁰²	5.46 x 10 ⁰⁰
ULNA Distal Shaft	2.57 x 10 ⁰¹	8.60 x 10 ⁰⁰	5.56 x 10 ⁰⁰	5.28 x 10 ⁻⁰¹	3.89 x 10 ⁻⁰¹	1.40 x 10 ⁻⁰¹	4.83 x 10 ⁰¹	1.90 x 10 ⁰⁰
ULNA Proximal End	3.61 x 10 ⁰¹	1.44 x 10 ⁰¹	8.71 x 10 ⁰⁰	7.13 x 10 ⁻⁰¹	7.86 x 10 ⁻⁰¹	2.62 x 10 ⁻⁰¹	9.50 x 10 ⁰¹	3.68 x 10 ⁰⁰
ULNA Proximal Shaft	3.64 x 10 ⁰¹	1.13 x 10 ⁰¹	6.55 x 10 ⁰⁰	5.60 x 10 ⁻⁰¹	3.54 x 10 ⁻⁰¹	1.47 x 10 ⁻⁰¹	6.45 x 10 ⁰¹	2.36 x 10 ⁰⁰
VERTEBRA Cervical-1	2.33 x 10 ⁰¹	8.29 x 10 ⁰⁰	1.39 x 10 ⁰¹	1.05 x 10 ⁰⁰	1.25 x 10 ⁰⁰	3.62 x 10 ⁻⁰¹	2.17 x 10 ⁰²	7.23 x 10 ⁰⁰
VERTEBRA Cervical-3 Arch	1.19 x 10 ⁰¹	4.08 x 10 ⁰⁰	1.46 x 10 ⁰¹	1.24 x 10 ⁰⁰	1.31 x 10 ⁰⁰	3.94 x 10 ⁻⁰¹	2.00 x 10 ⁰²	7.06 x 10 ⁰⁰
VERTEBRA Cervical-3 Body	8.80 x 10 ⁰⁰	1.99 x 10 ⁰⁰	1.88 x 10 ⁰¹	2.01 x 10 ⁰⁰	2.56 x 10 ⁰⁰	7.41 x 10 ⁻⁰¹	3.47 x 10 ⁰²	1.25 x 10 ⁰¹
VERTEBRA Cervical-5 Arch	1.22 x 10 ⁰¹	3.93 x 10 ⁰⁰	1.59 x 10 ⁰¹	1.29 x 10 ⁰⁰	2.22 x 10 ⁰⁰	5.05 x 10 ⁻⁰¹	2.46 x 10 ⁰²	8.15 x 10 ⁰⁰
VERTEBRA Cervical-5 Body	9.90 x 10 ⁰⁰	1.77 x 10 ⁰⁰	1.92 x 10 ⁰¹	1.87 x 10 ⁰⁰	3.14 x 10 ⁰⁰	9.19 x 10 ⁻⁰¹	3.73 x 10 ⁰²	1.36 x 10 ⁰¹
VERTEBRA Cervical-7 Arch	1.65 x 10 ⁰¹	5.61 x 10 ⁰⁰	1.70 x 10 ⁰¹	1.21 x 10 ⁰⁰	1.78 x 10 ⁰⁰	4.27 x 10 ⁻⁰¹	2.30 x 10 ⁰²	7.52 x 10 ⁰⁰

Right side of body was analyzed, unless noted otherwise.
Concentrations for bone are per kg of ash.

CASE 0242 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
VERTEBRA Cervical-7 Body	1.17 x 10 ⁰¹	2.21 x 10 ⁰⁰	2.28 x 10 ⁰¹	2.17 x 10 ⁰⁰	2.34 x 10 ⁰⁰	7.21 x 10 ⁻⁰¹	3.35 x 10 ⁰²	1.17 x 10 ⁰¹
VERTEBRA Lumbar-1 Arch	3.11 x 10 ⁰¹	1.04 x 10 ⁰¹	1.65 x 10 ⁰¹	9.26 x 10 ⁻⁰¹	1.90 x 10 ⁰⁰	3.10 x 10 ⁻⁰¹	2.55 x 10 ⁰²	7.68 x 10 ⁰⁰
VERTEBRA Lumbar-1 Body	5.87 x 10 ⁰¹	7.30 x 10 ⁰⁰	2.32 x 10 ⁰¹	1.28 x 10 ⁰⁰	3.84 x 10 ⁰⁰	4.57 x 10 ⁻⁰¹	4.20 x 10 ⁰²	1.22 x 10 ⁰¹
VERTEBRA Lumbar-3 Arch	3.98 x 10 ⁰¹	1.31 x 10 ⁰¹	1.52 x 10 ⁰¹	9.15 x 10 ⁻⁰¹	1.82 x 10 ⁰⁰	2.79 x 10 ⁻⁰¹	2.49 x 10 ⁰²	7.46 x 10 ⁰⁰
VERTEBRA Lumbar-3 Body	6.73 x 10 ⁰¹	8.42 x 10 ⁰⁰	2.75 x 10 ⁰¹	1.56 x 10 ⁰⁰	3.28 x 10 ⁰⁰	4.54 x 10 ⁻⁰¹	4.21 x 10 ⁰²	1.23 x 10 ⁰¹
VERTEBRA Lumbar-5 Arch	4.15 x 10 ⁰¹	1.32 x 10 ⁰¹	1.44 x 10 ⁰¹	8.71 x 10 ⁻⁰¹	1.91 x 10 ⁰⁰	2.65 x 10 ⁻⁰¹	2.30 x 10 ⁰²	6.60 x 10 ⁰⁰
VERTEBRA Lumbar-5 Body	7.09 x 10 ⁰¹	1.03 x 10 ⁰¹	2.15 x 10 ⁰¹	1.24 x 10 ⁰⁰	3.19 x 10 ⁰⁰	4.03 x 10 ⁻⁰¹	4.08 x 10 ⁰²	1.17 x 10 ⁰¹
VERTEBRA Thoracic-1 Arch	2.03 x 10 ⁰¹	6.79 x 10 ⁰⁰	1.65 x 10 ⁰¹	1.14 x 10 ⁰⁰	1.08 x 10 ⁰⁰	3.15 x 10 ⁻⁰¹	2.48 x 10 ⁰²	8.77 x 10 ⁰⁰
VERTEBRA Thoracic-1 Body	1.56 x 10 ⁰¹	2.83 x 10 ⁰⁰	1.78 x 10 ⁰¹	1.74 x 10 ⁰⁰	3.26 x 10 ⁰⁰	7.46 x 10 ⁻⁰¹	3.34 x 10 ⁰²	1.16 x 10 ⁰¹
VERTEBRA Thoracic-11 Arch	2.59 x 10 ⁰¹	8.61 x 10 ⁰⁰	1.52 x 10 ⁰¹	9.14 x 10 ⁻⁰¹	1.56 x 10 ⁰⁰	2.63 x 10 ⁻⁰¹	2.27 x 10 ⁰²	6.74 x 10 ⁰⁰
VERTEBRA Thoracic-11 Body	4.24 x 10 ⁰¹	6.62 x 10 ⁰⁰	2.46 x 10 ⁰¹	1.43 x 10 ⁰⁰	3.12 x 10 ⁰⁰	4.43 x 10 ⁻⁰¹	4.15 x 10 ⁰²	1.20 x 10 ⁰¹
VERTEBRA Thoracic-3 Arch	2.49 x 10 ⁰¹	7.24 x 10 ⁰⁰	1.58 x 10 ⁰¹	9.71 x 10 ⁻⁰¹	2.64 x 10 ⁰⁰	4.58 x 10 ⁻⁰¹	2.53 x 10 ⁰²	8.36 x 10 ⁰⁰
VERTEBRA Thoracic-3 Body	8.72 x 10 ⁰⁰	1.55 x 10 ⁰⁰	2.41 x 10 ⁰¹	2.50 x 10 ⁰⁰	2.91 x 10 ⁰⁰	9.16 x 10 ⁻⁰¹	3.17 x 10 ⁰²	1.17 x 10 ⁰¹
VERTEBRA Thoracic-5 Arch	2.45 x 10 ⁰¹	7.34 x 10 ⁰⁰	1.52 x 10 ⁰¹	9.81 x 10 ⁻⁰¹	1.57 x 10 ⁰⁰	4.34 x 10 ⁻⁰¹	1.97 x 10 ⁰²	7.84 x 10 ⁰⁰
VERTEBRA Thoracic-5 Body	2.84 x 10 ⁰¹	4.58 x 10 ⁰⁰	1.58 x 10 ⁰¹	1.22 x 10 ⁰⁰	2.57 x 10 ⁰⁰	5.26 x 10 ⁻⁰¹	3.12 x 10 ⁰²	9.77 x 10 ⁰⁰
VERTEBRA Thoracic-7 Arch	2.30 x 10 ⁰¹	7.84 x 10 ⁰⁰	1.69 x 10 ⁰¹	1.07 x 10 ⁰⁰	1.96 x 10 ⁰⁰	3.38 x 10 ⁻⁰¹	2.30 x 10 ⁰²	7.00 x 10 ⁰⁰
VERTEBRA Thoracic-7 Body	2.45 x 10 ⁰¹	3.16 x 10 ⁰⁰	2.83 x 10 ⁰¹	1.98 x 10 ⁰⁰	3.12 x 10 ⁰⁰	5.98 x 10 ⁻⁰¹	4.17 x 10 ⁰²	1.28 x 10 ⁰¹

Right side of body was analyzed, unless noted otherwise.
Concentrations for bone are per kg of ash.

CASE 0242 BONE

TISSUE	WET WT g	ASH WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
VERTEBRA Thoracic-9 Arch	2.46×10^{01}	8.02×10^{00}	1.61×10^{01}	9.65×10^{-01}	1.87×10^{00}	3.98×10^{-01}	2.32×10^{02}	8.09×10^{00}
VERTEBRA Thoracic-9 Body	3.20×10^{01}	4.35×10^{00}	2.23×10^{01}	1.50×10^{00}	2.79×10^{00}	5.45×10^{-01}	3.59×10^{02}	1.11×10^{01}

Right side of body was analyzed, unless noted otherwise.
Concentrations for bone are per kg of ash.

