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THE RADIOACTIVITY CONCENTRATION GUIDES

A NEW CALCULATION OF DERIVED LIMITS FOR THE 1960 RADIATION PROTECTION GUIDES REFLECTING UPDATED MODELS FOR DOSIMETRY AND BIOLOGICAL TRANSPORT

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RADIATION PROGRAMS

Prepared by the
OAK RIDGE NATIONAL LABORATORY
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A NEW CALCULATION OF DERIVED LIMITS FOR THE 1960 RADIATION PROTECTION GUIDES REFLECTING UPDATED MODELS FOR DOSIMETRY AND BIOLOGICAL TRANSPORT

K. F. Eckerman,[1] S. B. Watson,[1] C. B. Nelson,[2] D. R. Nelson,[2]
A. C. B. Richardson,[2] and R. E. Sullivan[2]

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Office of Radiation Programs
U.S. Environmental Protection Agency[2]
Washington, DC 20460
by the
OAK RIDGE NATIONAL LABORATORY[1]
Oak Ridge, Tennessee 37831

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PREFACE

The Federal Radiation Council (FRC) was formed in 1959 to provide recommendations to the President for Federal policy on radiation matters affecting health. The first Federal radiation protection guidance was promulgated shortly thereafter, on May 13, 1960, and applied to exposure of workers and the general population. Guidance dealing with protection from radioactive fallout from weapon tests, protection of underground uranium miners, and protective action levels for use in emergencies followed during the next decade. On December 2, 1970, the Council was abolished and its functions transferred to the newly formed Environmental Protection Agency (EPA), through Reorganization Plan No. 3 of 1970. The most recent guidance, promulgated February 1, 1978, applied to radiation protection in the diagnostic use of x rays in medicine.

In 1974, EPA initiated a review of information on radiation exposure of workers as part of the development of new recommendations for Federal radiation protection guidance for occupational exposure. Two principal components of this review were a reevaluation of risks from low levels of radiation by the National Academy of Sciences and an analysis of occupational exposure of U.S. workers by EPA. In this report we continue this review process by updating the calculation of concentrations of radioactivity in air and water that, for average adult members of the population, correspond to the limiting doses recommended under the 1960 Radiation Protection Guides for workers.

This updating is required because the metabolic and dosimetric models used to calculate these quantities in 1960 no longer adequately reflect the present state of scientific knowledge. This report makes use of the results of an extensive review and updating of such models by the International Commission on Radiological Protection (ICRP) published during the period 1979 to 1981. We have calculated numerical values for the concentrations of radioactivity in air and water (in conventional and SI units) that satisfy the 1960 Federal Radiation Protection Guides and are consistent with these up-to-date metabolic and dosimetric models. The term "Radioactivity Concentration Guide" (RCG), recommended by the FRC in 1960 for these values, is used in this report rather than the term "Maximum Permissible Concentration" now in more common use in the United States. The FRC terminology reflects more accurately the radiation protection principle that there is no single permissible or acceptable level of exposure without regard to the reason for permitting the exposure and without every effort to maintain that exposure as low as reasonably achievable.

These new RCGs are published to provide the radiation protection community up-to-date values based on current knowledge of radionuclide transport and the distribution of dose in the body, as well as to provide the basis for evaluating effects of future revisions in the Radiation Protection Guides themselves. New recommendations for Federal radiation protection guidance for occupational exposure were proposed by EPA in 1981 (46 FR

7836), and final recommendations are currently under consideration by Federal agencies. We plan to revise this report when new recommendations are approved and would appreciate being informed of any errors so that they can be corrected for future editions. Comments should be addressed to the Chief, Guides and Criteria Branch, ANR-460C, U.S. Environmental Protection Agency, Washington, D C 20460.

Sheldon Meyers
Acting Director
Office of Radiation Programs

INTRODUCTION

Radiation protection programs for controlling occupational exposure are based on a hierarchy of numerical limitations stemming from primary radiation protection guidance. Current primary guidance for U.S. workers includes numerical guides for the annual radiation dose equivalent to body organs which should not be exceeded except in special, justified cases. To facilitate application of a protection system* in the workplace, derived guides, in the form of radioactivity concentration guides for radionuclides in air and water, are developed from the primary guides. These derived guides are developed in such a manner that exposures at these levels would not be expected to result in radiation doses which exceed the numerical values of the primary guides.

The primary radiation protection guidance now in force in the United States was established by the President, acting on recommendations of the Federal Radiation Council (FRC), in 1960 (FRC 1960). That guidance was strongly influenced by and was generally consistent with contemporary recommendations of the International Commission on Radiological Protection (ICRP) and the U.S. National Council on Radiation Protection (NCRP). An important part of this guidance is concerned with protection against radiation from radioactive materials taken into the body. The FRC did not present, as part of its guidance, numerical values for derived guides; rather, it endorsed the values in use by government agencies at that time. Those values were contained in Report No. 22 of the NCRP (NCRP 1959), which was an abridgment of Publication 2 of the ICRP (ICRP 1959).

The ICRP has recently revised its radiation protection guidance for occupational exposure through issuance of recommendations in the form of new primary guidance in Publication 26 (ICRP 1977) and corresponding secondary and derived limits in Publication 30 (ICRP 1979a, 1980, 1981c). The dosimetric and metabolic models employed by the ICRP to derive these quantities supersede those presented in Publication 2 and represent the considerably advanced state of knowledge in radionuclide dosimetry, including biological transport in humans, achieved in the last two decades. The general features of current ICRP models are discussed in Appendix B.

The term "dosimetry" is used here to encompass the entire process for estimating, through computational methods, the radiation energy deposited in organs and tissues of the body due to exposure to a given concentration of radioactivity in air and water. In this sense, dosimetric models comprise mathematical representations of physical, anatomical, physiological, metabolic, and radiobiological processes governing the exposure-dose

*Paragraphs 144–152 of ICRP Publication 26 (ICRP 1977) discuss the hierarchy of various types of standards comprising a radiation protection system.

relationship. Because the dose to organs and tissues of the body is not measured directly, it must be inferred from measurements of radionuclide concentrations in air or water or measurements (direct or indirect) of radionuclides in the body and application of dosimetric models.

This report presents revised values for the derived guides, that is, radioactivity concentration guides (*RCGs*), based on the 1960 primary radiation protection guides (*RPGs*) for occupational exposure (FRC 1960) and for underground uranium miners (EPA 1971a) using the updated dosimetric models developed to prepare ICRP Publication 30. Unlike the derived quantities presented in Publication 30, which are based on limitation of the weighted sum of doses to all irradiated tissues, these *RCGs* are based on the "critical organ" approach of the 1960 guidance, which was a single limit for the most critically irradiated organ or tissue. The dosimetric relationships used by the ICRP were taken from data files at the Oak Ridge National Laboratory as assembled during the development of Publication 30. No new computations or reevaluations of these data were undertaken. Thus, this report simply provides revised derived guides for the 1960 Federal guidance which are consistent with current dosimetric relationships.

RADIATION PROTECTION GUIDES

The conduct of radiation protection activities by Federal agencies is guided by recommendations approved by the President as Federal radiation protection guidance. Most of the Federal guidance now in effect for protection of workers was developed by the former FRC and was promulgated on May 13, 1960 (FRC 1960). The FRC was abolished and its functions transferred to the Administrator of the EPA on December 2, 1970. Revised Federal guidance for workers in underground uranium mines, specific to radon decay products, was recommended by the FRC (FRC 1969, 1970) and promulgated by EPA (EPA 1971a, 1971b).

The first Federal radiation protection guidance set forth two basic principles for radiation protection:

1. There should not be any man-made radiation exposure without the expectation of benefit resulting from such exposure.
2. Every effort should be made to maintain radiation doses as low as practicable.

These two concepts have continued to be the underlying principles guiding the radiation protection activities of Federal agencies. In addition, Federal guidance recommends numerical limits on exposure of workers and members of the general public. These are designated *RPGs* and serve as the upper bounds for exposure under normal conditions, within the above framework for radiation protection.

Primary guides

The upper bounds on exposure of workers specified by the *RPGs* are the primary guides that are used here to generate derived guides for limiting concentration of radioactivity in air and water. These primary guides are given below.

Primary Radiation Protection Guides

Type of exposure (condition)	*RPG*
Whole body, active marrow, gonads, or lens of eye (annual)	5 rem accumulated average
Skin or thyroid (annual)	30 rem
Bone (body burden)	0.1 μg Ra-226 or its biological equivalent
Other organs (annual)	15 rem
Radon decay products (annual)	4 WLM exposure to Rn-222 decay products

Derived guides

Derived guides, in the form of *RCGs*, are numerical values for the average concentration of radionuclides in air and water such that normal intake of air or water or submersion in air for 50 years at these levels would result in the primary radiation protection guides being met in the 50th year of exposure (corresponding to an occupational lifetime). The *RCGs* now used in the United States are exemplified by the U.S. Nuclear Regulatory Commission regulations in 10 CFR 20. Most of these values were recommended in 1959 by the NCRP and ICRP (NCRP 1959, ICRP 1959) and were derived using models with the above objectives.

Exposure rather than dose is used to specify the *RPG* for bone-seeking radionuclides and the short-lived decay products of ^{222}Rn, as shown in the *RPG* table.

For bone-seeking radionuclides, the procedure implemented in ICRP Publication 2 restricted the dose equivalent rate in bone to that associated with a skeletal burden of 0.1 μg of ^{226}Ra, namely, 30 rem/year to the 7 kg of bone tissue. The new dosimetric system of ICRP Publication 30 replaces this approach by detailed calculations of the dose equivalent in two sensitive tissues of the skeleton, the active marrow and endosteal tissue lying within 10 μm of bone surfaces (ICRP 1968, 1977, 1979a). To estimate the dose equivalent in these tissues, it is necessary to classify radionuclides according to whether they are distributed in the volume or along the surfaces of bone. The dose equivalent rate to the endosteal tissue of the skeleton resulting from a burden of 0.1 μg ^{226}Ra is estimated as 50 rem/year. Thus, in calculating the derived guides presented here, the *RPG* equivalence for radium is based on a 50-rem/year implied limit for the dose rate to endosteal tissue. A guide for the active marrow does not need to be derived from the radium burden, since FRC provided explicit guidance for this tissue.

Inhalation of short-lived radon decay products results in a highly nonuniform irradiation of respiratory tissues. The critical tissue is assumed to be composed of the basal cells of the bronchial epithelium. The *RPG* for the control of exposure to radon progeny in the workplace is based on epidemiological studies of uranium miners. The current guide constrains the annual exposure to the short-lived radon decay products (daughters) of ^{222}Rn to 4 working level months (WLM) (EPA 1971a, 1971b). One working level (WL) is defined as any combination of short-lived radon decay products in 1 L of air that will result in the ultimate emission of alpha particles with a total energy of 1.3×10^5 MeV. The inhalation of radon decay products at a concentration of 1 WL for 170 h (approximately one working month) is defined as an exposure of 1 WLM. Although the *RPG* for underground miners was developed for exposure to the short-lived daughter products of ^{222}Rn, for completeness, we have extended use of the working level concept to ^{220}Rn.

RADIOACTIVITY CONCENTRATION GUIDES

Dose equivalent bases for the *RCGs*

To establish the *RCGs*, we first express the primary *RPGs* in terms of annual dose equivalent for the various organs or tissues T of the body considered in the dosimetry system of ICRP Publication 30. The annual dose equivalent guides are given below.

Annual Dose Equivalents for the *RPGs*

Organ/tissue	Annual Dose (rem)
Whole body, active marrow, gonads, and lens of eye	5
Thyroid and skin	30
Endosteal tissue of skeleton	50
Other organs	15

These annual dose guides are those explicitly or implicitly recommended by the FRC in 1960. Note that the value assigned to the endosteal tissue of the skeleton is consistent with the FRC recommendations of a "biological equivalence" with 0.1 μg of ^{226}Ra. The Federal guidance for radon decay products is treated below.