CASE 0242 VISCERA and MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
ADRENAL-Left	1.80 x 10 ⁰¹	8.52 x 10 ⁻⁰²	2.22 x 10 ⁻⁰²	9.27 x 10 ⁻⁰³	1.11 x 10 ⁻⁰²	2.94 x 10 ⁰⁰	1.37 x 10 ⁻⁰¹
ADRENAL-Right	2.10 x 10 ⁰¹	7.46 x 10 ⁻⁰²	1.90 x 10 ⁻⁰²	2.22 x 10 ⁻⁰²	1.11 x 10 ⁻⁰²	2.48 x 10 ⁰⁰	1.19 x 10 ⁻⁰¹
AORTA	2.24 x 10 ⁰¹	7.05 x 10 ⁻⁰¹	7.74 x 10 ⁻⁰²	8.33 x 10 ⁻⁰²	2.68 x 10 ⁻⁰²	1.47 x 10 ⁰¹	5.12 x 10 ⁻⁰¹
AORTA - Arch	4.16 x 10 ⁰¹	1.12 x 10 ⁰⁰	8.33 x 10 ⁻⁰²	1.55 x 10 ⁻⁰¹	2.88 x 10 ⁻⁰²	2.31 x 10 ⁰¹	7.01 x 10 ⁻⁰¹
AORTA - Descending	5.11 x 10 ⁰¹	9.95 x 10 ⁻⁰¹	6.52 x 10 ⁻⁰²	1.54 x 10 ⁻⁰¹	2.35 x 10 ⁻⁰²	1.88 x 10 ⁰¹	5.45 x 10 ⁻⁰¹
BLADDER	6.27 x 10 ⁰¹	8.51 x 10 ⁻⁰²	1.17 x 10 ⁻⁰²	4.25 x 10 ⁻⁰³	4.78 x 10 ⁻⁰³	3.85 x 10 ⁻⁰¹	2.76 x 10 ⁻⁰²
BLADDER-Scrap	2.25 x 10 ⁰²	1.43 x 10 ⁻⁰¹	1.42 x 10 ⁻⁰²	6.67 x 10 ⁻⁰³	2.61 x 10 ⁻⁰³	1.39 x 10 ⁰⁰	4.95 x 10 ⁻⁰²
CARTILAGE	2.60 x 10 ⁰⁰	1.92 x 10 ⁰¹	2.00 x 10 ⁰⁰	6.13 x 10 ⁻⁰¹	4.09 x 10 ⁻⁰¹	1.51 x 10 ⁰²	6.13 x 10 ⁰⁰
Costal Right - 1							
CARTILAGE	1.80 x 10 ⁰⁰	1.19 x 10 ⁰¹	1.63 x 10 ⁰⁰	4.63 x 10 ⁻⁰¹	4.63 x 10 ⁻⁰¹	1.02 x 10 ⁰²	5.41 x 10 ⁰⁰
Costal Right - 2							
CARTILAGE	1.90 x 10 ⁰⁰	1.35 x 10 ⁰¹	1.61 x 10 ⁰⁰	1.18 x 10 ⁰⁰	6.94 x 10 ⁻⁰¹	1.22 x 10 ⁰²	6.11 x 10 ⁰⁰
Costal Right - 3							
CARTILAGE	1.70 x 10 ⁰⁰	1.27 x 10 ⁰¹	1.80 x 10 ⁰⁰	9.20 x 10 ⁻⁰¹	5.36 x 10 ⁻⁰¹	1.34 x 10 ⁰²	6.51 x 10 ⁰⁰
Costal Right - 4							
CARTILAGE	2.10 x 10 ⁰⁰	1.52 x 10 ⁰¹	1.90 x 10 ⁰⁰	1.14 x 10 ⁰⁰	1.02 x 10 ⁰⁰	1.03 x 10 ⁰²	5.97 x 10 ⁰⁰
Costal Right - 5							
CEREBELLUM	9.30 x 10 ⁰¹	2.76 x 10 ⁻⁰²	5.74 x 10 ⁻⁰³	8.97 x 10 ⁻⁰³	4.30 x 10 ⁻⁰³	1.30 x 10 ⁰⁰	5.41 x 10 ⁻⁰²
CEREBRUM	1.26 x 10 ⁰³	2.33 x 10 ⁻⁰²	1.98 x 10 ⁻⁰³	4.52 x 10 ⁻⁰³	6.08 x 10 ⁻⁰⁴	5.49 x 10 ⁻⁰¹	1.61 x 10 ⁻⁰²
DIAPHRAGM	6.00 x 10 ⁰¹	9.64 x 10 ⁻⁰¹	5.78 x 10 ⁻⁰²	1.38 x 10 ⁻⁰¹	1.89 x 10 ⁻⁰²	2.15 x 10 ⁰¹	5.96 x 10 ⁻⁰¹
EAR-Left	2.88 x 10 ⁰¹	2.46 x 10 ⁻⁰¹	3.01 x 10 ⁻⁰²	1.04 x 10 ⁻⁰²	6.95 x 10 ⁻⁰³	1.06 x 10 ⁰⁰	6.48 x 10 ⁻⁰²
EAR-Right	2.58 x 10 ⁰¹	2.27 x 10 ⁻⁰¹	3.10 x 10 ⁻⁰²	9.03 x 10 ⁻⁰³	7.74 x 10 ⁻⁰³	1.12 x 10 ⁰⁰	6.85 x 10 ⁻⁰²
EPIDURA	1.87 x 10 ⁰¹	2.36 x 10 ⁰⁰	1.37 x 10 ⁻⁰¹	5.27 x 10 ⁻⁰²	1.69 x 10 ⁻⁰²	5.11 x 10 ⁰⁰	2.07 x 10 ⁻⁰¹
ESOPHAGUS	4.89 x 10 ⁰¹	7.44 x 10 ⁻⁰¹	8.87 x 10 ⁻⁰²	1.71 x 10 ⁻⁰²	1.71 x 10 ⁻⁰²	1.25 x 10 ⁰¹	4.78 x 10 ⁻⁰¹
EYE-Left	7.30 x 10 ⁰⁰	1.92 x 10 ⁻⁰¹	5.49 x 10 ⁻⁰²	1.83 x 10 ⁻⁰²	1.83 x 10 ⁻⁰²	1.19 x 10 ⁰⁰	1.28 x 10 ⁻⁰¹
EYE-Right	6.70 x 10 ⁰⁰	3.17 x 10 ⁻⁰¹	7.42 x 10 ⁻⁰²	-2.47 x 10 ⁻⁰²	1.98 x 10 ⁻⁰²	1.58 x 10 ⁰⁰	1.54 x 10 ⁻⁰¹
FAT-Abdominal	2.25 x 10 ⁰²	1.43 x 10 ⁻⁰¹	1.42 x 10 ⁻⁰²	6.82 x 10 ⁻⁰³	2.67 x 10 ⁻⁰³		
FAT-Mesenteric	1.12 x 10 ⁰³	1.55 x 10 ⁻⁰²	1.20 x 10 ⁻⁰³			1.40 x 10 ⁻⁰¹	4.90 x 10 ⁻⁰³
FINGERNAIL	1.10 x 10 ⁰⁰	1.52 x 10 ⁻⁰¹	1.82 x 10 ⁻⁰¹	5.79 x 10 ⁻⁰¹	4.05 x 10 ⁻⁰¹	1.41 x 10 ⁰¹	1.56 x 10 ⁰⁰

CASE 0242 VISCERA and MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
HAIR-Head	1.27 x 10 ⁰¹	1.05 x 10 ⁻⁰¹	3.59 x 10 ⁻⁰²	3.24 x 10 ⁻⁰²	2.70 x 10 ⁻⁰²	2.51 x 10 ⁰⁰	1.47 x 10 ⁻⁰¹
HEART	5.41 x 10 ⁰²	2.96 x 10 ⁻⁰¹	1.39 x 10 ⁻⁰²	2.31 x 10 ⁻⁰²	6.93 x 10 ⁻⁰³	7.26 x 10 ⁰⁰	2.19 x 10 ⁻⁰¹
INTESTINE Large	2.67 x 10 ⁰²	4.23 x 10 ⁻⁰²	4.00 x 10 ⁻⁰³	5.00 x 10 ⁻⁰³	2.00 x 10 ⁻⁰³	2.79 x 10 ⁻⁰¹	1.55 x 10 ⁻⁰²
INTESTINE Small	4.63 x 10 ⁰²	1.44 x 10 ⁻⁰¹	7.13 x 10 ⁻⁰³	6.12 x 10 ⁻⁰³	1.20 x 10 ⁻⁰³	6.22 x 10 ⁻⁰¹	2.09 x 10 ⁻⁰²
KIDNEY-Left	1.61 x 10 ⁰²	1.79 x 10 ⁻⁰¹	1.14 x 10 ⁻⁰²	1.31 x 10 ⁻⁰²	2.69 x 10 ⁻⁰³	1.73 x 10 ⁰⁰	5.34 x 10 ⁻⁰²
KIDNEY-Right	1.51 x 10 ⁰²	1.85 x 10 ⁻⁰¹	1.55 x 10 ⁻⁰²	1.55 x 10 ⁻⁰²	4.87 x 10 ⁻⁰³	1.47 x 10 ⁰⁰	5.53 x 10 ⁻⁰²
LARYNX	4.53 x 10 ⁰¹	2.50 x 10 ⁰⁰	5.15 x 10 ⁻⁰¹	1.10 x 10 ⁻⁰¹	2.21 x 10 ⁻⁰¹	1.23 x 10 ⁰¹	1.14 x 10 ⁰⁰
LIVER	1.62 x 10 ⁰³	6.48 x 10 ⁰⁰	1.54 x 10 ⁰⁰	1.84 x 10 ⁰⁰	2.47 x 10 ⁻⁰¹	2.41 x 10 ⁰²	7.11 x 10 ⁰⁰
LUNG-Left	5.89 x 10 ⁰²	3.44 x 10 ⁰¹	1.95 x 10 ⁰⁰	7.00 x 10 ⁰⁰	6.57 x 10 ⁻⁰¹	9.90 x 10 ⁰²	2.69 x 10 ⁰¹
LUNG-Right	7.53 x 10 ⁰²	2.66 x 10 ⁰¹	1.54 x 10 ⁰⁰	5.31 x 10 ⁰⁰	5.13 x 10 ⁻⁰¹	7.41 x 10 ⁰²	2.03 x 10 ⁰¹
LYMPH NODE Tracheobronchial # 1	5.10 x 10 ⁰⁰	1.90 x 10 ⁰³	3.10 x 10 ⁰²	2.78 x 10 ⁰²	3.76 x 10 ⁰¹	4.39 x 10 ⁰⁴	1.24 x 10 ⁰³
LYMPH NODE Tracheobronchial # 2	6.00 x 10 ⁻⁰¹	1.43 x 10 ⁰³	1.31 x 10 ⁰²	3.61 x 10 ⁰²	5.83 x 10 ⁰¹	5.30 x 10 ⁰⁴	1.61 x 10 ⁰³
LYMPH NODE- Mediastinal	5.70 x 10 ⁰⁰	1.98 x 10 ⁰³	7.95 x 10 ⁰¹	3.74 x 10 ⁰²	1.92 x 10 ⁰¹	6.02 x 10 ⁰⁴	1.59 x 10 ⁰³
MESENTERY Large and Small Intestine	1.12 x 10 ⁰³	1.55 x 10 ⁻⁰²	1.19 x 10 ⁻⁰³	1.77 x 10 ⁻⁰³	3.74 x 10 ⁻⁰⁴	1.40 x 10 ⁻⁰¹	4.90 x 10 ⁻⁰³
OMENTUM	1.97 x 10 ⁰³	2.05 x 10 ⁰⁰	1.65 x 10 ⁻⁰¹	4.26 x 10 ⁻⁰¹	7.18 x 10 ⁻⁰²	6.50 x 10 ⁰¹	1.93 x 10 ⁰⁰
OMENTUM Fluid	1.98 x 10 ⁰²	4.98 x 10 ⁻⁰²	1.06 x 10 ⁻⁰²	6.72 x 10 ⁻⁰³	3.90 x 10 ⁻⁰³	8.43 x 10 ⁻⁰¹	
PANCREAS	1.17 x 10 ⁰²	8.25 x 10 ⁻⁰²	1.19 x 10 ⁻⁰²	4.55 x 10 ⁻⁰³	4.55 x 10 ⁻⁰³	9.44 x 10 ⁻⁰¹	4.49 x 10 ⁻⁰²
PENIS	5.75 x 10 ⁰¹	3.18 x 10 ⁻⁰¹	2.55 x 10 ⁻⁰²	-8.70 x 10 ⁻⁰³	6.96 x 10 ⁻⁰³	1.05 x 10 ⁰⁰	5.74 x 10 ⁻⁰²
PERIPROSTATIC	2.25 x 10 ⁰²	1.43 x 10 ⁻⁰¹	1.43 x 10 ⁻⁰²	6.81 x 10 ⁻⁰³	2.64 x 10 ⁻⁰³	1.39 x 10 ⁰⁰	4.94 x 10 ⁻⁰²
PERITRACHEA	2.80 x 10 ⁰¹					3.06 x 10 ⁰³	8.32 x 10 ⁰¹
PERITRACHEAL Scrap # 2	4.81 x 10 ⁰¹	1.78 x 10 ⁰¹	8.36 x 10 ⁻⁰¹	4.09 x 10 ⁰⁰	3.09 x 10 ⁻⁰¹	6.25 x 10 ⁰²	1.71 x 10 ⁰¹
PITUITARY	4.00 x 10 ⁻⁰¹	2.44 x 10 ⁻⁰¹	2.85 x 10 ⁻⁰¹	1.22 x 10 ⁻⁰¹	2.44 x 10 ⁻⁰¹	1.10 x 10 ⁰¹	1.30 x 10 ⁰⁰
PROSTATE	3.43 x 10 ⁰¹	7.00 x 10 ⁻⁰²	1.65 x 10 ⁻⁰²	9.67 x 10 ⁻⁰⁴	9.67 x 10 ⁻⁰³	6.24 x 10 ⁻⁰¹	4.28 x 10 ⁻⁰²