Calculation of the *RCGs*

In the supplements to ICRP Publication 30 (ICRP 1979b, 1981a, 1982a, 1982b), relationships between exposure or intake of various radionuclides and dose are tabulated for Reference Man (ICRP 1975). The relationships for radionuclides taken into the body are based on the committed dose equivalent per unit intake. The committed dose equivalent, $H_{50,T}$, represents the total dose equivalent to organ or tissue T over the 50-year period following a unit intake of a radionuclide. It can be shown that $H_{50,T}$ for an instantaneous unit intake of any radionuclide is numerically equal to the annual dose equivalent in the 50th year of continuous annual intakes of a unit activity. Thus, the numerical values of $H_{50,T}$ contained in the supplements to ICRP Publication 30 can be used to estimate the annual rate at which a radionuclide could be continuously taken into the body and not exceed the annual dose equivalent guides (*RPGs*) in the 50th year.

For radionuclides that are not metabolized by the body (such as radioisotopes of argon, krypton, and xenon), submersion in an airborne concentration of the radionuclide results in the irradiation of body tissue from radiation incident upon the body. The doses from inhalation of radioactive decay products of these elements are negligible in comparison to the submersion dose. However, for the decay products of radon, the situation is just the opposite. Here the dose for submersion is negligible relative to the dose from inhalation of the decay products. The decay products of radon are discussed as follows. The dose equivalent rate, $\dot{H}_T$, in tissue T per unit concentration for submersion exposures is presented in the supplements to ICRP Publication 30. These values can be used in conjunction with the annual dose equivalent guides (*RPGs*) to derive corresponding *RCGs*.

Internal Emitters: The critical organ, C, is defined as that organ of the body for which the ratio between the committed dose equivalent per unit intake, $H_{50,T}$, and the RPG_T is a maximum. The critical organ determined for each radionuclide is dependent on whether the radionuclide is inhaled or ingested and the chemical form of the radionuclide. The concentration of a radionuclide in air or water which would result in an annual dose equivalent corresponding to the *RPG* for the critical organ in the 50th year of continuous intake is defined as

$$RCG_{air} = \frac{1}{2.4 \times 10^9} \frac{RPG_C}{H_{50,C}}$$

or

$$RCG_{water} = \frac{1}{2.8 \times 10^5} \frac{RPG_C}{H_{50,C}} ,$$

where

2.4×10^9 is the volume, in cubic centimeters, of air inhaled by Reference Man in a working year,

2.8×10^5 is the volume, in cubic centimeters, of water ingested by Reference Man in a working year,

RPG_C is the radiation protection guide (limit on the annual dose equivalent) for critical organ C,

$H_{50,C}$ is the committed dose equivalent for the critical organ C per unit activity inhaled or ingested by Reference Man.

Numerical values of the *RCGs* for air and water are given in Appendix A, Tables 1 and 2.

In Appendix C, the classification of chemical compounds for lung clearance and fractional absorption from the gastrointestinal (GI) tract are presented as recommended in ICRP Publication 30. Additional information presented in Appendix C includes the committed dose equivalent per unit intake for the critical organ and the limiting annual intake and body burden. This body burden is the total activity present in the body after 50 years of continued intake at the limiting annual intake. The relationships of these quantities to the *RCGs* are discussed further in Appendix C.

Submersion: Dose equivalent rates, $\dot{H}_T$, in tissue T of the body from a unit concentration of airborne radionuclides are given in the supplements to ICRP Publication 30. The critical organ for this exposure mode is the body organ for which the ratio of the time integral of the dose equivalent rate over one working year (2000 h) per unit concentration, H_C, to the RPG_T is a maximum. The *RCG* for this exposure is

$$RCG_{submersion} = \frac{RPG_C}{H_C} .$$

The *RCGs* for submersion and the numerical values of the dose equivalent rate per unit airborne concentration for the critical organ are shown in Appendix A, Table 3.

Radon decay products

The *RPG* for protection against inhalation of ^{222}Rn decay products is expressed in WLM, that is, in terms of exposure to decay products rather than dose. Since this guide is the product of a concentration in air (WL) and duration of exposure, a concentration, expressed in WL, that is analogous to the other *RCGs* can be directly calculated without use of dosimetric models. While these concepts were developed for the prompt decay products of ^{222}Rn, they are also appropriate for ^{220}Rn. [In the case of ^{220}Rn, however, the first decay product (^{216}Po, $T_{1/2}$ = 0.15 s) decays so rapidly that it is omitted from the calculation of WL exposure.] We have therefore also calculated an *RCG* expressed in WL for ^{220}Rn. These are the only two radionuclides for which the *RCGs* are based on exposure to decay products that are produced prior to entry of the parent radionuclide into the body.

The ICRP recently reviewed the epidemiological and dosimetric data for the two radon isotopes of concern in uranium mining, namely, ^{222}Rn and ^{220}Rn, and concluded that the risk from inhalation of the short-lived decay products of ^{220}Rn was about one-third that associated with ^{222}Rn decay products (ICRP 1981b). The ICRP's recommended exposure guidance for ^{222}Rn is in close agreement with the current Federal guide (4 WLM). Although a specific Federal guide has not been given for the decay products of ^{220}Rn, the ICRP's recommendation provides a basis for establishing a value equivalent with the current Federal guide for ^{222}Rn; this value is about 12 WLM. The derived *RCGs* for the short-lived decay products of radon isotopes are given as follows.

RCGs for Radon Decay Products

Radon isotope	WL
Rn-222	1/3
Rn-220	1

These *RCG* values correspond to annual exposures of 4 and 12 WLM for the decay products of ^{222}Rn and ^{220}Rn, respectively.

Chemical toxicity and biological capacity for intake

The *RCGs* given in this report are based solely on the radiation doses received by organs and tissues of the body and do not reflect consideration of chemical toxicity or the amount of material a worker could reasonably ingest or inhale. For some nuclides of very low specific activity, the mass associated with the annual intake may imply an amount greater than it is reasonable to expect a worker to inhale or ingest in any one year. As an example, the annual intake of 0.4 μCi of ^{115}In (lung clearance class D) would correspond to a mass of 650 kg. In other instances, the chemical effects of some materials, for example, certain compounds of uranium, may present a greater risk than effects from irradiation of body tissue. The chemical toxicity of contaminants in the workplace should be examined as part of an industrial hygiene program, and the recommendations of the American Conference of Governmental Industrial Hygienists (ACGIH) should be consulted for additional guidance in limiting the airborne concentration of chemical substances in the workplace (ACGIH 1980).

Principal assumptions and considerations

The computational procedures and models used to calculate the dosimetric values have been outlined in Appendix B of this report. However, the reader is encouraged to also become familiar with the details and assumptions presented in ICRP Publication 30 (ICRP 1979a). The following are the principal assumptions and factors used in the calculations:

a. The *RCGs* are computed for occupational exposure of a worker for 40 h per week and 50 weeks per year.

b. A worker ingests water at the rate of 1.1 L per 8-h working day.

c. A worker breathes at the rate of 20 L/min.

d. The activity median aerodynamic diameter (*AMAD*) of airborne particulate forms of radionuclides is 1 μm. *RCGs* for other *AMAD* values can be computed from information in the Supplements to ICRP Publication 30.

e. The quality factor, *Q*, for alpha radiations is 20.

f. The modifying factor, *N*, in the definition of dose equivalent is taken as 1 in all calculations.

g. The dose from submersion in an airborne concentration of inert radioactive material and noble gas radioisotopes includes consideration of body shielding of organs. The dose from beta particles and electrons is evaluated at a depth of 70 μm for skin and at a depth of 3 mm for the lens of the eye. The distribution in energy of the photons incident on the body, including bremsstrahlung, is considered; however, the radiations emitted by any radioactive decay product are not considered.

h. In most cases, the concentration limit for submersion in a radioactive semi-infinite cloud is based on irradiation of the body and does not include consideration of any absorbed gas within the body or the inhalation of any radioactive decay products.

Exceptions are elemental tritium and ^{37}Ar, for which the dose from activity in the lungs limits their concentration in air.

i. Retention of material in body organs is generally represented by a multi-exponential function. Material deposited in organs after its introduction into body fluids is assumed to be eliminated from the organs without redeposition in other body organs.

j. For radionuclides that yield radioactive decay products, the calculations assume that only the parent nuclide enters the body, although the calculated dose equivalent in the 50th year includes the contribution from the ingrowth of decay products over the period following intake. For this reason, the ratio of the annual dose equivalent for the *RPGs* to the estimated body burden for continuous exposure at the *RCG* can only provide a rough indication of the ratio of dose equivalent in any year to the measured body burden in that year.

k. The *RCGs* take into account the estimated time-dependent distribution of activity within the entire body. Even in cases where no radioactive decay products are associated with the radionuclide inhaled or ingested, the ratio of the annual dose equivalent for the *RPGs* to the estimated body burden for continuous exposure at the *RCG* can only provide a rough indication of the ratio of annual dose equivalent in any year based on a measured body burden in that year.

l. No consideration is given to potential chemical toxicity; the *RCGs* reported here are based solely on radiation protection considerations.

Many other factors may affect the actual doses received by workers as opposed to these calculated here for Reference Man. Physiological differences, as well as differences in habits, age, sex, and other factors, can influence the uptake and retention of radionuclides by individuals. The use of the guides presented here for other exposure situations, such as accidental exposures or exposures of the general public, requires careful consideration.

THE EFFECT OF REVISED DOSIMETRIC MODELS ON THE *RCGs*

A comparison of the revised *RCGs* presented in Appendix A, Tables 1–3 with those of ICRP Publications 2 and 6 (ICRP 1959, 1964) reveals that in some instances substantial changes in the numerical values have been introduced by the new data and revised dosimetric models. As the chemical form of inhaled or ingested materials is now characterized in a manner different from that of Publications 2 and 6, the appropriateness of comparisons, in some instances, is questionable. Furthermore, identification of specific items contributing to the change in numerical values is complicated by the many factors in the calculations. Despite these difficulties, the old and revised values were compared to identify those radionuclides whose *RCGs* have been changed substantially. In these cases the major item or items contributing to the change in numerical values are noted.

Before discussing the comparisons, it is instructive to examine the magnitude of possible changes introduced by revisions in the dosimetric models.

Major revisions in dosimetric models

In Appendix B the current dosimetry models are reviewed with particular emphasis on the advances since the issuance of ICRP Publication 2 (ICRP 1959). The advances in models that most influence dosimetric relationships are the model for translocation of inhaled material from the lung and the dosimetry model for tissues of the skeleton.

Model for Retention of Inhaled Material in the Lung

In Publication 2 a simple model of the lung was used to define the translocation of material into the body after inhalation. Seventy-five percent of the inhaled activity was assumed to be deposited in the lung; the remaining 25% was exhaled. For soluble materials the fractional transfer to blood of the inhaled activity was taken to be $0.25 + 0.50\,f_1$. The factor 0.25 represents the fraction of inhaled activity considered to be transferred directly to blood, while the fraction 0.50 was assumed to be cleared upward from the lung and swallowed, thereupon entering the GI tract. Of the activity swallowed, the fraction f_1 is assumed to be absorbed from the GI tract to blood. The dose equivalent to the lung from the temporary residence of soluble materials was not considered in Publication 2. On the other hand, the *RCGs* for insoluble materials were based only on the dose equivalent to the lung or segments of the GI tract, since the transfer of insoluble materials to blood was not considered. A clearance halftime from the lung of 120 days was used for all insoluble radionuclides except plutonium and thorium, for which halftimes of 1 and 4 years, respectively, were used. An initial deposited fraction, 0.12, of the inhaled insoluble activity was assumed to be retained in the lung for these halftimes.

The dosimetric analysis of Publication 30 (ICRP 1979a) employs a more refined lung model (ICRP 1966), wherein deposition in regions of the lung is defined in terms of the *AMAD* of the aerosol and the clearance of deposited activity is defined in terms of three clearance classes D, W, and Y. Furthermore, clearance kinetics is modeled to account for loss of material through radioactive decay. For a long-lived radionuclide, the fractional transfer of inhaled activity to blood can be expressed in a manner analogous to the Publication 2 lung model as shown.

Fractional Transfer of Inhaled Activity to Blood

Publication 2		Publication 30†	
Class*	Fraction	Class	Fraction
S	$0.25 + 0.50 f_1$	D	$0.48 + 0.15 f_1$
I	N/A	W	$0.12 + 0.51 f_1$
		Y	$0.05 + 0.58 f_1$

*S and I denote soluble and insoluble material, respectively.
†*AMAD* = 1 μm; radioactive decay neglected.

The implications of the changes in modeling the transfer of inhaled material to blood can be inferred by examining the table. The classes D, W, and Y correspond to clearance times for the pulmonary region of the lung on the order of days, weeks, and years, respectively. For compounds with f_1 values less than 10^{-2}, the model of Publication 30 results in a higher transfer of activity to blood, relative to the lung model of Publication 2, for class D compounds (0.48 vs 0.25) and a lower transfer (0.12 vs 0.25) for class W compounds. If f_1 approaches 1, the two models predict similar transfers, the only difference being in the initial deposition estimate, which is 63% for an *AMAD* of 1 μm in the Publication 30 model compared with 75% in the Publication 2 model.

As noted earlier, the dose equivalent to the lung was considered in Publication 2 for insoluble compounds only. The dose equivalent is proportional to the time integral of the activity in the lung. If the inhaled radionuclide is long lived, that is, long relative to the biological clearance halftime, the fraction, 0.12, of the inhaled activity assumed to be retained in the lung results in the following tabulated values of the time integral.

Publication 2 Lung Model

Radionuclide	Time integral* (d)
Thorium	250
Plutonium	63
Others	21

*or μCi-d per μCi-inhaled.

Values of the time integral are similarly tabulated as follows for the lung model of Publication 30 as a function of clearance class.

Publication 30 Lung Model	
Clearance class	Time integral* (d)
D	0.22
W	12
Y	230

*or μCi-d per μCi-inhaled.

For long-lived isotopes of plutonium of clearance class Y, the dose equivalent (proportional to the integral) in the lung predicted by the lung model of Publication 30 is about four times higher than the value predicted from the model of Publication 2. Furthermore, for radionuclides other than thorium and plutonium, a factor of 10 is indicated for class Y compounds. For compounds now assigned to clearance class W, the assumption of the insoluble form in the model of Publication 2 results in an overestimation by factors of about 20, 5, and 2 for thorium, plutonium, and other radionuclides, respectively. It should be noted that in this discussion the loss of activity by radioactive decay has not been considered; therefore, the above differences are maximum values.

In summary, the revised modeling of the translocation and retention of inhaled materials can affect the *RCGs* through an increased transfer of inhaled material to blood for class D compounds relative to the soluble forms considered in Publication 2. Furthermore, the dose equivalent to the lung as estimated in Publication 2 for insoluble forms is overstated by factors between 2 and 20 if the material is a class W compound and understated by factors of 4 to 10 if it is a class Y nonthorium compound.

Dosimetric Model for Bone Seekers

The dosimetric model for bone-seeking radionuclides has also been modified substantially in ICRP Publication 30. This model provides for calculations of the dose equivalent to endosteal tissue adjacent to bone surfaces and the dose equivalent to the active marrow. In the model of Publication 2, formulated in terms of a comparison with ^{226}Ra, the dose equivalent was averaged over the entire mass of the marrow-free skeleton bone (7 kg). In the following discussion of these two models, the same activity is assumed to be present in the entire skeleton so that the magnitude of the changes introduced by methods for computing the specific effective energy (*SEE*) for target tissues of the skeleton can be examined (dose equivalent is directly proportional to *SEE*). The discussion will be limited to particulate radiation, that is, alpha and beta radiations.

The specific effective energy deposited in the skeleton per unit energy (E) emitted in bone, SEE/E, for the dosimetric model of Publication 2 is given by

$$SEE/E = \frac{NQ}{m} ,$$

where

N is the modifying factor,
Q the quality factor, and
m is the mass of bone.

The value of N in the model of Publication 2 was 1 or 5, depending on whether or not the spatial distribution of the radionuclide was considered to be similar to ^{226}Ra. The results are given in the following table of specific effective energy per unit emitted energy (SEE/E).

Publication 2 Bone Dosimetry	
Radiation	SEE/E (g^{-1})
Alpha, $Q=10$	
Isotopes of radium ($N=1$)	1.4×10^{-3}
Other radionuclides ($N=5$)	7.1×10^{-3}
Beta, $Q=1$	
Isotopes of radium ($N=1$)	1.4×10^{-4}
Other radionuclides ($N=5$)	7.1×10^{-4}

In Publication 30 the energy deposition is averaged over a 10-μm layer of soft tissue (endosteal tissue) adjacent to the surfaces of bone. In estimating the energy deposition in this region, consideration must be given to whether the radionuclide is distributed on the surface or within the volume of bone. The specific effective energy for the endosteal tissue per unit emitted energy, SEE/E, is given as

$$SEE/E = \frac{F_{CB}Q\,AF(BS \leftarrow CB) + F_{TB}Q\,AF(BS \leftarrow TB)}{m},$$

where

F_{CB} and F_{TB} denote the fraction of the activity in the skeleton residing within or on the surfaces of cortical and trabecular bone, respectively,

Q is the radiation quality factor,

$AF(BS \leftarrow CB)$ and $AF(BS \leftarrow TB)$ represent the fractions of the energy emitted within or on the surfaces of cortical and trabecular bone, respectively, that are absorbed by the endosteal tissue,

m is the mass of the endosteal layer adjacent to the bone surfaces, taken as 120 g.

Values for the parameters of the above formulation are contained in ICRP Publication 30 (see Chapter 5 of ICRP 1979a). Using these values the SEE deposited in the endosteal tissues per unit emitted energy are as follows:

Publication 30 Bone Dosimetry	
Radiation	SEE/E (g^{-1})
Alpha, $Q=20$	
Emitter in volume	2.2×10^{-3}
Emitter on surface	8.3×10^{-2}
Beta, $Q=1$	
Emitter in volume	1.4×10^{-4}
Emitter on surface	
$E < 0.2$ MeV	4.2×10^{-3}
$E > 0.2$ MeV	3.3×10^{-4}

Note that in this table, the quality factor Q for alpha radiation is taken to be 20 rather than the value of 10 used in Publication 2, and the modifying factor, N, is 1 in all cases.

The major impact of the new bone dosimetry model occurs for alpha and low-energy beta emitters, in particular those radionuclides which are surface seekers. The *SEE* (and thus dose equivalent) for the endosteal tissues from surface seekers is 60 times higher than the value for bone in Publication 2 for isotopes of radium and 12 times higher for other alpha-emitting surface seekers. Radium is actually a volume seeker, and thus the factor of 60 would only apply to short-lived radium isotopes, for example, ^{224}Ra. For isotopes of radium distributed throughout bone volume, the dose equivalent in the endosteal region is 1.6 times higher than that for bone. If the alpha emitter is volume distributed, the dose equivalent for endosteal tissue is three times lower than that for bone. Thus, the revised bone dosimetry model can be expected to affect substantially the *RCGs* for alpha and low-energy beta emitters distributed on the surface of bone.

Changes in the *RCGs*

To compare the revised *RCGs* with those of ICRP Publications 2 and 6, several conventions were established here in an attempt to compare values for similar chemical forms. These conventions are not based on an in-depth consideration of the translocation of inhaled or ingested compounds in the body. Such a consideration is, of course, not possible within the soluble-insoluble classification scheme of ICRP Publications 2 and 6. The following conventions were followed for inhalation exposure:

a. The old *RCGs* for inhalation of the soluble forms, given as maximum permissible concentrations (*MPCs*) in Publications 2 and 6, were compared with the revised *RCGs* of Table 1 for compounds of lung clearance class D. If no class D compounds of the radionuclide were given in Table 1, the comparison was made with the revised *RCG* for class W compounds. It was considered inappropriate to compare soluble and class Y compounds.

b. The old *RCGs* for the insoluble form, given as *MPCs* in Publications 2 and 6, were compared with the revised *RCGs* of Table 1 for class Y compounds. If no class Y compounds for a radionuclide were indicated in Table 1, then the comparison was made with the *RCG* for class W compounds unless that class W compound had already been used for comparison with the soluble compounds.

In the case of ingestion exposure, the conventions were as follows:

a. If all compounds of the radionuclide were assigned a single f_1 value in Table 2, the revised *RCG* was compared to the corresponding old *RCG* for the soluble form, given as *MPCs* in ICRP Publications 2 and 6.

b. If compounds of the radionuclide were assigned two f_1 values in Table 2, then the revised *RCG* for compounds with the higher f_1 value were compared with the old *RCG* for soluble compounds of Publications 2 and 6, and those of the lower f_1 were compared with the old *RCG* for the insoluble form.

Inhalation Exposure

The comparison of old and revised *RCGs* for inhalation is shown in the histogram of Figure 1. In about 80% of the comparisons, the values differ by less than a factor of 4, and in one-half of the comparisons, the values differ by less than a factor of 2.

Nuclides with revised *RCGs* that are substantially different from the old values, that is, at least 32 times more restrictive (i.e., 32 × revised *RCG* < old *RCG*) or at least 16 times less restrictive (i.e., revised *RCG* > 16 × old *RCG*), are shown below.

Substantially Changed *RCGs* for Inhalation

Radionuclide	Old *RCG* (μCi/cc)*	Revised *RCG* (μCi/cc)*
Revised *RCG* more restrictive by factor > 32		
In-115	2×10^{-7} (S) Kidney	2×10^{-10} (D) R. marrow
	3×10^{-8} (I) Lung	6×10^{-10} (W) R. marrow
Pu-241	4×10^{-8} (I) Lung	3×10^{-10} (Y) B. surface
Zr-93	1×10^{-7} (S) Bone	3×10^{-9} (D) B. surface
Am-244	4×10^{-6} (S) Bone	7×10^{-8} (W) B. surface
Revised *RCG* less restrictive by factor > 16		
Re-187	5×10^{-7} (I) Lung	2×10^{-5} (W) Lung
S-35	3×10^{-7} (S) Testis	8×10^{-6} (D) Lung
I-134	5×10^{-7} (S) Thyroid	1×10^{-5} (D) Thyroid

*The chemical form is denoted by S or I for soluble and insoluble under the old *RCG* column, and the lung clearance class is denoted by D, W, or Y under the revised *RCG* column. The listed organ is the critical organ.

With the exception of ^{115}In, all the cases where the revised *RCGs* are more restrictive involve bone surface (endosteal tissue) as the critical organ. Furthermore, all radionuclides, with the exception of ^{115}In, are considered to deposit on the surface of mineral bone. However, this is only part of the reason why these revised values are more restrictive.

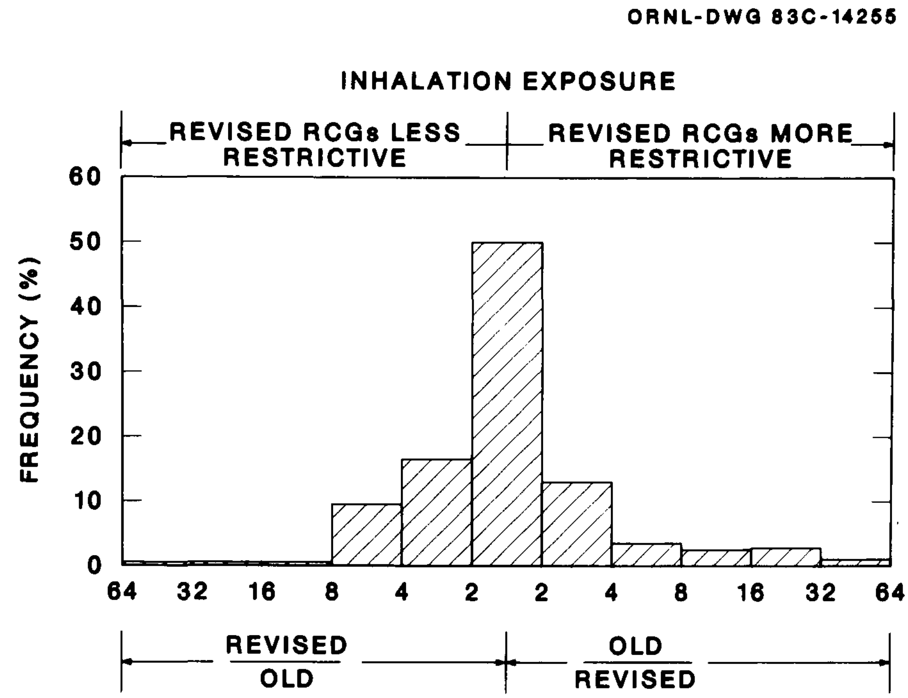

Fig. 1. Comparison of the old and the revised *RCGs* for inhalation exposure. About 50% of the values differ by less than a factor of 2; 80% differ by less than a factor of 4.