CASE 0242 VISCERA and MISCELLANEOUS TISSUES

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
SALIVARY GLAND	1.57 x 10 ⁰¹	1.17 x 10 ⁻⁰¹	2.76 x 10 ⁻⁰²	2.12 x 10 ⁻⁰³	1.06 x 10 ⁻⁰²	1.83 x 10 ⁰⁰	1.10 x 10 ⁻⁰¹
SALIVARY GLAND Sublingual	5.60 x 10 ⁰⁰	1.73 x 10 ⁻⁰¹	5.95 x 10 ⁻⁰²	3.57 x 10 ⁻⁰²	3.57 x 10 ⁻⁰²	2.82 x 10 ⁰⁰	2.32 x 10 ⁻⁰¹
SALIVARY GLAND Submaxillary	1.27 x 10 ⁰¹	1.13 x 10 ⁻⁰¹	3.41 x 10 ⁻⁰²	3.41 x 10 ⁻⁰²	2.36 x 10 ⁻⁰²	5.75 x 10 ⁻⁰¹	7.09 x 10 ⁻⁰²
SCROTUM	1.22 x 10 ⁰²	2.43 x 10 ⁻⁰¹	1.78 x 10 ⁻⁰²	4.38 x 10 ⁻⁰³	2.46 x 10 ⁻⁰³	6.29 x 10 ⁻⁰¹	2.82 x 10 ⁻⁰²
SPLEEN	2.05 x 10 ⁰²	1.53 x 10 ⁰⁰	6.34 x 10 ⁻⁰²	3.48 x 10 ⁻⁰¹	5.86 x 10 ⁻⁰²	5.76 x 10 ⁰¹	1.67 x 10 ⁰⁰
STOMACH	1.99 x 10 ⁰²	1.25 x 10 ⁻⁰¹	8.89 x 10 ⁻⁰³	9.90 x 10 ⁻⁰³	2.18 x 10 ⁻⁰³	9.24 x 10 ⁻⁰¹	3.05 x 10 ⁻⁰²
TEAR GLAND	2.46 x 10 ⁰¹	5.42 x 10 ⁻⁰²	1.45 x 10 ⁻⁰²	1.36 x 10 ⁻⁰²	8.13 x 10 ⁻⁰³	5.92 x 10 ⁻⁰¹	5.15 x 10 ⁻⁰²
TESTIS-Left	1.17 x 10 ⁰¹	4.56 x 10 ⁻⁰²	2.28 x 10 ⁻⁰²	4.27 x 10 ⁻⁰²	2.28 x 10 ⁻⁰²	5.25 x 10 ⁰⁰	2.42 x 10 ⁻⁰¹
TESTIS-Right	1.18 x 10 ⁰¹	1.13 x 10 ⁻⁰¹	3.68 x 10 ⁻⁰²	4.25 x 10 ⁻⁰²	2.27 x 10 ⁻⁰²	7.07 x 10 ⁰⁰	3.06 x 10 ⁻⁰¹
THYROID	3.30 x 10 ⁰⁰	1.94 x 10 ⁻⁰¹	9.17 x 10 ⁻⁰²	7.14 x 10 ⁻⁰²	6.12 x 10 ⁻⁰²	2.73 x 10 ⁰⁰	2.85 x 10 ⁻⁰¹
TOENAILS	1.30 x 10 ⁰⁰	1.22 x 10 ⁰⁰	3.31 x 10 ⁻⁰¹	1.02 x 10 ⁻⁰¹	1.27 x 10 ⁻⁰¹	2.83 x 10 ⁰¹	1.53 x 10 ⁰⁰
TONGUE	7.56 x 10 ⁰¹	1.47 x 10 ⁻⁰¹	1.50 x 10 ⁻⁰²	1.94 x 10 ⁻⁰²	4.85 x 10 ⁻⁰³	1.68 x 10 ⁰⁰	6.13 x 10 ⁻⁰²
TRACHEA	2.15 x 10 ⁰¹	1.78 x 10 ⁰⁰	1.08 x 10 ⁰⁰	1.55 x 10 ⁻⁰¹	4.64 x 10 ⁻⁰¹	1.32 x 10 ⁰¹	1.86 x 10 ⁰⁰
TRACHEA Scrap # 1	2.80 x 10 ⁰¹	1.05 x 10 ⁰²	5.48 x 10 ⁰⁰	2.10 x 10 ⁰¹	1.90 x 10 ⁰⁰	3.06 x 10 ⁰³	8.32 x 10 ⁰¹
TRACHEA Scrap # 2	4.81 x 10 ⁰¹	1.78 x 10 ⁰¹	8.66 x 10 ⁻⁰¹	4.09 x 10 ⁰⁰	3.12 x 10 ⁻⁰¹	6.52 x 10 ⁰²	1.71 x 10 ⁰¹

CASE 0242 MUSCLE

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
BACK Left # 1	9.26 x 10 ⁰²	5.65 x 10 ⁻⁰²	5.58 x 10 ⁻⁰³	2.88 x 10 ⁻⁰³	1.44 x 10 ⁻⁰³	4.76 x 10 ⁻⁰¹	2.02 x 10 ⁻⁰²
BACK Left # 2	1.95 x 10 ⁰²	1.03 x 10 ⁻⁰¹	0.00 x 10 ⁰⁰	3.42 x 10 ⁻⁰³	7.69 x 10 ⁻⁰³	1.53 x 10 ⁰⁰	7.00 x 10 ⁻⁰²
BACK Left # 3	5.03 x 10 ⁰²	8.74 x 10 ⁻⁰²	9.27 x 10 ⁻⁰³	2.32 x 10 ⁻⁰³	2.98 x 10 ⁻⁰³	4.91 x 10 ⁻⁰¹	2.52 x 10 ⁻⁰²
BACK Left # 4	4.69 x 10 ⁰²	1.04 x 10 ⁻⁰¹	1.10 x 10 ⁻⁰²	4.62 x 10 ⁻⁰³	3.91 x 10 ⁻⁰³	6.21 x 10 ⁻⁰¹	2.95 x 10 ⁻⁰²
BACK Right # 1	1.56 x 10 ⁰³	4.64 x 10 ⁻⁰²	3.95 x 10 ⁻⁰³	1.70 x 10 ⁻⁰³	1.06 x 10 ⁻⁰³	3.97 x 10 ⁻⁰¹	1.47 x 10 ⁻⁰²
BACK Right # 2	6.21 x 10 ⁰²	3.89 x 10 ⁻⁰²	5.64 x 10 ⁻⁰³	2.15 x 10 ⁻⁰³	2.15 x 10 ⁻⁰³	3.11 x 10 ⁻⁰¹	1.69 x 10 ⁻⁰²
BACK Right # 3	1.39 x 10 ⁰³	6.54 x 10 ⁻⁰²	5.02 x 10 ⁻⁰³	7.18 x 10 ⁻⁰³	1.80 x 10 ⁻⁰³	1.04 x 10 ⁰⁰	3.27 x 10 ⁻⁰²
BACK Right # 4	1.72 x 10 ⁰³	2.21 x 10 ⁻⁰¹	9.80 x 10 ⁻⁰³	3.40 x 10 ⁻⁰³	1.07 x 10 ⁻⁰³	3.83 x 10 ⁻⁰¹	1.37 x 10 ⁻⁰²
CALF Left # 1	1.10 x 10 ⁰³	9.08 x 10 ⁻⁰²	6.37 x 10 ⁻⁰³	7.73 x 10 ⁻⁰³	1.82 x 10 ⁻⁰³	6.48 x 10 ⁻⁰¹	2.26 x 10 ⁻⁰²
CALF Left # 2	7.02 x 10 ⁰²	1.06 x 10 ⁻⁰¹	9.02 x 10 ⁻⁰³	8.32 x 10 ⁻⁰³	2.61 x 10 ⁻⁰³	6.47 x 10 ⁻⁰¹	2.66 x 10 ⁻⁰²
CALF Right # 1	9.98 x 10 ⁰²	1.01 x 10 ⁻⁰¹	7.18 x 10 ⁻⁰³	5.02 x 10 ⁻⁰³	1.67 x 10 ⁻⁰³	5.43 x 10 ⁻⁰¹	2.05 x 10 ⁻⁰²
CALF Right # 2	7.01 x 10 ⁰²	1.06 x 10 ⁻⁰¹	8.80 x 10 ⁻⁰³	7.38 x 10 ⁻⁰³	2.38 x 10 ⁻⁰³	6.72 x 10 ⁻⁰¹	2.81 x 10 ⁻⁰²
CLAVICLE Left	2.85 x 10 ⁰²	1.96 x 10 ⁻⁰¹	1.87 x 10 ⁻⁰²	3.22 x 10 ⁻⁰²	8.18 x 10 ⁻⁰³	3.42 x 10 ⁰⁰	1.25 x 10 ⁻⁰¹
CLAVICLE Right	2.48 x 10 ⁰²	2.33 x 10 ⁻⁰¹	2.22 x 10 ⁻⁰²	1.07 x 10 ⁻⁰²	5.04 x 10 ⁻⁰³	2.60 x 10 ⁰⁰	1.00 x 10 ⁻⁰¹
FLUID	3.08 x 10 ⁰²	4.33 x 10 ⁻⁰³	2.05 x 10 ⁻⁰³	1.08 x 10 ⁻⁰³	1.08 x 10 ⁻⁰³	5.42 x 10 ⁻⁰³	1.95 x 10 ⁻⁰³
FOOT Left	4.18 x 10 ⁰²	1.82 x 10 ⁻⁰¹	1.53 x 10 ⁻⁰²	1.05 x 10 ⁻⁰²	4.46 x 10 ⁻⁰³	1.24 x 10 ⁰⁰	4.88 x 10 ⁻⁰²
FOOT Right	3.94 x 10 ⁰²	2.05 x 10 ⁻⁰¹	1.52 x 10 ⁻⁰²	9.48 x 10 ⁻⁰³	3.39 x 10 ⁻⁰³	1.13 x 10 ⁰⁰	4.67 x 10 ⁻⁰²
FOREARM - Left	5.10 x 10 ⁰²	7.28 x 10 ⁻⁰²	8.16 x 10 ⁻⁰³	3.27 x 10 ⁻⁰³	2.29 x 10 ⁻⁰³	4.52 x 10 ⁻⁰¹	2.29 x 10 ⁻⁰²
FOREARM - Right	6.83 x 10 ⁰²	7.45 x 10 ⁻⁰²	7.08 x 10 ⁻⁰³	6.60 x 10 ⁻⁰³	2.44 x 10 ⁻⁰³	4.75 x 10 ⁻⁰¹	2.15 x 10 ⁻⁰²
FRONT Left # 1	8.05 x 10 ⁰²	1.58 x 10 ⁻⁰¹	1.12 x 10 ⁻⁰²	4.76 x 10 ⁻⁰³	1.86 x 10 ⁻⁰³	5.68 x 10 ⁻⁰¹	2.38 x 10 ⁻⁰²
FRONT Left # 2	4.37 x 10 ⁰²	1.78 x 10 ⁻⁰¹	1.37 x 10 ⁻⁰²	7.25 x 10 ⁻⁰³	4.20 x 10 ⁻⁰³	1.20 x 10 ⁰⁰	5.49 x 10 ⁻⁰²
FRONT Left # 3	1.03 x 10 ⁰³	7.29 x 10 ⁻⁰²	6.62 x 10 ⁻⁰³	7.58 x 10 ⁻⁰³	2.10 x 10 ⁻⁰³	4.81 x 10 ⁻⁰¹	2.00 x 10 ⁻⁰²
FRONT Left # 4	7.78 x 10 ⁰²	9.32 x 10 ⁻⁰²	7.71 x 10 ⁻⁰³	1.07 x 10 ⁻⁰³	1.71 x 10 ⁻⁰³	4.73 x 10 ⁻⁰¹	2.14 x 10 ⁻⁰²
FRONT Right # 1	1.33 x 10 ⁰³	1.12 x 10 ⁻⁰¹	7.04 x 10 ⁻⁰³	1.33 x 10 ⁻⁰²	2.52 x 10 ⁻⁰³	1.73 x 10 ⁰⁰	5.51 x 10 ⁻⁰²
FRONT Right # 2	3.31 x 10 ⁰²	6.20 x 10 ⁻⁰²	1.06 x 10 ⁻⁰²	3.53 x 10 ⁻⁰³	3.53 x 10 ⁻⁰³	1.37 x 10 ⁻⁰¹	1.41 x 10 ⁻⁰²
FRONT Right # 3	1.26 x 10 ⁰³	2.25 x 10 ⁻⁰²	3.84 x 10 ⁻⁰³	1.58 x 10 ⁻⁰³	1.06 x 10 ⁻⁰³	3.06 x 10 ⁻⁰¹	1.26 x 10 ⁻⁰²
FRONT Right # 4	1.48 x 10 ⁰³	2.11 x 10 ⁻⁰¹	1.07 x 10 ⁻⁰²	8.43 x 10 ⁻⁰³	2.25 x 10 ⁻⁰³	4.29 x 10 ⁻⁰¹	1.96 x 10 ⁻⁰²