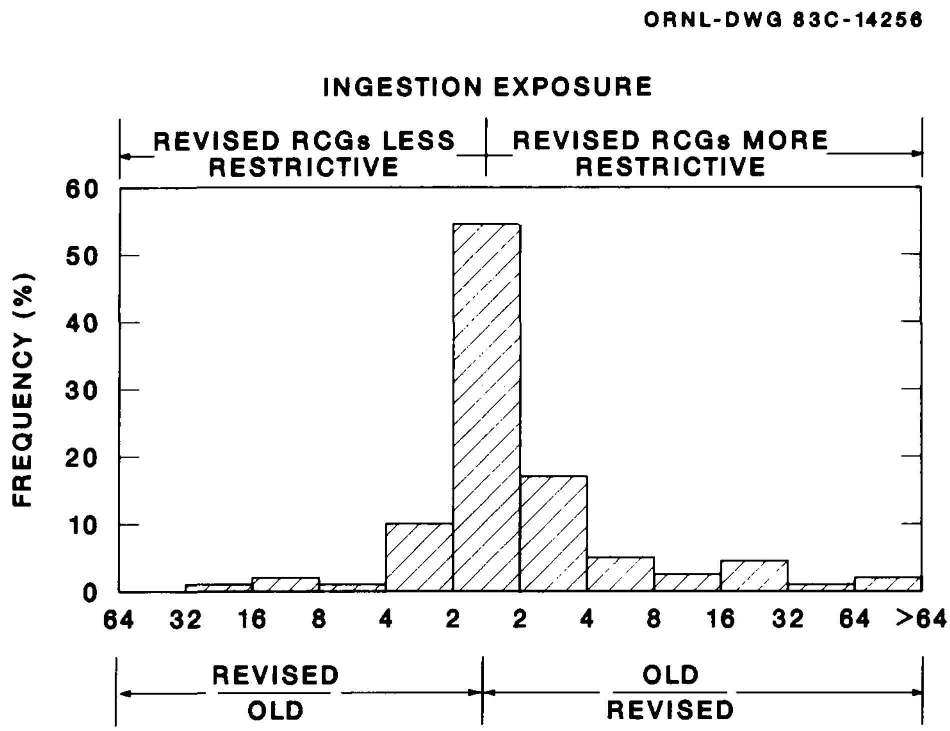

Fig. 2. Comparison of the old and the revised *RCGs* for ingestion exposure. About 55% of the values differ by less than a factor of 2; 80% differ by less than a factor of 4.

The change in the *RCG* for ^{115}In (half-life of 5.1×10^{15} years) is of more academic than practical interest since it would appear impossible to maintain an airborne concentration corresponding to the *RCG* for this low-specific-activity radionuclide. The metabolic model for indium given in ICRP Publication 30 assumes that 30% of the indium entering the transfer compartment (body fluids) is translocated to the red marrow (the critical organ in the revised *RCG*), where it is retained with an infinite halftime. The metabolic model of Publication 2 assumed that 4% of the indium entering blood was translocated to the kidney (the critical organ), where it was retained with a biological halftime of 60 days. The change in the metabolic model is the dominant feature of the new dosimetric analysis contributing to the change in the *RCG*. The other radioisotopes of indium are sufficiently short lived that the assumption of infinite retention does not substantially affect their *RCG*.

The revised *RCG* for ^{241}Pu (class Y) is about 100 times more restrictive than the old *RCG* for the insoluble form. Plutonium-241 is the only plutonium isotope where the critical organ for inhalation of class Y compounds is not the lung. The dosimetric analysis of Publication 2 assumed that insoluble plutonium cleared from the lung with a halftime of one year and that the transfer to systemic organs need not be considered. The dominant contribution to the dose equivalent for ^{241}Pu exposures is the alpha-emitting daughter product ^{241}Am. In Publication 2 the ratio of the ^{241}Am daughter activity to that of the parent in the lung, assuming the above noted retention halftime, was 7.1×10^{-4} (see Table 5.a of Publication 2). The Task Group Lung Model, as employed in Publication 30, indicates an activity ratio of 1.3×10^{-2} (see Supplement to ICRP Publication 30, Part 1). However, the computational approach of Publication 30 considers the transfer of activity to blood and its uptake in systemic organs; this results in the *RCG* being based on the dose equivalent to bone surfaces.

The more restrictive revised *RCG* for ^{93}Zr is largely a result of the new metabolic model, where the retention in bone is a factor of 8 higher than previously assumed. This, coupled with an increased transfer to the skeleton of about 3 (increased clearance of class D compounds to blood and increased deposition in the skeleton), largely accounts for the noted change in the numerical value. Other radioisotopes of zirconium are sufficiently short lived so that the revised skeletal retention does not substantially change their numerical value.

The revised *RCG* for ^{244}Am is more restrictive partly due to an apparent error in Publication 6 regarding the half-life of this nuclide. The half-life of the metastable state (^{244m}Am, half-life of 26 min) was assigned to the ground state, whose half-life is now considered to be 10.1 h. The metastable state, ^{244m}Am, was not included in the tabulations of Publication 6. Since the half-life, not biological clearance, of this americium isotope governs the activity in the body, the error resulted in an underestimate of the activity of the body by a factor of about 23. This factor largely accounts for the change in the value for ^{244}Am.

The revised *RCG* for class W compounds of ^{187}Re is 40 times less restrictive than the old *RCG* for insoluble forms of Publication 2. Rhenium-187, like ^{115}In, is a low-specific-activity radionuclide with a half-life of 5×10^{10} years. The retention of inhaled material in the lung is similar (within a factor of 2) for insoluble and class W compounds. In Publication 2 the effective beta energy was taken to be 0.012 MeV per disintegration.

Newer nuclear decay data, as used in Publication 30, consider the average energy to be 6.6 × 10^{-4} MeV (ICRP 1983). Thus, the new information on the decay of ^{187}Re is the dominant source of the change in its *RCG*.

The metabolic model for sulfur presented in Publication 30 indicates a much more rapid loss of sulfur from the body than assumed in Publication 2. The revised metabolic model suggests that 80% of the sulfur introduced into body fluids is excreted promptly, 15% of the sulfur is retained with a halftime of 20 days, and the remaining 5% is assigned a halftime of 2000 days. In the model of Publication 2, 0.13% of the sulfur entering blood was transferred to the testis, the critical organ, where it was considered to be retained with a halftime of 623 days. Because of the decreased deposition and retention of sulfur in the body, the critical organ for the revised *RCG* is the lung.

In the computational model of Publication 2, a fraction of the inhaled activity of soluble radionuclides was considered to be instantaneously transferred to systemic organs with no consideration of radioactive decay during clearance from the lung and uptake in systemic organs. The computational approach of Publication 30 accounts for radiological decay during the course of clearance from the lung and uptake in tissues of the body. Iodine entering the transfer compartment is considered to be translocated from this compartment at a rate corresponding to a halftime of 0.25 days. The half-life of ^{134}I (52.6 min) is short compared to the rate of transfer from blood to the thyroid, and thus, radiological decay reduces the uptake of ^{134}I by the thyroid (about a factor of 8 relative to Publication 2). Radiological decay during clearance from the lung also contributes to a lower thyroid uptake of this radionuclide and, thus, a less restrictive *RCG*.

Ingestion Exposure

The comparison of old *RCGs* (*MPCs* of ICRP Publications 2 and 6) with the revised *RCGs* in Appendix A, Table 2 for exposure by ingestion is shown in the histogram of Figure 2. In about 80% of the comparisons, the values differ by a factor less than 4, and 55% of the comparisons differ by less than a factor of 2. The nuclides whose revised *RCGs* are substantially changed are tabulated below.

Substantially Changed *RCGs* for Ingestion

Radionuclide	Old *RCG* (μCi/cc)*	Revised *RCG* (μCi/cc)*
Revised *RCG* more restrictive by factor >32		
In-115	3×10^{-3} (S, 2×10^{-3}) LLI†	3×10^{-5} (2×10^{-2}) R. marrow
Ac-227	6×10^{-5} (S, 1×10^{-4}) Bone	7×10^{-7} (1×10^{-4}) B. surface
Np-237	9×10^{-5} (S, 1×10^{-4}) Bone	3×10^{-7} (1×10^{-2}) B. surface
Sm-147	2×10^{-3} (S, 1×10^{-4}) Bone	6×10^{-5} (3×10^{-4}) B. surface
Pa-231	3×10^{-5} (S, 1×10^{-4}) Bone	7×10^{-7} (1×10^{-3}) B. surface
Cf-250	4×10^{-4} (S, 3×10^{-5}) Bone	7×10^{-7} (5×10^{-4}) B. surface
Revised *RCG* less restrictive by factor >16		
Ni-63	8×10^{-4} (S, 3×10^{-1}) Lung	2×10^{-2} (5×10^{-2}) LLI
Ra-226	4×10^{-7} (S, 3×10^{-1}) Bone	7×10^{-6} (2×10^{-1}) B. surface

*The chemical form and f_1 value are shown in parentheses for the old *RCG*, where S denotes the soluble form. The f_1 value is shown in parentheses for the revised *RCG*. The listed organ is the critical organ.

†LLI denotes lower large intestine.

As in exposure by inhalation, the list of radionuclides whose revised values are more restrictive is dominated by radionuclides for which bone surface (endosteal tissue) is the critical organ. In addition, with the exception of ^{115}In, all the radionuclides are considered to be bone surface seekers, that is, to deposit on the surface of bone. Furthermore, the revised metabolic model for these radionuclides includes an increased uptake from the GI tract to blood, that is, the f_1 parameter.

The increased uptake from the GI tract to body fluids is the dominant factor in most cases where revised *RCG*s are more restrictive. As discussed previously, the change in the retention of ^{115}In within the body also contributes to its *RCG* being more restrictive. Other changes in the metabolic models for these radionuclides, generally involving an increased fraction deposited in bone and a lower skeletal retention, do not contribute substantially to changes in the numerical values of the *RCGs*. The revised dosimetric model, which classifies bone seekers as surface and volume seekers, also contributes to the changes in numerical values.

The revised *RCGs* for both ^{63}Ni and ^{226}Ra are less restrictive due to changes in their metabolic models. Sixty-eight percent of the nickel entering the transfer compartment is excreted, and 30% is distributed throughout the total body and retained with a 1200-day biological halftime. The remaining 2% is transferred to the kidney, where it is retained with a halftime of 0.2 days. Under this metabolic model with the lower uptake from the GI tract, the critical organ is the lower large intestine. In the metabolic model of Publication 2, one-half of the nickel which reached blood was assumed to be transferred to bone, where it was retained with an 800-day biological halftime.

The higher (less restrictive) *RCG* for ^{226}Ra is the result of the decreased retention of radium in the skeleton as indicated by the alkaline-earth model of ICRP Publication 20 (ICRP 1973a). An effective halftime of 1.6×10^4 days was assumed in Publication 2. From Table 36 of Publication 20, the time integral of the retention of ^{226}Ra in the skeleton indicated by the alkaline-earth metabolic model is 98.7 μCi-day per microcurie entering blood. The same time integral for the retention model of Publication 2, assuming one-tenth the radium entering blood is transferred to the skeleton, is 970 μCi-day/μCi. Thus, the major reason the revised *RCG* for ^{226}Ra is less restrictive is the reduced retention indicated in the alkaline-earth model. On the other hand, the change in the quality factor for alpha radiation (now taken as 20 rather than 10), the slightly reduced absorption from the GI tract, and the revised dosimetric model for bone seekers all contribute to a reduction in the magnitude of the change from that caused by the change in retention.

Submersion Exposure

Only a limited number of comparisons are possible for submersion, since this exposure mode is principally of concern for noble gas radionuclides. The radionuclide comparisons possible between Publication 2 and the revised values of Table 3 are shown below.

For the most part, the revised *RCGs* are less restrictive due to the dosimetric model taking into account the shielding of body organs from the overlying tissues. The revised values for ^{3}H and ^{37}Ar are based on radionuclide content in the lung rather than on external irradiation of body tissues. Both of these nuclides emit radiations that are too weak to penetrate the outer skin layer. The other radionuclide for which the *RCG* has been

Submersion		
Radionuclide	Old *RCG* (μCi/cc)	Revised *RCG* (μCi/cc)
H-3	2×10^{-3} Skin	2×10^{-1} Lung
Ar-37	6×10^{-3} Skin	5×10^{-1} Lung
Ar-41	2×10^{-6} W. body	2×10^{-6} Lens
Kr-85*m*	6×10^{-6} W. body	2×10^{-5} R. marrow
Kr-85	1×10^{-5} W. body	9×10^{-5} Skin
Kr-87	1×10^{-6} W. body	2×10^{-6} Lens
Xe-131*m*	2×10^{-5} W. body	2×10^{-4} Lens
Xe-133	1×10^{-5} W. body	6×10^{-5} R. marrow
Xe-135	4×10^{-6} W. body	1×10^{-5} R. marrow

reduced substantially is ^{85}Kr. Krypton-85 emits gamma radiation of rather low intensity, and thus, the new value is based on the dose to skin. In addition, the old *RCG* for ^{85}Kr of Publication 2 was derived from a dosimetric model that assumed that beta particles of energy greater than 0.1 MeV contributed to the whole body dose.

Summary

A comparison of the old *RCGs* endorsed in 1960 by the Federal Radiation Council (FRC 1960) with the revised *RCGs* presented in this report indicates that in about 80% of the cases, changes in the numerical values were not substantial, that is, less than a factor of 4. However, some *RCGs* are altered substantially by the new metabolic and dosimetric models, in particular, the lung and bone dosimetry models. Revisions in half-life, nuclear decay data, uptake to body fluids, retention in lung and body tissues, and energy deposition estimates also contributed to changes in the *RCGs*. Even if the *RCG* for a given radionuclide has not been revised substantially, it should not be concluded that the components of its dosimetric analysis have not changed.

APPENDIX A

TABLE 1. RADIOACTIVITY CONCENTRATION GUIDES FOR OCCUPATIONAL EXPOSURE TO RADIONUCLIDES IN AIR*

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
H-3					
TRIT.WATER	*		2×10^{-5}	8×10^{5}	SOFT TIS
BE-7	W	5×10^{-3}	8×10^{-6}	3×10^{5}	LUNGS
	Y	5×10^{-3}	5×10^{-6}	2×10^{5}	LUNGS
BE-10	W	5×10^{-3}	3×10^{-8}	1×10^{3}	R MARROW
	Y	5×10^{-3}	2×10^{-9}	8×10^{1}	LUNGS
C-11					
DIOXIDE	*		3×10^{-4}	9×10^{6}	GONADS
LAB.COMP.	*		2×10^{-4}	6×10^{6}	GONADS
MONOXIDE	*		5×10^{-4}	2×10^{7}	GONADS
C-14					
DIOXIDE	*		9×10^{-5}	3×10^{6}	GONADS
LAB.COMP.	*		1×10^{-6}	4×10^{4}	GONADS
MONOXIDE	*		7×10^{-4}	3×10^{7}	GONADS
F-18	D	1	2×10^{-5}	6×10^{5}	LUNGS
	W	1	1×10^{-5}	5×10^{5}	LUNGS
	Y	1	1×10^{-5}	4×10^{5}	LUNGS
NA-22	D	1	2×10^{-7}	8×10^{3}	R MARROW
NA-24	D	1	1×10^{-6}	5×10^{4}	LUNGS
MG-28	D	5×10^{-1}	6×10^{-7}	2×10^{4}	LUNGS
	W	5×10^{-1}	3×10^{-7}	1×10^{4}	LUNGS
AL-26	D	1×10^{-2}	1×10^{-8}	5×10^{2}	R MARROW
	W	1×10^{-2}	2×10^{-8}	6×10^{2}	LUNGS
SI-31	D	1×10^{-2}	6×10^{-6}	2×10^{5}	LUNGS
	W	1×10^{-2}	5×10^{-6}	2×10^{5}	LUNGS
	Y	1×10^{-2}	4×10^{-6}	2×10^{5}	LUNGS
SI-32	D	1×10^{-2}	1×10^{-7}	4×10^{3}	GONADS
	W	1×10^{-2}	2×10^{-8}	6×10^{2}	LUNGS
	Y	1×10^{-2}	7×10^{-10}	3×10^{1}	LUNGS
P-32	D	8×10^{-1}	9×10^{-8}	3×10^{3}	R MARROW
	W	8×10^{-1}	7×10^{-8}	2×10^{3}	LUNGS
P-33	D	8×10^{-1}	2×10^{-6}	6×10^{4}	R MARROW
	W	8×10^{-1}	4×10^{-7}	1×10^{4}	LUNGS
S-35	D	8×10^{-1}	8×10^{-6}	3×10^{5}	LUNGS
	W	8×10^{-1}	3×10^{-7}	1×10^{4}	LUNGS
GAS	*		6×10^{-6}	2×10^{5}	GONADS
CL-36	D	1	1×10^{-6}	4×10^{4}	GONADS
	W	1	4×10^{-8}	1×10^{3}	LUNGS
CL-38	D	1	8×10^{-6}	3×10^{5}	LUNGS
	W	1	7×10^{-6}	3×10^{5}	LUNGS
CL-39	D	1	1×10^{-5}	4×10^{5}	LUNGS
	W	1	8×10^{-6}	3×10^{5}	LUNGS
K-40	D	1	2×10^{-7}	7×10^{3}	GONADS
K-42	D	1	8×10^{-7}	3×10^{4}	LUNGS
K-43	D	1	2×10^{-6}	8×10^{4}	LUNGS
K-44	D	1	1×10^{-5}	5×10^{5}	LUNGS
K-45	D	1	2×10^{-5}	7×10^{5}	LUNGS
CA-41	W	3×10^{-1}	3×10^{-7}	1×10^{4}	R MARROW

*Definition of terms may be found at the end of table in footnote *b*.

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
CA-45	W	3×10^{-1}	2×10^{-7}	6×10^{3}	LUNGS
CA-47	W	3×10^{-1}	2×10^{-7}	8×10^{3}	LUNGS
SC-43	Y	1×10^{-4}	5×10^{-6}	2×10^{5}	LUNGS
SC-44	Y	1×10^{-4}	3×10^{-6}	1×10^{5}	LUNGS
SC-44M	Y	1×10^{-4}	2×10^{-7}	6×10^{3}	LLI WALL
SC-46	Y	1×10^{-4}	4×10^{-8}	1×10^{3}	LUNGS
SC-47	Y	1×10^{-4}	7×10^{-7}	2×10^{4}	LLI WALL
SC-48	Y	1×10^{-4}	4×10^{-7}	2×10^{4}	LLI WALL
SC-49	Y	1×10^{-4}	8×10^{-6}	3×10^{5}	LUNGS
TI-44	D	1×10^{-2}	5×10^{-9}	2×10^{2}	R MARROW
	W	1×10^{-2}	1×10^{-8}	4×10^{2}	LUNGS
	Y	1×10^{-2}	9×10^{-10}	3×10^{1}	LUNGS
TI-45	D	1×10^{-2}	7×10^{-6}	3×10^{5}	LUNGS
	W	1×10^{-2}	6×10^{-6}	2×10^{5}	LUNGS
	Y	1×10^{-2}	5×10^{-6}	2×10^{5}	LUNGS
V-47	D	1×10^{-2}	2×10^{-5}	6×10^{5}	LUNGS
	W	1×10^{-2}	1×10^{-5}	5×10^{5}	LUNGS
V-48	D	1×10^{-2}	2×10^{-7}	9×10^{3}	R MARROW
	W	1×10^{-2}	1×10^{-7}	5×10^{3}	LUNGS
V-49	D	1×10^{-2}	3×10^{-6}	1×10^{5}	R MARROW
	W	1×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
CR-48	D	1×10^{-1}	5×10^{-6}	2×10^{5}	GONADS
	W	1×10^{-1}	2×10^{-6}	8×10^{4}	LUNGS
	Y	1×10^{-1}	2×10^{-6}	7×10^{4}	LUNGS
CR-49	D	1×10^{-1}	2×10^{-5}	6×10^{5}	LUNGS
	W	1×10^{-1}	1×10^{-5}	6×10^{5}	LUNGS
	Y	1×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS
CR-51	D	1×10^{-1}	2×10^{-5}	8×10^{5}	GONADS
	W	1×10^{-1}	4×10^{-6}	2×10^{5}	LUNGS
	Y	1×10^{-1}	3×10^{-6}	1×10^{5}	LUNGS
MN-51	D	1×10^{-1}	1×10^{-5}	4×10^{5}	LUNGS
	W	1×10^{-1}	9×10^{-6}	3×10^{5}	LUNGS
MN-52	D	1×10^{-1}	5×10^{-7}	2×10^{4}	R MARROW
	W	1×10^{-1}	4×10^{-7}	1×10^{4}	LUNGS
MN-52M	D	1×10^{-1}	2×10^{-5}	6×10^{5}	LUNGS
	W	1×10^{-1}	2×10^{-5}	6×10^{5}	LUNGS
MN-53	D	1×10^{-1}	5×10^{-6}	2×10^{5}	BON SURF
	W	1×10^{-1}	2×10^{-6}	7×10^{4}	LUNGS
MN-54	D	1×10^{-1}	3×10^{-7}	1×10^{4}	R MARROW
	W	1×10^{-1}	3×10^{-7}	9×10^{3}	LUNGS
MN-56	D	1×10^{-1}	4×10^{-6}	1×10^{5}	LUNGS
	W	1×10^{-1}	3×10^{-6}	1×10^{5}	LUNGS
FE-52	D	1×10^{-1}	1×10^{-6}	4×10^{4}	LUNGS
	W	1×10^{-1}	7×10^{-7}	2×10^{4}	LUNGS
FE-55	D	1×10^{-1}	6×10^{-7}	2×10^{4}	SPLEEN
	W	1×10^{-1}	2×10^{-6}	6×10^{4}	LUNGS
FE-59	D	1×10^{-1}	2×10^{-7}	6×10^{3}	GONADS
	W	1×10^{-1}	1×10^{-7}	5×10^{3}	LUNGS
FE-60	D	1×10^{-1}	3×10^{-9}	1×10^{2}	GONADS
	W	1×10^{-1}	9×10^{-9}	3×10^{2}	GONADS
CO-55	W	5×10^{-2}	1×10^{-6}	4×10^{4}	LLI WALL
	Y	5×10^{-2}	8×10^{-7}	3×10^{4}	LLI WALL