CASE 0242 MUSCLE

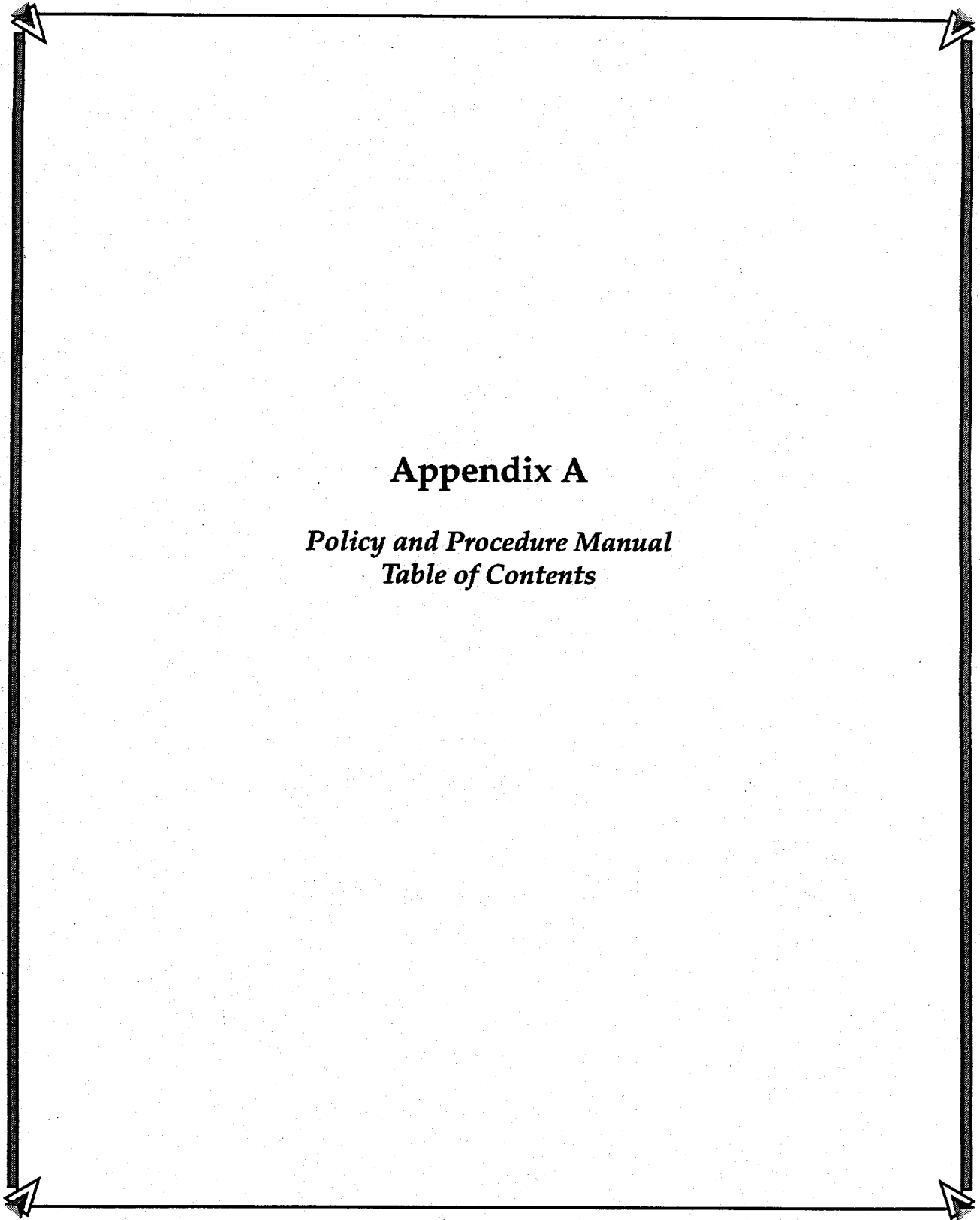
TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
HAND Left	1.45 x 10 ⁰²	2.19 x 10 ⁻⁰¹	2.67 x 10 ⁻⁰²	3.31 x 10 ⁻⁰²	1.01 x 10 ⁻⁰²	1.72 x 10 ⁰⁰	8.55 x 10 ⁻⁰²
HAND Right	1.60 x 10 ⁰²	1.74 x 10 ⁻⁰¹	2.16 x 10 ⁻⁰²	9.15 x 10 ⁻⁰³	6.65 x 10 ⁻⁰³	8.18 x 10 ⁻⁰¹	5.08 x 10 ⁻⁰²
HEAD	4.32 x 10 ⁰²	1.59 x 10 ⁻⁰¹	1.20 x 10 ⁻⁰²	1.24 x 10 ⁻⁰²	3.71 x 10 ⁻⁰³	1.37 x 10 ⁰⁰	5.03 x 10 ⁻⁰²
ILIOPOAS	6.38 x 10 ⁰²	2.59 x 10 ⁻⁰¹	1.67 x 10 ⁻⁰²	2.25 x 10 ⁻⁰²	4.44 x 10 ⁻⁰³	3.28 x 10 ⁰⁰	9.88 x 10 ⁻⁰²
MUSCLE	2.77 x 10 ⁰²			3.32 x 10 ⁻⁰²	8.44 x 10 ⁻⁰³	3.52 x 10 ⁰⁰	1.28 x 10 ⁻⁰¹
RIBS	9.76 x 10 ⁰²	3.42 x 10 ⁻⁰¹	1.61 x 10 ⁻⁰²	3.24 x 10 ⁻⁰²	3.93 x 10 ⁻⁰³	5.84 x 10 ⁰⁰	1.61 x 10 ⁻⁰¹
SCAPULA Left	3.08 x 10 ⁰²			1.08 x 10 ⁻⁰³	1.08 x 10 ⁻⁰³		
SCAPULA Right	9.84 x 10 ⁰¹	1.33 x 10 ⁻⁰¹	2.69 x 10 ⁻⁰²	0.00 x 10 ⁰⁰	1.53 x 10 ⁻⁰²	7.22 x 10 ⁻⁰¹	7.07 x 10 ⁻⁰²
THIGHT Left # 1	2.62 x 10 ⁰³	5.84 x 10 ⁻⁰²	3.63 x 10 ⁻⁰³	4.20 x 10 ⁻⁰³	8.91 x 10 ⁻⁰⁴	5.03 x 10 ⁻⁰¹	1.58 x 10 ⁻⁰²
THIGHT Left # 2	2.60 x 10 ⁰³	5.91 x 10 ⁻⁰²	3.72 x 10 ⁻⁰³	3.92 x 10 ⁻⁰³	1.03 x 10 ⁻⁰³	4.72 x 10 ⁻⁰¹	1.54 x 10 ⁻⁰²
THIGHT Right # 1	2.07 x 10 ⁰³	6.60 x 10 ⁻⁰²	4.50 x 10 ⁻⁰³	2.57 x 10 ⁻⁰³	8.02 x 10 ⁻⁰⁴	4.96 x 10 ⁻⁰¹	1.69 x 10 ⁻⁰²
THIGHT Right # 2	2.51 x 10 ⁰³	5.55 x 10 ⁻⁰²	3.46 x 10 ⁻⁰³	4.38 x 10 ⁻⁰³	9.96 x 10 ⁻⁰⁴	5.00 x 10 ⁻⁰¹	1.59 x 10 ⁻⁰²
TORSO	2.39 x 10 ⁰²	2.42 x 10 ⁻⁰¹	2.30 x 10 ⁻⁰²	1.11 x 10 ⁻⁰²	5.57 x 10 ⁻⁰³	2.69 x 10 ⁰⁰	1.04 x 10 ⁻⁰¹
UPPER ARM Left	1.28 x 10 ⁰³	6.13 x 10 ⁻⁰²	4.80 x 10 ⁻⁰³	2.73 x 10 ⁻⁰³	1.30 x 10 ⁻⁰³	5.62 x 10 ⁻⁰¹	2.13 x 10 ⁻⁰²
UPPER ARM Right	1.29 x 10 ⁰³	4.91 x 10 ⁻⁰²	4.52 x 10 ⁻⁰³	2.32 x 10 ⁻⁰³	1.93 x 10 ⁻⁰³	5.26 x 10 ⁻⁰¹	2.23 x 10 ⁻⁰²
VERTEBRAE	5.77 x 10 ⁰²	4.62 x 10 ⁻⁰¹	2.31 x 10 ⁻⁰²	5.87 x 10 ⁻⁰²	7.23 x 10 ⁻⁰³	7.49 x 10 ⁰⁰	2.12 x 10 ⁻⁰¹