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
CO-56	W	5×10^{-2}	6×10^{-8}	2×10^{3}	LUNGS
	Y	5×10^{-2}	3×10^{-8}	1×10^{3}	LUNGS
CO-57	W	5×10^{-2}	4×10^{-7}	2×10^{4}	LUNGS
	Y	5×10^{-2}	1×10^{-7}	4×10^{3}	LUNGS
CO-58	W	5×10^{-2}	2×10^{-7}	8×10^{3}	LUNGS
	Y	5×10^{-2}	1×10^{-7}	4×10^{3}	LUNGS
CO-58M	W	5×10^{-2}	2×10^{-5}	7×10^{5}	LUNGS
	Y	5×10^{-2}	1×10^{-5}	5×10^{5}	LUNGS
CO-60	W	5×10^{-2}	5×10^{-8}	2×10^{3}	LUNGS
	Y	5×10^{-2}	5×10^{-9}	2×10^{2}	LUNGS
CO-60M	W	5×10^{-2}	6×10^{-4}	2×10^{7}	LUNGS
	Y	5×10^{-2}	4×10^{-4}	2×10^{7}	LUNGS
CO-61	W	5×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
	Y	5×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
CO-62M	W	5×10^{-2}	2×10^{-5}	9×10^{5}	LUNGS
	Y	5×10^{-2}	2×10^{-5}	9×10^{5}	LUNGS
NI-56	D	5×10^{-2}	7×10^{-7}	3×10^{4}	GONADS
	W	5×10^{-2}	5×10^{-7}	2×10^{4}	LUNGS
VAPOR	*		5×10^{-7}	2×10^{4}	GONADS
NI-57	D	5×10^{-2}	2×10^{-6}	7×10^{4}	LLI WALL
	W	5×10^{-2}	1×10^{-6}	4×10^{4}	LLI WALL
VAPOR	*		3×10^{-6}	1×10^{5}	LUNGS
NI-59	D	5×10^{-2}	2×10^{-6}	6×10^{4}	GONADS
	W	5×10^{-2}	1×10^{-6}	5×10^{4}	LUNGS
VAPOR	*		8×10^{-7}	3×10^{4}	GONADS
NI-63	D	5×10^{-2}	7×10^{-7}	3×10^{4}	GONADS
	W	5×10^{-2}	6×10^{-7}	2×10^{4}	LUNGS
VAPOR	*		3×10^{-7}	1×10^{4}	GONADS
NI-65	D	5×10^{-2}	5×10^{-6}	2×10^{5}	LUNGS
	W	5×10^{-2}	4×10^{-6}	2×10^{5}	LUNGS
VAPOR	*		2×10^{-6}	9×10^{4}	LUNGS
NI-66	D	5×10^{-2}	3×10^{-7}	1×10^{4}	LLI WALL
	W	5×10^{-2}	1×10^{-7}	5×10^{3}	LLI WALL
VAPOR	*		7×10^{-7}	3×10^{4}	LUNGS
CU-60	D	5×10^{-1}	2×10^{-5}	6×10^{5}	LUNGS
	W	5×10^{-1}	2×10^{-5}	6×10^{5}	LUNGS
	Y	5×10^{-1}	2×10^{-5}	6×10^{5}	LUNGS
CU-61	D	5×10^{-1}	8×10^{-6}	3×10^{5}	LUNGS
	W	5×10^{-1}	6×10^{-6}	2×10^{5}	LUNGS
	Y	5×10^{-1}	6×10^{-6}	2×10^{5}	LUNGS
CU-64	D	5×10^{-1}	8×10^{-6}	3×10^{5}	LUNGS
	W	5×10^{-1}	5×10^{-6}	2×10^{5}	LUNGS
	Y	5×10^{-1}	5×10^{-6}	2×10^{5}	LUNGS
CU-67	D	5×10^{-1}	4×10^{-6}	1×10^{5}	LLI WALL
	W	5×10^{-1}	1×10^{-6}	4×10^{4}	LUNGS
	Y	5×10^{-1}	1×10^{-6}	4×10^{4}	LUNGS
ZN-62	Y	5×10^{-1}	6×10^{-7}	2×10^{4}	LUNGS
ZN-63	Y	5×10^{-1}	1×10^{-5}	4×10^{5}	LUNGS
ZN-65	Y	5×10^{-1}	8×10^{-8}	3×10^{3}	LUNGS
ZN-69	Y	5×10^{-1}	2×10^{-5}	8×10^{5}	LUNGS
ZN-69M	Y	5×10^{-1}	2×10^{-6}	6×10^{4}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
ZN-71M	Y	5×10^{-1}	3×10^{-6}	1×10^{5}	LUNGS
ZN-72	Y	5×10^{-1}	3×10^{-7}	1×10^{4}	LUNGS
GA-65	D	1×10^{-3}	3×10^{-5}	1×10^{6}	LUNGS
	W	1×10^{-3}	3×10^{-5}	1×10^{6}	LUNGS
GA-66	D	1×10^{-3}	1×10^{-6}	5×10^{4}	LUNGS
	W	1×10^{-3}	8×10^{-7}	3×10^{4}	LUNGS
GA-67	D	1×10^{-3}	6×10^{-6}	2×10^{5}	LLI WALL
	W	1×10^{-3}	3×10^{-6}	1×10^{5}	LLI WALL
GA-68	D	1×10^{-3}	9×10^{-6}	3×10^{5}	LUNGS
	W	1×10^{-3}	8×10^{-6}	3×10^{5}	LUNGS
GA-70	D	1×10^{-3}	3×10^{-5}	1×10^{6}	LUNGS
	W	1×10^{-3}	3×10^{-5}	1×10^{6}	LUNGS
GA-72	D	1×10^{-3}	1×10^{-6}	5×10^{4}	LLI WALL
	W	1×10^{-3}	1×10^{-6}	4×10^{4}	LUNGS
GA-73	D	1×10^{-3}	4×10^{-6}	2×10^{5}	LUNGS
	W	1×10^{-3}	3×10^{-6}	1×10^{5}	LUNGS
GE-66	D	1	5×10^{-6}	2×10^{5}	LUNGS
	W	1	3×10^{-6}	1×10^{5}	LUNGS
GE-67	D	1	2×10^{-5}	6×10^{5}	LUNGS
	W	1	2×10^{-5}	6×10^{5}	LUNGS
GE-68	D	1	7×10^{-7}	3×10^{4}	LUNGS
	W	1	2×10^{-8}	6×10^{2}	LUNGS
GE-69	D	1	3×10^{-6}	1×10^{5}	LUNGS
	W	1	1×10^{-6}	4×10^{4}	LUNGS
GE-71	D	1	7×10^{-5}	2×10^{6}	LUNGS
	W	1	6×10^{-6}	2×10^{5}	LUNGS
GE-75	D	1	1×10^{-5}	5×10^{5}	LUNGS
	W	1	1×10^{-5}	4×10^{5}	LUNGS
GE-77	D	1	2×10^{-6}	6×10^{4}	LUNGS
	W	1	9×10^{-7}	3×10^{4}	LUNGS
GE-78	D	1	4×10^{-6}	1×10^{5}	LUNGS
	W	1	3×10^{-6}	1×10^{5}	LUNGS
AS-69	W	5×10^{-1}	2×10^{-5}	7×10^{5}	LUNGS
AS-70	W	5×10^{-1}	8×10^{-6}	3×10^{5}	LUNGS
AS-71	W	5×10^{-1}	1×10^{-6}	4×10^{4}	LUNGS
AS-72	W	5×10^{-1}	3×10^{-7}	1×10^{4}	LUNGS
AS-73	W	5×10^{-1}	2×10^{-7}	9×10^{3}	LUNGS
AS-74	W	5×10^{-1}	1×10^{-7}	5×10^{3}	LUNGS
AS-76	W	5×10^{-1}	3×10^{-7}	1×10^{4}	LUNGS
AS-77	W	5×10^{-1}	1×10^{-6}	4×10^{4}	LUNGS
AS-78	W	5×10^{-1}	3×10^{-6}	1×10^{5}	LUNGS
SE-70	D	8×10^{-1}	7×10^{-6}	3×10^{5}	LUNGS
	W	8×10^{-1}	6×10^{-6}	2×10^{5}	LUNGS
SE-73	D	8×10^{-1}	3×10^{-6}	1×10^{5}	LUNGS
	W	8×10^{-1}	2×10^{-6}	9×10^{4}	LUNGS
SE-73M	D	8×10^{-1}	3×10^{-5}	1×10^{6}	LUNGS
	W	8×10^{-1}	2×10^{-5}	8×10^{5}	LUNGS
SE-75	D	8×10^{-1}	3×10^{-7}	1×10^{4}	KIDNEYS
	W	8×10^{-1}	3×10^{-7}	1×10^{4}	LUNGS
SE-79	D	8×10^{-1}	2×10^{-7}	7×10^{3}	KIDNEYS
	W	8×10^{-1}	2×10^{-7}	6×10^{3}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
SE-81	D	8×10^{-1}	4×10^{-5}	1×10^{6}	LUNGS
	W	8×10^{-1}	4×10^{-5}	1×10^{6}	LUNGS
SE-81M	D	8×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS
	W	8×10^{-1}	1×10^{-5}	4×10^{5}	LUNGS
SE-83	D	8×10^{-1}	2×10^{-5}	8×10^{5}	LUNGS
	W	8×10^{-1}	2×10^{-5}	7×10^{5}	LUNGS
BR-74	D	1	1×10^{-5}	5×10^{5}	LUNGS
	W	1	1×10^{-5}	5×10^{5}	LUNGS
BR-74M	D	1	7×10^{-6}	3×10^{5}	LUNGS
	W	1	6×10^{-6}	2×10^{5}	LUNGS
BR-75	D	1	9×10^{-6}	3×10^{5}	LUNGS
	W	1	7×10^{-6}	3×10^{5}	LUNGS
BR-76	D	1	1×10^{-6}	4×10^{4}	LUNGS
	W	1	7×10^{-7}	2×10^{4}	LUNGS
BR-77	D	1	1×10^{-5}	4×10^{5}	R MARROW
	W	1	6×10^{-6}	2×10^{5}	LUNGS
BR-80	D	1	3×10^{-5}	1×10^{6}	LUNGS
	W	1	3×10^{-5}	1×10^{6}	LUNGS
BR-80M	D	1	3×10^{-6}	1×10^{5}	LUNGS
	W	1	2×10^{-6}	8×10^{4}	LUNGS
BR-82	D	1	2×10^{-6}	8×10^{4}	LUNGS
	W	1	1×10^{-6}	4×10^{4}	LUNGS
BR-83	D	1	1×10^{-5}	4×10^{5}	LUNGS
	W	1	9×10^{-6}	3×10^{5}	LUNGS
BR-84	D	1	1×10^{-5}	4×10^{5}	LUNGS
	W	1	1×10^{-5}	4×10^{5}	LUNGS
RB-79	D	1	2×10^{-5}	8×10^{5}	LUNGS
RB-81	D	1	9×10^{-6}	3×10^{5}	LUNGS
RB-81M	D	1	6×10^{-5}	2×10^{6}	LUNGS
RB-82M	D	1	7×10^{-6}	2×10^{5}	LUNGS
RB-83	D	1	3×10^{-7}	1×10^{4}	R MARROW
RB-84	D	1	3×10^{-7}	1×10^{4}	R MARROW
RB-86	D	1	2×10^{-7}	9×10^{3}	R MARROW
RB-87	D	1	4×10^{-7}	2×10^{4}	R MARROW
RB-88	D	1	1×10^{-5}	4×10^{5}	LUNGS
RB-89	D	1	2×10^{-5}	9×10^{5}	LUNGS
SR-80	D	3×10^{-1}	2×10^{-6}	9×10^{4}	LUNGS
	Y	1×10^{-2}	2×10^{-6}	7×10^{4}	LUNGS
SR-81	D	3×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS
	Y	1×10^{-2}	1×10^{-5}	4×10^{5}	LUNGS
SR-83	D	3×10^{-1}	3×10^{-6}	1×10^{5}	LLI WALL
	Y	1×10^{-2}	1×10^{-6}	4×10^{4}	LLI WALL
SR-85	D	3×10^{-1}	6×10^{-7}	2×10^{4}	R MARROW
	Y	1×10^{-2}	2×10^{-7}	9×10^{3}	LUNGS
SR-85M	D	3×10^{-1}	3×10^{-4}	1×10^{7}	LUNGS
	Y	1×10^{-2}	1×10^{-4}	5×10^{6}	LUNGS
SR-87M	D	3×10^{-1}	4×10^{-5}	1×10^{6}	LUNGS
	Y	1×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
SR-89	D	3×10^{-1}	1×10^{-7}	4×10^{3}	R MARROW
	Y	1×10^{-2}	2×10^{-8}	7×10^{2}	LUNGS
SR-90	D	3×10^{-1}	2×10^{-9}	6×10^{1}	R MARROW
	Y	1×10^{-2}	6×10^{-10}	2×10^{1}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m³)	CRITICAL ORGAN
SR-91	D	3×10^{-1}	2×10^{-6}	7×10^{4}	LUNGS
	Y	1×10^{-2}	8×10^{-7}	3×10^{4}	LUNGS
SR-92	D	3×10^{-1}	2×10^{-6}	9×10^{4}	LUNGS
	Y	1×10^{-2}	2×10^{-6}	6×10^{4}	LUNGS
Y-86	W	1×10^{-4}	2×10^{-6}	6×10^{4}	LUNGS
	Y	1×10^{-4}	1×10^{-6}	5×10^{4}	LLI WALL
Y-86M	W	1×10^{-4}	3×10^{-5}	9×10^{5}	LUNGS
	Y	1×10^{-4}	2×10^{-5}	8×10^{5}	LLI WALL
Y-87	W	1×10^{-4}	1×10^{-6}	4×10^{4}	LLI WALL
	Y	1×10^{-4}	9×10^{-7}	3×10^{4}	LLI WALL
Y-88	W	1×10^{-4}	1×10^{-7}	4×10^{3}	LUNGS
	Y	1×10^{-4}	5×10^{-8}	2×10^{3}	LUNGS
Y-90	W	1×10^{-4}	2×10^{-7}	6×10^{3}	LLI WALL
	Y	1×10^{-4}	1×10^{-7}	5×10^{3}	LLI WALL
Y-90M	W	1×10^{-4}	3×10^{-6}	1×10^{5}	LLI WALL
	Y	1×10^{-4}	3×10^{-6}	9×10^{4}	LLI WALL
Y-91	W	1×10^{-4}	3×10^{-8}	1×10^{3}	LUNGS
	Y	1×10^{-4}	2×10^{-8}	6×10^{2}	LUNGS
Y-91M	W	1×10^{-4}	4×10^{-5}	1×10^{6}	LUNGS
	Y	1×10^{-4}	2×10^{-5}	9×10^{5}	LUNGS
Y-92	W	1×10^{-4}	1×10^{-6}	5×10^{4}	LUNGS
	Y	1×10^{-4}	1×10^{-6}	5×10^{4}	LUNGS
Y-93	W	1×10^{-4}	7×10^{-7}	3×10^{4}	LUNGS
	Y	1×10^{-4}	7×10^{-7}	2×10^{4}	LUNGS
Y-94	W	1×10^{-4}	1×10^{-5}	4×10^{5}	LUNGS
	Y	1×10^{-4}	1×10^{-5}	4×10^{5}	LUNGS
Y-95	W	1×10^{-4}	2×10^{-5}	8×10^{5}	LUNGS
	Y	1×10^{-4}	2×10^{-5}	8×10^{5}	LUNGS
ZR-86	D	2×10^{-3}	2×10^{-6}	6×10^{4}	LLI WALL
	W	2×10^{-3}	8×10^{-7}	3×10^{4}	LLI WALL
	Y	2×10^{-3}	7×10^{-7}	3×10^{4}	LLI WALL
ZR-88	D	2×10^{-3}	4×10^{-8}	2×10^{3}	R MARROW
	W	2×10^{-3}	2×10^{-7}	6×10^{3}	R MARROW
	Y	2×10^{-3}	5×10^{-8}	2×10^{3}	LUNGS
ZR-89	D	2×10^{-3}	1×10^{-6}	4×10^{4}	R MARROW
	W	2×10^{-3}	8×10^{-7}	3×10^{4}	LLI WALL
	Y	2×10^{-3}	7×10^{-7}	3×10^{4}	LLI WALL
ZR-93	D	2×10^{-3}	3×10^{-9}	1×10^{2}	BON SURF
	W	2×10^{-3}	1×10^{-8}	4×10^{2}	BON SURF
	Y	2×10^{-3}	2×10^{-8}	7×10^{2}	LUNGS
ZR-95	D	2×10^{-3}	4×10^{-8}	2×10^{3}	R MARROW
	W	2×10^{-3}	9×10^{-8}	3×10^{3}	LUNGS
	Y	2×10^{-3}	4×10^{-8}	2×10^{3}	LUNGS
ZR-97	D	2×10^{-3}	6×10^{-7}	2×10^{4}	LLI WALL
	W	2×10^{-3}	4×10^{-7}	1×10^{4}	LLI WALL
	Y	2×10^{-3}	3×10^{-7}	1×10^{4}	LLI WALL
NB-88	W	1×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	Y	1×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
NB-89*	W	1×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
	Y	1×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
NB-89†	W	1×10^{-2}	6×10^{-6}	2×10^{5}	LUNGS
	Y	1×10^{-2}	6×10^{-6}	2×10^{5}	LUNGS

*122 min.
†66 min.

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
NB-90	W	1×10^{-2}	1×10^{-6}	4×10^{4}	LUNGS
	Y	1×10^{-2}	9×10^{-7}	3×10^{4}	LLI WALL
NB-93M	W	1×10^{-2}	3×10^{-7}	1×10^{4}	LUNGS
	Y	1×10^{-2}	3×10^{-8}	1×10^{3}	LUNGS
NB-94	W	1×10^{-2}	4×10^{-8}	1×10^{3}	LUNGS
	Y	1×10^{-2}	2×10^{-9}	8×10^{1}	LUNGS
NB-95	W	1×10^{-2}	3×10^{-7}	1×10^{4}	LUNGS
	Y	1×10^{-2}	2×10^{-7}	8×10^{3}	LUNGS
NB-95M	W	1×10^{-2}	6×10^{-7}	2×10^{4}	LUNGS
	Y	1×10^{-2}	6×10^{-7}	2×10^{4}	LUNGS
NB-96	W	1×10^{-2}	9×10^{-7}	3×10^{4}	LLI WALL
	Y	1×10^{-2}	8×10^{-7}	3×10^{4}	LLI WALL
NB-97	W	1×10^{-2}	1×10^{-5}	4×10^{5}	LUNGS
	Y	1×10^{-2}	1×10^{-5}	4×10^{5}	LUNGS
NB-98	W	1×10^{-2}	8×10^{-6}	3×10^{5}	LUNGS
	Y	1×10^{-2}	7×10^{-6}	3×10^{5}	LUNGS
MO-90	D	8×10^{-1}	3×10^{-6}	1×10^{5}	LUNGS
	Y	5×10^{-2}	2×10^{-6}	6×10^{4}	LLI WALL
MO-93	D	8×10^{-1}	1×10^{-6}	5×10^{4}	LIVER
	Y	5×10^{-2}	3×10^{-8}	1×10^{3}	LUNGS
MO-93M	D	8×10^{-1}	7×10^{-6}	3×10^{5}	LUNGS
	Y	5×10^{-2}	5×10^{-6}	2×10^{5}	LUNGS
MO-99	D	8×10^{-1}	9×10^{-7}	3×10^{4}	LIVER
	Y	5×10^{-2}	3×10^{-7}	1×10^{4}	LLI WALL
MO-101	D	8×10^{-1}	3×10^{-5}	1×10^{6}	LUNGS
	Y	5×10^{-2}	2×10^{-5}	8×10^{5}	LUNGS
TC-93	D	8×10^{-1}	3×10^{-5}	1×10^{6}	S WALL
	W	8×10^{-1}	3×10^{-5}	1×10^{6}	LUNGS
TC-93M	D	8×10^{-1}	6×10^{-5}	2×10^{6}	LUNGS
	W	8×10^{-1}	6×10^{-5}	2×10^{6}	LUNGS
TC-94	D	8×10^{-1}	8×10^{-6}	3×10^{5}	S WALL
	W	8×10^{-1}	8×10^{-6}	3×10^{5}	LUNGS
TC-94M	D	8×10^{-1}	1×10^{-5}	4×10^{5}	LUNGS
	W	8×10^{-1}	9×10^{-6}	4×10^{5}	LUNGS
TC-96	D	8×10^{-1}	1×10^{-6}	4×10^{4}	S WALL
	W	8×10^{-1}	8×10^{-7}	3×10^{4}	LUNGS
TC-96M	D	8×10^{-1}	1×10^{-4}	4×10^{6}	S WALL
	W	8×10^{-1}	7×10^{-5}	3×10^{6}	LUNGS
TC-97	D	8×10^{-1}	7×10^{-6}	2×10^{5}	S WALL
	W	8×10^{-1}	9×10^{-7}	3×10^{4}	LUNGS
TC-97M	D	8×10^{-1}	8×10^{-7}	3×10^{4}	S WALL
	W	8×10^{-1}	2×10^{-7}	7×10^{3}	LUNGS
TC-98	D	8×10^{-1}	3×10^{-7}	1×10^{4}	S WALL
	W	8×10^{-1}	4×10^{-8}	2×10^{3}	LUNGS
TC-99	D	8×10^{-1}	7×10^{-7}	3×10^{4}	S WALL
	W	8×10^{-1}	1×10^{-7}	4×10^{3}	LUNGS
TC-99M	D	8×10^{-1}	6×10^{-5}	2×10^{6}	S WALL
	W	8×10^{-1}	6×10^{-5}	2×10^{6}	LUNGS
TC-101	D	8×10^{-1}	6×10^{-5}	2×10^{6}	LUNGS
	W	8×10^{-1}	6×10^{-5}	2×10^{6}	LUNGS
TC-104	D	8×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS
	W	8×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
RU-94	D	5×10^{-2}	1×10^{-5}	4×10^{5}	LUNGS
	W	5×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
	Y	5×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
RU-97	D	5×10^{-2}	8×10^{-6}	3×10^{5}	GONADS
	W	5×10^{-2}	5×10^{-6}	2×10^{5}	LLI WALL
	Y	5×10^{-2}	4×10^{-6}	2×10^{5}	LLI WALL
RU-103	D	5×10^{-2}	8×10^{-7}	3×10^{4}	GONADS
	W	5×10^{-2}	2×10^{-7}	6×10^{3}	LUNGS
	Y	5×10^{-2}	1×10^{-7}	4×10^{3}	LUNGS
RU-105	D	5×10^{-2}	5×10^{-6}	2×10^{5}	LUNGS
	W	5×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
	Y	5×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
RU-106	D	5×10^{-2}	4×10^{-8}	2×10^{3}	GONADS
	W	5×10^{-2}	8×10^{-9}	3×10^{2}	LUNGS
	Y	5×10^{-2}	2×10^{-9}	6×10^{1}	LUNGS
RH-99	D	5×10^{-2}	1×10^{-6}	5×10^{4}	GONADS
	W	5×10^{-2}	5×10^{-7}	2×10^{4}	LUNGS
	Y	5×10^{-2}	4×10^{-7}	2×10^{4}	LUNGS
RH-99M	D	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	W	5×10^{-2}	2×10^{-5}	8×10^{5}	LUNGS
	Y	5×10^{-2}	2×10^{-5}	8×10^{5}	LUNGS
RH-100	D	5×10^{-2}	2×10^{-6}	8×10^{4}	GONADS
	W	5×10^{-2}	2×10^{-6}	7×10^{4}	GONADS
	Y	5×10^{-2}	2×10^{-6}	6×10^{4}	GONADS
RH-101	D	5×10^{-2}	2×10^{-7}	7×10^{3}	R MARROW
	W	5×10^{-2}	2×10^{-7}	7×10^{3}	LUNGS
	Y	5×10^{-2}	2×10^{-8}	9×10^{2}	LUNGS
RH-101M	D	5×10^{-2}	5×10^{-6}	2×10^{5}	GONADS
	W	5×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
	Y	5×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
RH-102	D	5×10^{-2}	4×10^{-8}	1×10^{3}	GONADS
	W	5×10^{-2}	8×10^{-8}	3×10^{3}	LUNGS
	Y	5×10^{-2}	1×10^{-8}	4×10^{2}	LUNGS
RH-102M	D	5×10^{-2}	2×10^{-7}	8×10^{3}	GONADS
	W	5×10^{-2}	6×10^{-8}	2×10^{3}	LUNGS
	Y	5×10^{-2}	2×10^{-8}	7×10^{2}	LUNGS
RH-103M	D	5×10^{-2}	2×10^{-4}	8×10^{6}	LUNGS
	W	5×10^{-2}	2×10^{-4}	7×10^{6}	LUNGS
	Y	5×10^{-2}	2×10^{-4}	7×10^{6}	LUNGS
RH-105	D	5×10^{-2}	3×10^{-6}	1×10^{5}	LLI WALL
	W	5×10^{-2}	1×10^{-6}	5×10^{4}	LLI WALL
	Y	5×10^{-2}	1×10^{-6}	5×10^{4}	LLI WALL
RH-106M	D	5×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
	W	5×10^{-2}	7×10^{-6}	3×10^{5}	LUNGS
	Y	5×10^{-2}	7×10^{-6}	3×10^{5}	LUNGS
RH-107	D	5×10^{-2}	4×10^{-5}	2×10^{6}	LUNGS
	W	5×10^{-2}	4×10^{-5}	1×10^{6}	LUNGS
	Y	5×10^{-2}	4×10^{-5}	1×10^{6}	LUNGS
PD-100	D	5×10^{-3}	4×10^{-7}	1×10^{4}	KIDNEYS
	W	5×10^{-3}	5×10^{-7}	2×10^{4}	LLI WALL
	Y	5×10^{-3}	5×10^{-7}	2×10^{4}	LLI WALL