CASE 0242 SKIN

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
BACK Left # 1	5.13 x 10 ⁰²	6.69 x 10 ⁻⁰²	7.80 x 10 ⁻⁰³	2.27 x 10 ⁻⁰³	1.62 x 10 ⁻⁰³	2.81 x 10 ⁻⁰¹	1.62 x 10 ⁻⁰²
BACK Left # 2	1.83 x 10 ⁰²	1.22 x 10 ⁻⁰¹	1.82 x 10 ⁻⁰²	1.82 x 10 ⁻⁰³	4.54 x 10 ⁻⁰³	3.57 x 10 ⁻⁰¹	3.01 x 10 ⁻⁰²
BACK Left # 3	4.58 x 10 ⁰²	8.85 x 10 ⁻⁰²	9.83 x 10 ⁻⁰³	1.82 x 10 ⁻⁰³	1.82 x 10 ⁻⁰³	2.10 x 10 ⁻⁰¹	1.46 x 10 ⁻⁰²
BACK Left # 4	7.18 x 10 ⁰²	1.41 x 10 ⁻⁰¹	1.05 x 10 ⁻⁰²	2.08 x 10 ⁻⁰³	1.62 x 10 ⁻⁰³	3.41 x 10 ⁻⁰¹	1.70 x 10 ⁻⁰²
BACK Right # 1	3.18 x 10 ⁰²	7.71 x 10 ⁻⁰²	1.05 x 10 ⁻⁰²	5.23 x 10 ⁻⁰³	3.66 x 10 ⁻⁰³	4.84 x 10 ⁻⁰¹	2.99 x 10 ⁻⁰²
BACK Right # 2	2.19 x 10 ⁰²	1.53 x 10 ⁻⁰¹	1.83 x 10 ⁻⁰²			5.09 x 10 ⁻⁰¹	3.73 x 10 ⁻⁰²
BACK Right # 3	2.12 x 10 ⁰²	1.64 x 10 ⁻⁰¹	1.89 x 10 ⁻⁰²	3.15 x 10 ⁻⁰³	4.73 x 10 ⁻⁰³	4.89 x 10 ⁻⁰¹	3.38 x 10 ⁻⁰²
BACK Right # 4	2.34 x 10 ⁰²	2.27 x 10 ⁰⁰	9.61 x 10 ⁻⁰²	-2.85 x 10 ⁻⁰³	3.56 x 10 ⁻⁰³	4.23 x 10 ⁻⁰¹	2.92 x 10 ⁻⁰²
CALF Left # 1	5.56 x 10 ⁰²	6.81 x 10 ⁻⁰²	7.80 x 10 ⁻⁰³	8.40 x 10 ⁻⁰³	2.70 x 10 ⁻⁰³	5.70 x 10 ⁻⁰¹	2.55 x 10 ⁻⁰²
CALF Left # 2	3.40 x 10 ⁰²	8.29 x 10 ⁻⁰²	1.08 x 10 ⁻⁰²	7.85 x 10 ⁻⁰³	3.43 x 10 ⁻⁰³	1.14 x 10 ⁰⁰	4.86 x 10 ⁻⁰²
CALF Right # 1	6.01 x 10 ⁰²	6.54 x 10 ⁻⁰²	7.21 x 10 ⁻⁰³	5.82 x 10 ⁻⁰³	2.22 x 10 ⁻⁰³	5.95 x 10 ⁻⁰¹	2.61 x 10 ⁻⁰²
CALF Right # 2	2.59 x 10 ⁰²	9.33 x 10 ⁻⁰²	1.22 x 10 ⁻⁰²	6.44 x 10 ⁻⁰³	3.86 x 10 ⁻⁰³	1.22 x 10 ⁰⁰	5.53 x 10 ⁻⁰²
FLUID	1.54 x 10 ⁰²	4.98 x 10 ⁻⁰³	1.29 x 10 ⁻⁰³	-1.00 x 10 ⁻⁰⁴	5.00 x 10 ⁻⁰⁴	6.60 x 10 ⁻⁰³	1.41 x 10 ⁻⁰³
FOOT Left	2.36 x 10 ⁰²	1.82 x 10 ⁻⁰¹	1.98 x 10 ⁻⁰²	-2.82 x 10 ⁻⁰³	4.93 x 10 ⁻⁰³	1.31 x 10 ⁰⁰	6.07 x 10 ⁻⁰²
FOOT Right	2.33 x 10 ⁰²	1.62 x 10 ⁻⁰¹	1.79 x 10 ⁻⁰²	8.60 x 10 ⁻⁰³	5.02 x 10 ⁻⁰³	1.04 x 10 ⁰⁰	5.16 x 10 ⁻⁰²
FOREARM Right	3.20 x 10 ⁰²	9.59 x 10 ⁻⁰²	1.25 x 10 ⁻⁰²	1.04 x 10 ⁻⁰²	4.17 x 10 ⁻⁰³	8.34 x 10 ⁻⁰¹	3.91 x 10 ⁻⁰²
FOREARM Left	3.71 x 10 ⁰²	1.11 x 10 ⁻⁰¹	1.17 x 10 ⁻⁰²	4.93 x 10 ⁻⁰³	3.14 x 10 ⁻⁰³	7.71 x 10 ⁻⁰¹	3.50 x 10 ⁻⁰²
FRONT Left # 1	9.98 x 10 ⁰²	3.00 x 10 ⁻⁰¹	1.49 x 10 ⁻⁰²	4.67 x 10 ⁻⁰²	4.67 x 10 ⁻⁰³	3.56 x 10 ⁰⁰	1.01 x 10 ⁻⁰¹
FRONT Left # 2	7.55 x 10 ⁰²	4.99 x 10 ⁻⁰²	5.96 x 10 ⁻⁰³	1.10 x 10 ⁻⁰³	1.77 x 10 ⁻⁰³	2.37 x 10 ⁻⁰¹	1.32 x 10 ⁻⁰²
FRONT Left # 3	1.50 x 10 ⁰³	6.23 x 10 ⁻⁰²	4.45 x 10 ⁻⁰³	8.83 x 10 ⁻⁰⁴	6.63 x 10 ⁻⁰⁴	1.85 x 10 ⁻⁰¹	8.34 x 10 ⁻⁰³
FRONT Left # 4	1.51 x 10 ⁰³	1.65 x 10 ⁻⁰¹	8.51 x 10 ⁻⁰³	2.22 x 10 ⁻⁰³	8.62 x 10 ⁻⁰⁴	2.75 x 10 ⁻⁰¹	1.10 x 10 ⁻⁰²
FRONT Right # 1	3.38 x 10 ⁰²	1.17 x 10 ⁻⁰¹	1.28 x 10 ⁻⁰²	4.93 x 10 ⁻⁰³	2.96 x 10 ⁻⁰³	6.03 x 10 ⁻⁰¹	3.16 x 10 ⁻⁰²
FRONT Right # 2	8.88 x 10 ⁰¹	1.16 x 10 ⁻⁰¹	3.67 x 10 ⁻⁰²	-7.51 x 10 ⁻⁰³	1.13 x 10 ⁻⁰²	5.86 x 10 ⁻⁰¹	5.61 x 10 ⁻⁰²
FRONT Right # 3	1.86 x 10 ⁰²	1.60 x 10 ⁻⁰¹	2.06 x 10 ⁻⁰²	6.28 x 10 ⁻⁰³	5.39 x 10 ⁻⁰³	5.40 x 10 ⁻⁰¹	3.77 x 10 ⁻⁰²
FRONT Right # 4	2.02 x 10 ⁰²	3.17 x 10 ⁻⁰¹	2.89 x 10 ⁻⁰²			2.60 x 10 ⁻⁰¹	2.50 x 10 ⁻⁰²
HAND Left	1.58 x 10 ⁰²	3.70 x 10 ⁻⁰¹	3.60 x 10 ⁻⁰²	5.93 x 10 ⁻⁰²	1.48 x 10 ⁻⁰²	4.07 x 10 ⁰⁰	1.58 x 10 ⁻⁰¹
HAND Right	1.58 x 10 ⁰²	2.06 x 10 ⁻⁰¹	2.64 x 10 ⁻⁰²	1.06 x 10 ⁻⁰²	6.33 x 10 ⁻⁰³	1.56 x 10 ⁰⁰	8.13 x 10 ⁻⁰²

CASE 0242 SKIN

TISSUE	WET WT g	Am-241 Bq/kg	SD Am-241 Bq/kg	Pu-238 Bq/kg	SD Pu-238 Bq/kg	Pu-239 Bq/kg	SD Pu-239 Bq/kg
HEAD	7.23×10^{-02}	9.45×10^{-02}	8.30×10^{-03}	8.98×10^{-03}	2.53×10^{-03}	8.64×10^{-01}	3.27×10^{-02}
SKIN	1.54×10^{-02}	4.98×10^{-03}	1.30×10^{-03}	-1.00×10^{-04}	5.00×10^{-04}		
THIGH Left # 1	1.25×10^{-03}	5.58×10^{-02}	4.95×10^{-03}	1.33×10^{-03}	9.33×10^{-04}	3.15×10^{-01}	1.34×10^{-02}
THIGH Left # 2	1.66×10^{-03}	5.80×10^{-02}	4.43×10^{-03}	2.72×10^{-03}	1.01×10^{-03}	2.38×10^{-01}	9.86×10^{-03}
THIGH Right # 1	1.76×10^{-03}	7.31×10^{-02}	5.03×10^{-03}	9.50×10^{-04}	9.50×10^{-04}	2.30×10^{-01}	1.01×10^{-02}
THIGH Right # 2	1.12×10^{-03}	6.07×10^{-02}	4.93×10^{-03}	3.44×10^{-03}	1.49×10^{-03}	3.24×10^{-01}	1.42×10^{-02}
UPPER ARM Left	8.88×10^{-02}	7.89×10^{-02}	6.38×10^{-03}	3.95×10^{-03}	1.50×10^{-03}	3.43×10^{-01}	1.52×10^{-02}
UPPER ARM Right	9.19×10^{-02}	5.08×10^{-02}	5.44×10^{-03}	1.45×10^{-03}	1.09×10^{-03}	3.38×10^{-01}	1.60×10^{-02}



Appendix A

Policy and Procedure Manual Table of Contents

United States Transuranium and Uranium Registries

POLICIES AND PROCEDURES MANUAL

Table of Contents

Organizational Chart

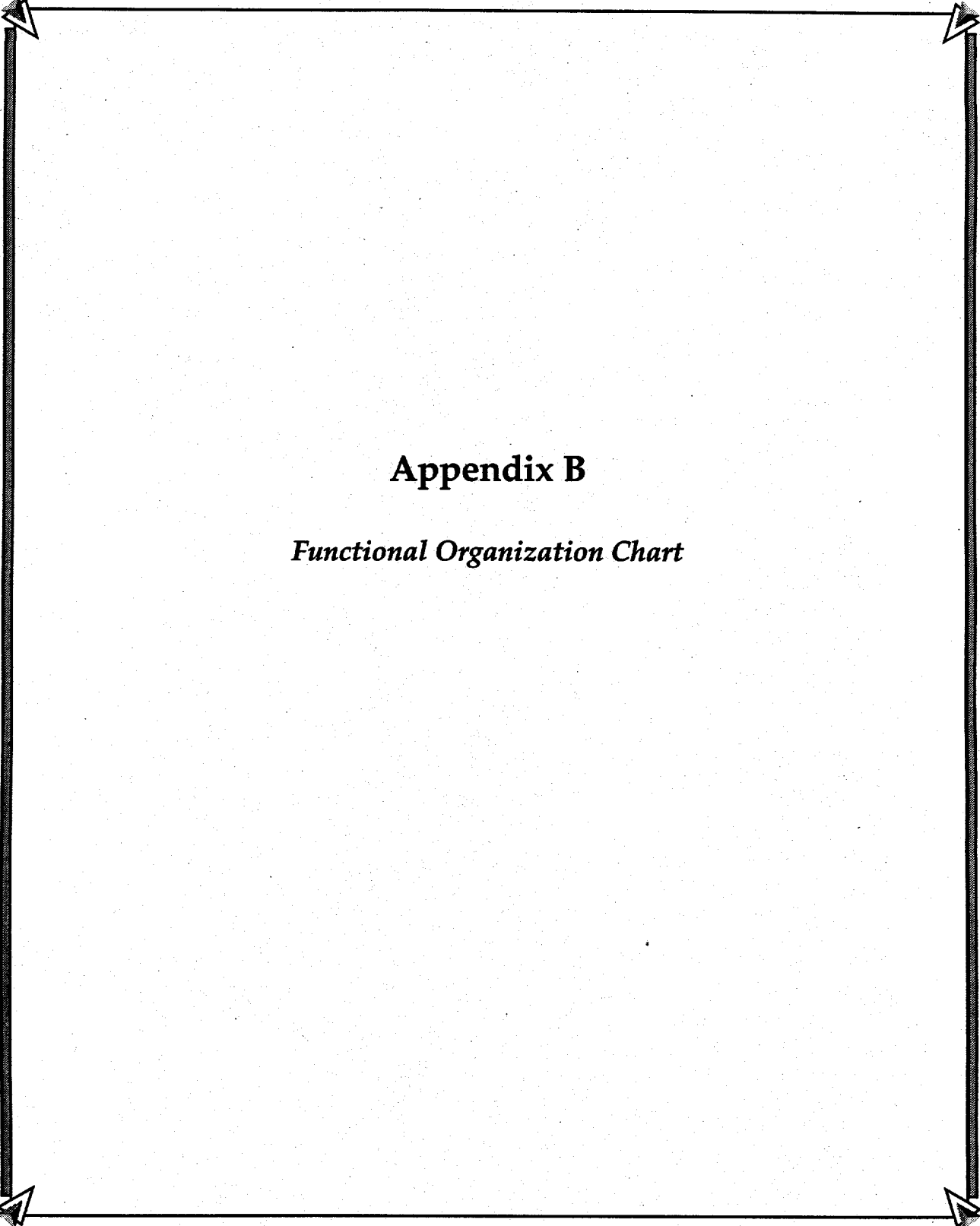
P101	Purpose and Objectives
P102	Positions
102.1	Director
102.2	Administrative Manager
102.3	Student Research Assistants
102.4	Medical Consultant
102.5	Scientific Staff
102.6	Curator, NHRTR
102.7	Research Technologist, NHRTR
102.8	Research Technologist
102.9	Associate Director
102.10	Computer Support Analyst
102.11	Secretary Senior
P103	Communications Policy
P104	Advisory Committee
P105	Authorship on Manuscripts
P106	Scientific Collaboration and Data Access
F106	Statement of Confidentiality
P107	Publications Policy
R107	Publications Numbering System
P108	Classified Time-off Policy
F108	Request for Time-off
P109	Building and Records Safety and Security
P150	Handling Donated Human Tissue

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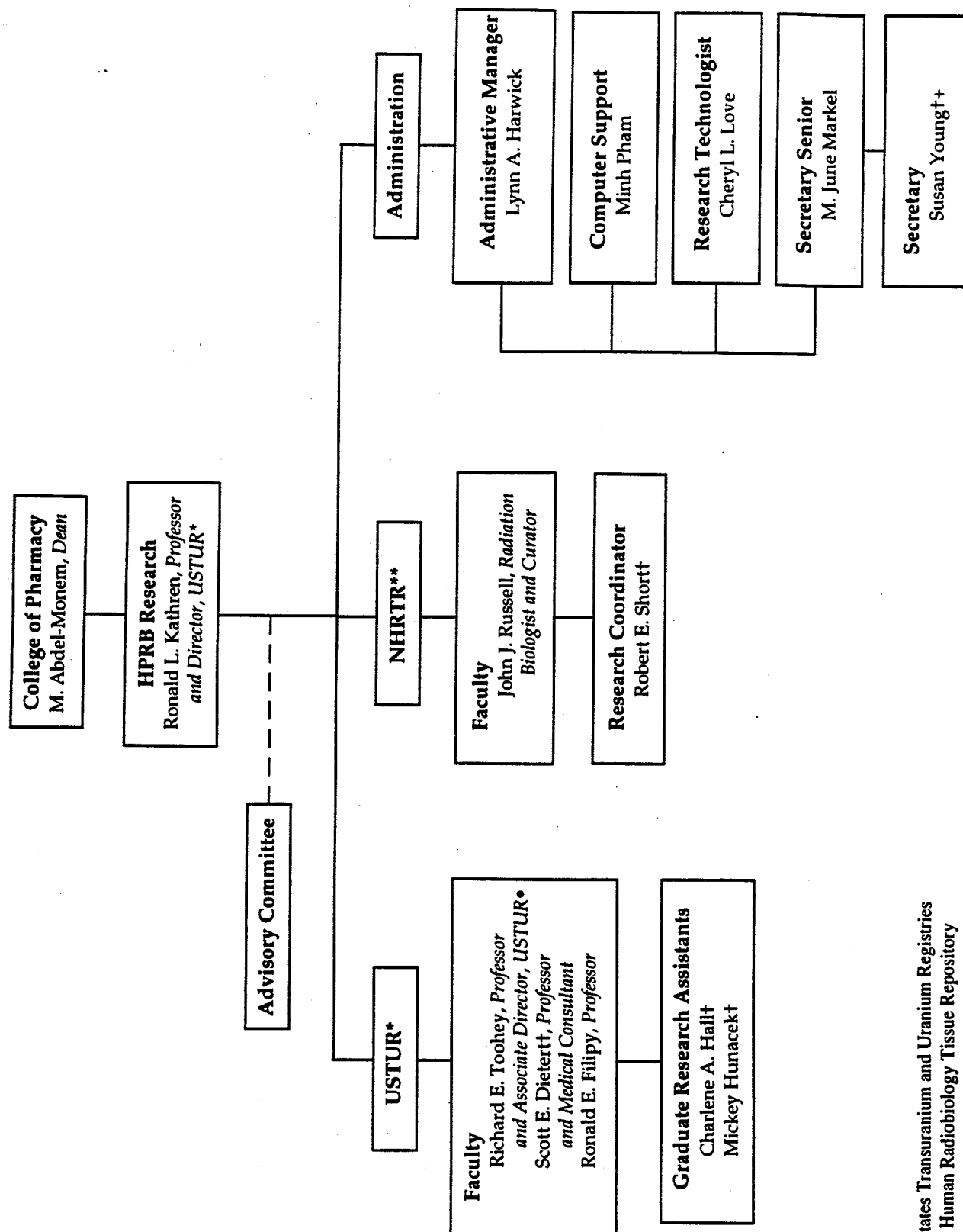
P151	Acquisition of Tissues
P201	Registrant Enrollment and Renewal
P202	Criteria for Registrant Acceptance
P203	Autopsies on Registrants
F203	Autopsy Prosector Form
P204	Classification of Registrant Status
P205	Visitor Access to the NHRTR
F205	Information and Informed Consent
R401	Instructions to Pathologist
F401	Autopsy Checklist
R402	Arranging for the Autopsy of a Deceased Registrant
F402a	Whole Body Specimen Worksheet
F402b	Routine Specimen Worksheet
R403	Off Hours Notification



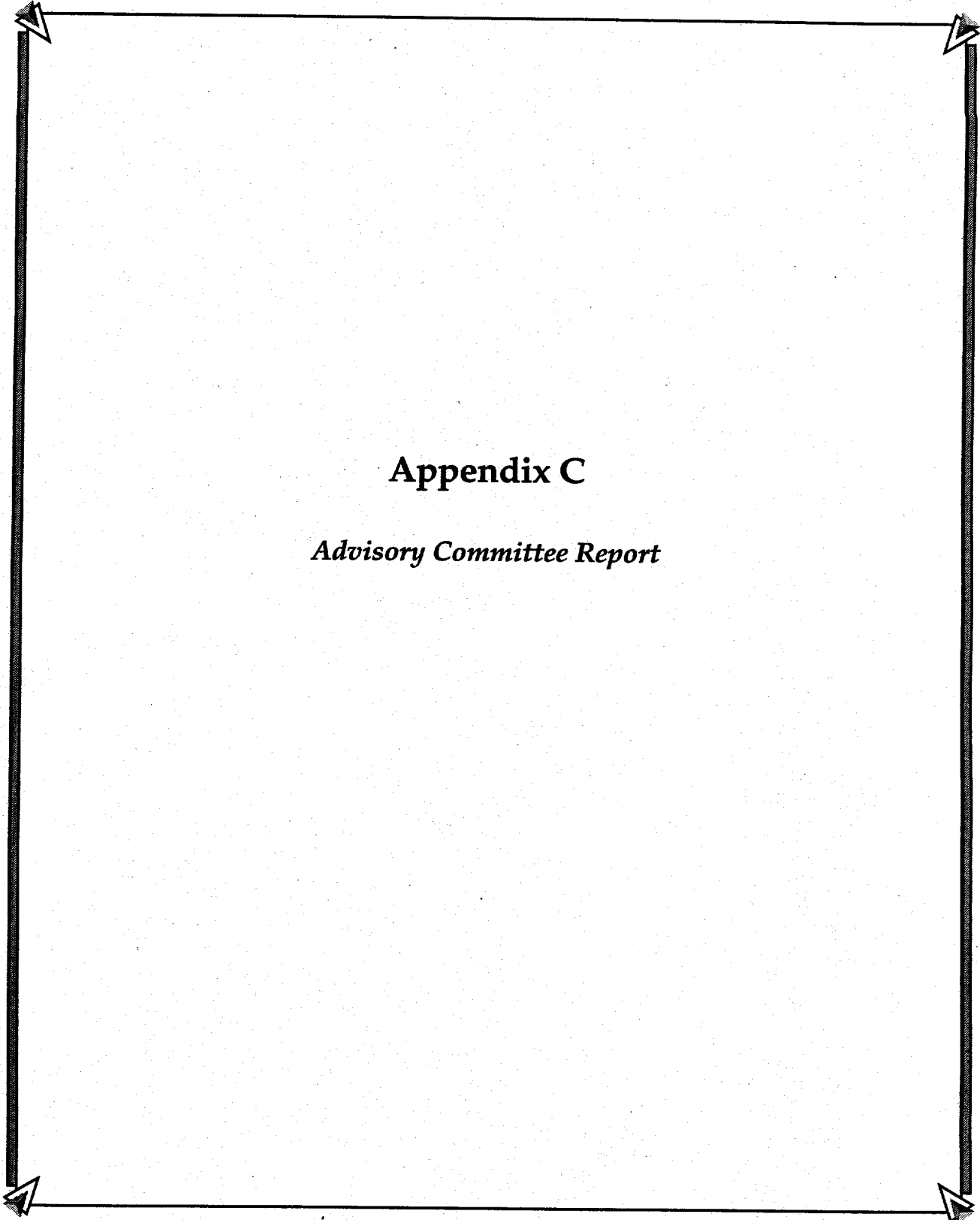
Appendix B

Functional Organization Chart

Functional Organizational Chart for Health Physics and Radiation Biology Research (HPRB)



- * United States Transuranium and Uranium Registries
- ** National Human Radiobiology Tissue Repository
- † Half-time
- + Added April 1994
- Resigned June 1994



Appendix C

Advisory Committee Report

Keith J. Schiager, PhD, CHP

3671 S. Millbrook Terrace
Salt Lake City, UT 84106

1 March 1994

TO: USTUR Advisory Committee Members and Meeting Attendees

RE: Final Report on the Committee Meeting held on 5-6 October 1993

The attached report is for distribution to all who attended the October meeting. It contains minor changes from the draft version that was circulated to the Committee members. The most significant change is some degree of prioritization of the Committee's recommendations is indicated in the introductory paragraph on page 3 under "Advisory Committee Recommendations."



1993 REPORT OF THE ADVISORY COMMITTEE TO THE U. S. TRANSURANIUM AND URANIUM REGISTRIES

Venue:

The Advisory Committee met in the Max Benitz Library Conference Room on the Washington State University Tri-Cities Campus in Richland, Washington, on 5 and 6 October 1993.

Attendance:

The meeting was called to order by Chairman Voelz at 8:30 am on 5 October 1993 with everyone introducing themselves.

Advisory Committee members present: Borje K. Gustafsson, Kenneth G. W. Inn, Keith J. Schiager, MaryBelle Thompson, Roy C. Thompson and George L. Voelz.

Registries staff members present for part or all of the meeting: Ronald L. Kathren, Director and Professor of Health Physics; Ronald L. Filipy, Professor of Radiobiology; John J. Russell, Curator, National Human Radiobiological Tissue Repository (NHRTR); Richard E. Toohey, Professor of Health Physics; Scott E. Dietert, Medical Consultant and Professor of Pathology; Cheryl L. Love, Research Technologist; Minh Pham, Computer Consultant; Lynn A. Harwick, Administrative Assistant; Charlene A. Hall, Graduate Research Assistant; and Mickey Hunacek, Graduate Research Assistant.

The Department of Energy was represented during part or all of the meeting by: Barbara G. Brooks, USTUR Program Manager, Office of Epidemiology and Health Surveillance; Dan White, Lead Contract Specialist for Administration; Robert Petty, Contract Specialist; Donald R. Segna, Program Manager, Richland Field Office; Darryl Green, Safety Engineer; and Hollie Mooers, Health Systems Specialist. Cooperating DOE laboratories were represented by: Robert W. Bistline, Rocky Flats Plant; and James F. McInroy, Los Alamos National Laboratory.

Additional Washington State University personnel in attendance for part or all of the meeting: M. M. Abdul-Monem, Dean, College of Pharmacy; and Diana Scoles, Manager, Finance and Administration, College of Pharmacy. Ahmed Nevassi, Professor of Fisheries, University of Washington, was also present.

Executive Session:

As the first order of business, immediately after introductions, outgoing Chairman Voelz convened an executive session of the Advisory Committee. Keith Schiager and Roy Thompson were elected Chairman and Vice-Chairman, respectively, each for a two-year term. Continuing in the tradition of the outgoing Chairman, Schiager agreed to prepare the report of the meeting, with Roy Thompson serving as a backup.

Staff Presentations:

The activities and accomplishments of the Registries during the preceding year were presented by various members of the staff, closely following the agenda (copy attached). The presentations afforded ample opportunity for Committee members to raise questions and engage in dialog with the staff members. In the report of the 1992 Advisory Committee meeting, we commented on the "remarkable administrative changes" that had taken place during the previous year. Again this year, the Committee was very favorably impressed with the accomplishments of the Registries staff.

In summarizing the activities of the year, Director Kathren noted specific contributions of individual staff members and the new activities being planned. The database has been started using Paradox; the administrative and post mortem data have been entered. The staff expects to have all the radioanalytical and health physics data entered within two years. However, the coding schemes for the data have not been developed. Ronald Filipy will be establishing a histopathology laboratory; Scott Dietert plans an investigation of uranium effects in the kidneys. As a master's thesis topic, Charlene Hall plans to develop a method to determine total skeletal content of actinides from a limited number of samples. Mickey Hunacek has completed a literature search and tabulation of risk coefficients for internal alpha emitters.

There were a number of contacts with the news media during the year. As expected, several of the stories resulting from media attention were less than favorable. However, one noteworthy exception was an article in the March 1993 issue of the Chronicles of Higher Education.

John Russell reported on the Whole Body Donor Program. From 1 July 1992 through 1 October 1993, six autopsies were performed on whole-body donors in addition to ten regular autopsies. The laboratory is now saving half of each sample for future studies in areas such as radiobiology, genetic alteration, retrospective dosimetry and validity of neoplasia markers.

Richard Toohey discussed plans for setting up a new radioanalytical laboratory at WSU. He presented the goals for the radiochemistry program and the justifications for conducting this aspect of the Registries mission at WSU. The figures presented by Toohey indicated that for 2,000 samples per year, the cost per analysis at WSU would be approximately \$150, compared with \$270 at LANL and more than \$300 by other (non-DOE) laboratories. The lab could conceivably be established in the Nuclear Radiation Center at Pullman, which has under utilized radiochemistry laboratories and counting rooms. The major new need would be for alpha spectroscopy equipment, at an estimated cost of approximately \$100,000. The staff proposal is for a 6-12 month period to phase out the LANL operation and phase in the work at WSU.

The Five Year Plan was presented by Ronald Kathren. The Plan contains three primary short-term goals: (1) relocation of radiochemistry support to WSU, (2) organization of Registries files, and (3) updated computerized data base. In addition to several secondary short-term goals, a few scientific studies were identified as already in progress or to be initiated soon. Plans for longer-term studies were somewhat less detailed, although several specific topics were listed, e.g.

comparative biokinetics of Pu-238, 239 and 240; correlation of measured depositions with health physics data; examination and/or validation of respiratory tract models; etc.

Facility Tour:

During the morning break, the staff provided a tour of the office space that was acquired during the last year. Committee members were given an opportunity to observe sample input screens in the new database and to examine the nature of the paper files pertaining to registrants.

Advisory Committee Recommendations

The following list of recommendations contains some that are new this year, as well as several that are repeated from previous years. The recommendations are listed in approximately the order of importance that the Committee placed on them during discussion, but without strict ranking for priority. The recommendations are numbered to correspond to the first year in which the recommendation was made, although the emphasis of some recommendations may have changed over the years. The Committee reviewed progress made on the recommendations contained in the 1992 report to determine if they should be retained or removed from the list.

All recommended actions that have not been substantially completed or resolved, and which are still of concern to the Committee, are retained on the list. The Committee feels that all of the recommendations are very important and should be addressed even though their resolution may take several years.

1993-1 MAINTAIN FULLY FUNCTIONAL RADIOCHEMISTRY ANALYTICAL CAPABILITIES AND ALLOW ADEQUATE PERIOD FOR TRANSITION

The Committee is greatly concerned over the current proposal for phasing out the LANL radiochemistry laboratory concurrently with setting up a laboratory at WSU within 6 to 12 months. It is essential that the LANL laboratory be kept fully functional until the WSU laboratory demonstrates the capability to produce equivalent analytical results. The quality control program for the laboratory should be operational and comparability of results should be verified before the LANL laboratory is phased out. It is also important to develop and maintain a depth of analytical capability to ensure against unexpected demands or disasters. The period of overlap of laboratory facilities should be used to complete the backlog of whole-body donor cases.

1991-2 FIVE-YEAR PLAN

A five-year plan has been prepared, although it does not yet contain all of the essential elements recommended by the Committee. The plan presented this year discusses general activities and goals, both for the immediate future and for the long term. However, the plan does not yet contain estimated work loads based on projected death rates of registrants, nor does it yet address the optimum numbers of registrants to be sought for each category of exposure or body burden.

The Committee believes that the five-year plan should explicitly address the fundamental mission of the Registries, the major scientific questions that could and should be answered by the Registries, and the steps that need to be taken to address those questions. The five-year plan should be based on and guided by the overall mission of the Registries.

1990-3 RECRUITMENT OF REGISTRANTS AND RELATIONSHIP WITH DOE CONTRACTORS

The Committee was pleased to note that visits had been made to some of the DOE laboratories, but believes that much more effort needs to be placed on this task. Recruitment of registrants should be focussed, based on the research needs identified by the mission statement and the five-year plan. The Committee recommends that the Registries establish targets for the number of cases needed for each category of exposure and set priorities for recruitment on that basis.

To encourage site personnel to cooperate in identifying appropriate cases, the registrant's consent statement should be modified to authorize sharing of data with site personnel. Site personnel should be invited and encouraged to participate in the analysis of data and the publication of the research conducted by the Registries.

1991-4 DETERMINATION OF SUITABILITY OF WHOLE-BODY CASES

To avoid a last minute determination that a case is unsuitable, the Committee recommends that registrants for whole-body donations be evaluated at an early stage using limited screening data. If the donation is not acceptable, the registrant should be notified immediately. The decision regarding suitability should not be deferred until the time of death, as it may not then be possible to obtain the necessary data to make an appropriate decision.

1992-5 QUALITY MANAGEMENT AND WRITTEN PROTOCOLS

Development of written protocols has been initiated; the Committee noted that procedures R401, R402 and R403, relating to initial autopsy, had been completed. However, other standard operating procedures that should be in place before new projects are initiated are still lacking. Operating procedures should be part of a quality management program.

1990-6 FILE OF PROCEDURES

Although this is the fourth year in which this recommendation has been repeated, there has been limited progress in developing a comprehensive file of procedures. This file should contain documentation of the procedures for all Registry activities, including sample preparation, storage, radiochemical separation and sample counting.

1990-7 DEVELOPMENT OF REGISTRY DATABASE

The database has been started, using Paradox as the platform. The administrative and post mortem files have been created, but the radioanalytical and health physics data files have not been started. The fact that a coding scheme has not yet been developed for these data is of concern to the Committee. Although the staff indicated that all data would be in the database within two years, this seems unlikely, considering the uncertainties related to coding of the data.

1993-2 EFFECTIVE USE OF THE WSU PUBLIC RELATIONS STAFF

The Committee recommends that the Registries staff obtain more assistance from the WSU public relations staff to develop positive responses and images for the news media. These communications professionals may be able to guide a more proactive, promotional relationship with the press. The Committee recognizes the importance of good public relations in presenting the Registries' program to the public. However, this in no way implies that public relations considerations should play any role in determining what research should be done, or how that research should be conducted.

Other Observations by the Committee:

Collaborative and expanded research is commendable, but it should not be conducted at the expense of the primary mission of the Registries. A concise mission statement for the Registries might help to clarify the appropriate emphasis to be placed on various categories of research.

The Committee members felt that it would be highly beneficial to them in serving the needs of the Committee, and also be of benefit to the Registries, if each member were to receive a copy of every technical report and publication prepared under the auspices of the Registries. The technical reports would be of even greater value than the monthly administrative summaries that are currently sent to each member.

Request to the Advisory Committee from the Registries' staff:

The Registries' staff asked the Advisory Committee for suggestions on how to contact potential registrants more effectively. They also asked the Committee for suggestions on how to reimburse sites for the costs of recruitment, extraction of records, etc.

The only initial suggestion from the Committee is that allowing site personnel to share the data and the opportunities for analysis and publication might be one method of compensation for their effort. This would require some change(s) to the registrant's consent statement.

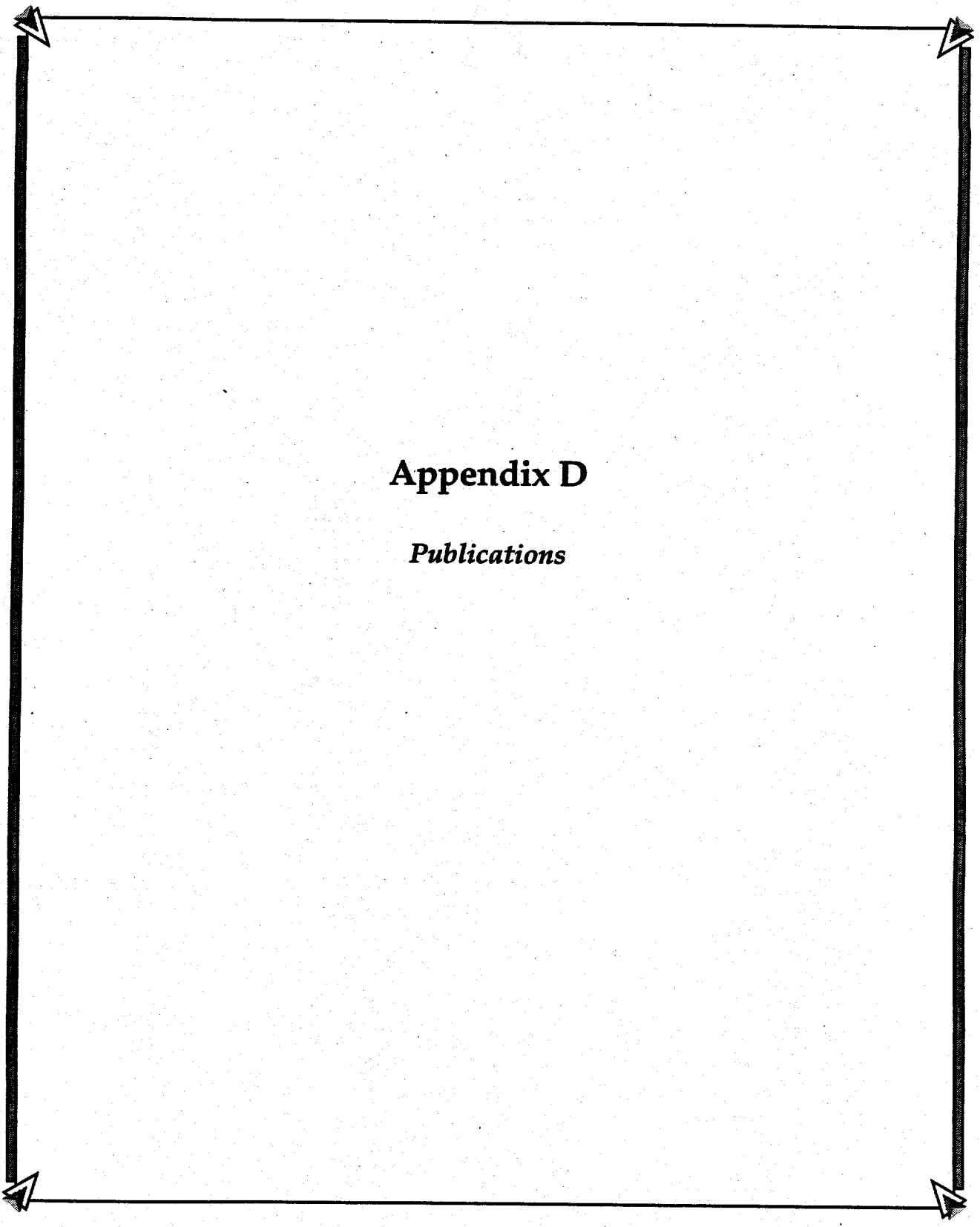
Next Advisory Committee Meeting:

The timing and duration of the meeting this year, i.e. 1½ days in early October, was ideal. However, to complete an appropriate review of Registries activities in that time, the agenda must concentrate on the activities of the Registries, with less time devoted to peripheral activities of the staff. As was done this year, there should be a brief executive session at the beginning of the meeting, as well as on the second day. There should be a review of responses to previous recommendations early in the agenda, to assure that progress on those items will be addressed during the subsequent detailed presentations by the staff.

Dates for the next meeting were not set, or even discussed.

Attachment:

Agenda



Appendix D

Publications

USTUR Publications, April 1992-September 1993

1992

- Collart, F.R., M. Horio, R.A. Schlenker, R.L. Kathren, and E. Huberman. "Alteration of the *c-fms* Gene in a Blood Sample from a Thorotrast Individual." Health Phys. 63: 27-32 (1992).
- Dagle, G.E., E.P. Moen, R.R. Adey, T.E. Hui, A. C. James, R.E. Filipy and R.L. Kathren. "Macrodistribution and Microdosimetry of Thorium Deposited in the Liver." Health Phys. 63:41-45 (1992).
- Filipy, R.E., R.L. Kathren and J.F. McInroy. "Relative Concentrations of Plutonium and Americium in the Liver, Testes, and Thyroid Gland." (Abstract) Health Phys. 62:(Suppl.) S17 (1992).
- Graham, S.J., R.B. Heaton, D.F. Garvin and J.D. Cotelingam. "Whole Body Pathologic Analysis of a Patient with Thorotrast-Induced Myelodysplasia." Health Phys. 63:20-26 (1992).
- Kathren, R.L. Book review: Environmental Health by D.W. Moeller. Health Phys. 63:238-239 (1992).
- Kathren, R.L. and R.L. Hill. "Distribution and Dosimetry of Thorotrast in a Whole-body Donation to the U.S. Uranium Registry." (Abstract) Health Phys. 62:(Suppl.) S7 (1992).
- McInroy, J.F., E.R. Gonzales and J.J. Miglio. "Measurement of Thorium Isotopes in the Soft Tissues and Skeleton of a Deceased Thorotrast Patient." (Abstract) Health Phys. 62:(Suppl.) S48 (1992).
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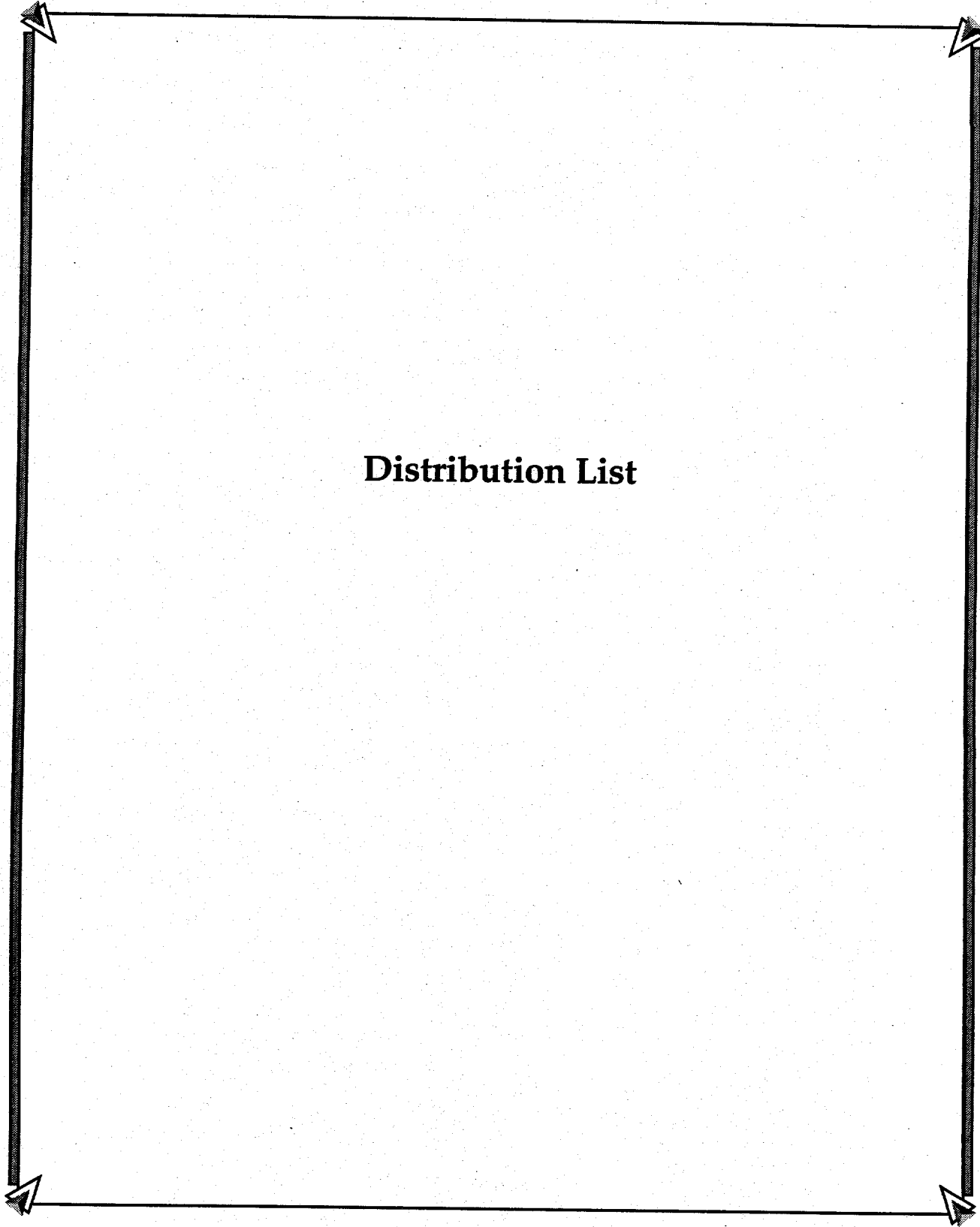
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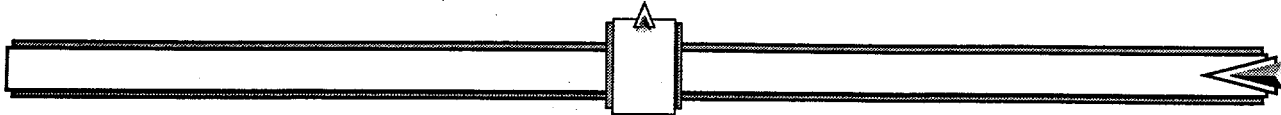
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