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
PD-101	D	5×10^{-3}	1×10^{-5}	5×10^{5}	KIDNEYS
	W	5×10^{-3}	1×10^{-5}	4×10^{5}	LUNGS
	Y	5×10^{-3}	1×10^{-5}	4×10^{5}	LUNGS
PD-103	D	5×10^{-3}	9×10^{-7}	3×10^{4}	KIDNEYS
	W	5×10^{-3}	8×10^{-7}	3×10^{4}	LUNGS
	Y	5×10^{-3}	6×10^{-7}	2×10^{4}	LUNGS
PD-107	D	5×10^{-3}	3×10^{-6}	1×10^{5}	KIDNEYS
	W	5×10^{-3}	1×10^{-6}	4×10^{4}	LUNGS
	Y	5×10^{-3}	6×10^{-8}	2×10^{3}	LUNGS
PD-109	D	5×10^{-3}	2×10^{-6}	9×10^{4}	LLI WALL
	W	5×10^{-3}	1×10^{-6}	5×10^{4}	LUNGS
	Y	5×10^{-3}	1×10^{-6}	5×10^{4}	LLI WALL
AG-102	D	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	W	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	Y	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
AG-103	D	5×10^{-2}	2×10^{-5}	9×10^{5}	LUNGS
	W	5×10^{-2}	2×10^{-5}	7×10^{5}	LUNGS
	Y	5×10^{-2}	2×10^{-5}	7×10^{5}	LUNGS
AG-104	D	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	W	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	Y	5×10^{-2}	3×10^{-5}	9×10^{5}	LUNGS
AG-104M	D	5×10^{-2}	2×10^{-5}	8×10^{5}	LUNGS
	W	5×10^{-2}	2×10^{-5}	7×10^{5}	LUNGS
	Y	5×10^{-2}	2×10^{-5}	7×10^{5}	LUNGS
AG-105	D	5×10^{-2}	2×10^{-7}	6×10^{3}	LIVER
	W	5×10^{-2}	4×10^{-7}	2×10^{4}	LUNGS
	Y	5×10^{-2}	3×10^{-7}	1×10^{4}	LUNGS
AG-106	D	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	W	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	Y	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
AG-106M	D	5×10^{-2}	1×10^{-7}	5×10^{3}	LIVER
	W	5×10^{-2}	4×10^{-7}	2×10^{4}	LUNGS
	Y	5×10^{-2}	4×10^{-7}	1×10^{4}	LUNGS
AG-108M	D	5×10^{-2}	3×10^{-8}	1×10^{3}	LIVER
	W	5×10^{-2}	6×10^{-8}	2×10^{3}	LUNGS
	Y	5×10^{-2}	4×10^{-9}	1×10^{2}	LUNGS
AG-110M	D	5×10^{-2}	2×10^{-8}	8×10^{2}	LIVER
	W	5×10^{-2}	5×10^{-8}	2×10^{3}	LUNGS
	Y	5×10^{-2}	1×10^{-8}	5×10^{2}	LUNGS
AG-111	D	5×10^{-2}	2×10^{-7}	7×10^{3}	LIVER
	W	5×10^{-2}	2×10^{-7}	8×10^{3}	LUNGS
	Y	5×10^{-2}	2×10^{-7}	7×10^{3}	LUNGS
AG-112	D	5×10^{-2}	2×10^{-6}	8×10^{4}	LUNGS
	W	5×10^{-2}	2×10^{-6}	6×10^{4}	LUNGS
	Y	5×10^{-2}	2×10^{-6}	6×10^{4}	LUNGS
AG-115	D	5×10^{-2}	2×10^{-5}	7×10^{5}	LUNGS
	W	5×10^{-2}	1×10^{-5}	5×10^{5}	LUNGS
	Y	5×10^{-2}	1×10^{-5}	5×10^{5}	LUNGS
CD-104	D	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	W	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	Y	5×10^{-2}	3×10^{-5}	9×10^{5}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
CD-107	D	5×10^{-2}	2×10^{-5}	7×10^{5}	LUNGS
	W	5×10^{-2}	1×10^{-5}	5×10^{5}	LUNGS
	Y	5×10^{-2}	1×10^{-5}	4×10^{5}	LUNGS
CD-109	D	5×10^{-2}	4×10^{-9}	2×10^{2}	KIDNEYS
	W	5×10^{-2}	1×10^{-8}	5×10^{2}	KIDNEYS
	Y	5×10^{-2}	2×10^{-8}	8×10^{2}	LUNGS
CD-113	D	5×10^{-2}	3×10^{-10}	1×10^{1}	KIDNEYS
	W	5×10^{-2}	9×10^{-10}	3×10^{1}	KIDNEYS
	Y	5×10^{-2}	2×10^{-9}	7×10^{1}	KIDNEYS
CD-113M	D	5×10^{-2}	3×10^{-10}	1×10^{1}	KIDNEYS
	W	5×10^{-2}	1×10^{-9}	4×10^{1}	KIDNEYS
	Y	5×10^{-2}	2×10^{-9}	8×10^{1}	KIDNEYS
CD-115	D	5×10^{-2}	2×10^{-7}	7×10^{3}	KIDNEYS
	W	5×10^{-2}	3×10^{-7}	1×10^{4}	LLI WALL
	Y	5×10^{-2}	3×10^{-7}	1×10^{4}	LLI WALL
CD-115M	D	5×10^{-2}	7×10^{-9}	3×10^{2}	KIDNEYS
	W	5×10^{-2}	3×10^{-8}	1×10^{3}	KIDNEYS
	Y	5×10^{-2}	2×10^{-8}	8×10^{2}	LUNGS
CD-117	D	5×10^{-2}	4×10^{-6}	1×10^{5}	LUNGS
	W	5×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
	Y	5×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
CD-117M	D	5×10^{-2}	5×10^{-6}	2×10^{5}	LUNGS
	W	5×10^{-2}	4×10^{-6}	1×10^{5}	LUNGS
	Y	5×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
IN-109	D	2×10^{-2}	1×10^{-5}	5×10^{5}	R MARROW
	W	2×10^{-2}	2×10^{-5}	7×10^{5}	LUNGS
IN-110*	D	2×10^{-2}	8×10^{-6}	3×10^{5}	GONADS
	W	2×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
IN-110†	D	2×10^{-2}	1×10^{-5}	4×10^{5}	LUNGS
	W	2×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
IN-111	D	2×10^{-2}	2×10^{-6}	6×10^{4}	R MARROW
	W	2×10^{-2}	2×10^{-6}	9×10^{4}	LLI WALL
IN-112	D	2×10^{-2}	1×10^{-4}	4×10^{6}	LUNGS
	W	2×10^{-2}	1×10^{-4}	4×10^{6}	LUNGS
IN-113M	D	2×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	W	2×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
IN-114M	D	2×10^{-2}	7×10^{-9}	3×10^{2}	R MARROW
	W	2×10^{-2}	2×10^{-8}	9×10^{2}	LUNGS
IN-115	D	2×10^{-2}	2×10^{-10}	6	R MARROW
	W	2×10^{-2}	6×10^{-10}	2×10^{1}	R MARROW
IN-115M	D	2×10^{-2}	1×10^{-5}	5×10^{5}	LUNGS
	W	2×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
IN-116M	D	2×10^{-2}	2×10^{-5}	8×10^{5}	LUNGS
	W	2×10^{-2}	2×10^{-5}	7×10^{5}	LUNGS
IN-117	D	2×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	W	2×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
IN-117M	D	2×10^{-2}	8×10^{-6}	3×10^{5}	LUNGS
	W	2×10^{-2}	6×10^{-6}	2×10^{5}	LUNGS
IN-119M	D	2×10^{-2}	2×10^{-5}	8×10^{5}	LUNGS
	W	2×10^{-2}	2×10^{-5}	8×10^{5}	LUNGS
SN-110	D	2×10^{-2}	4×10^{-6}	1×10^{5}	LUNGS
	W	2×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS

*4.9 h.
†69.1 min.

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
SN-111	D	2×10^{-2}	5×10^{-5}	2×10^{6}	LUNGS
	W	2×10^{-2}	4×10^{-5}	1×10^{6}	LUNGS
SN-113	D	2×10^{-2}	2×10^{-7}	8×10^{3}	R MARROW
	W	2×10^{-2}	9×10^{-8}	3×10^{3}	LUNGS
SN-117M	D	2×10^{-2}	5×10^{-7}	2×10^{4}	BON SURF
	W	2×10^{-2}	3×10^{-7}	1×10^{4}	LUNGS
SN-119M	D	2×10^{-2}	3×10^{-7}	1×10^{4}	R MARROW
	W	2×10^{-2}	1×10^{-7}	5×10^{3}	LUNGS
SN-121	D	2×10^{-2}	5×10^{-6}	2×10^{5}	LLI WALL
	W	2×10^{-2}	3×10^{-6}	9×10^{4}	LLI WALL
SN-121M	D	2×10^{-2}	1×10^{-7}	4×10^{3}	R MARROW
	W	2×10^{-2}	8×10^{-8}	3×10^{3}	LUNGS
SN-123	D	2×10^{-2}	1×10^{-7}	4×10^{3}	R MARROW
	W	2×10^{-2}	3×10^{-8}	1×10^{3}	LUNGS
SN-123M	D	2×10^{-2}	2×10^{-5}	9×10^{5}	LUNGS
	W	2×10^{-2}	2×10^{-5}	8×10^{5}	LUNGS
SN-125	D	2×10^{-2}	2×10^{-7}	6×10^{3}	R MARROW
	W	2×10^{-2}	8×10^{-8}	3×10^{3}	LUNGS
SN-126	D	2×10^{-2}	1×10^{-8}	4×10^{2}	R MARROW
	W	2×10^{-2}	1×10^{-8}	4×10^{2}	LUNGS
SN-127	D	2×10^{-2}	6×10^{-6}	2×10^{5}	LUNGS
	W	2×10^{-2}	4×10^{-6}	1×10^{5}	LUNGS
SN-128	D	2×10^{-2}	6×10^{-6}	2×10^{5}	LUNGS
	W	2×10^{-2}	5×10^{-6}	2×10^{5}	LUNGS
SB-115	D	1×10^{-1}	5×10^{-5}	2×10^{6}	LUNGS
	W	1×10^{-2}	4×10^{-5}	2×10^{6}	LUNGS
SB-116M	D	1×10^{-1}	2×10^{-5}	9×10^{5}	LUNGS
	W	1×10^{-2}	2×10^{-5}	8×10^{5}	LUNGS
SB-117	D	1×10^{-1}	7×10^{-5}	3×10^{6}	LUNGS
	W	1×10^{-2}	6×10^{-5}	2×10^{6}	LUNGS
SB-118M	D	1×10^{-1}	1×10^{-5}	4×10^{5}	GONADS
	W	1×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
SB-119	D	1×10^{-1}	1×10^{-5}	5×10^{5}	LLI WALL
	W	1×10^{-2}	7×10^{-6}	2×10^{5}	LLI WALL
SB-120*	D	1×10^{-1}	8×10^{-5}	3×10^{6}	LUNGS
	W	1×10^{-2}	7×10^{-5}	3×10^{6}	LUNGS
SB-120†	D	1×10^{-1}	1×10^{-6}	4×10^{4}	GONADS
	W	1×10^{-2}	6×10^{-7}	2×10^{4}	LUNGS
SB-122	D	1×10^{-1}	6×10^{-7}	2×10^{4}	LLI WALL
	W	1×10^{-2}	2×10^{-7}	9×10^{3}	LLI WALL
SB-124	D	1×10^{-1}	4×10^{-7}	1×10^{4}	R MARROW
	W	1×10^{-2}	4×10^{-8}	2×10^{3}	LUNGS
SB-124M	D	1×10^{-1}	2×10^{-4}	6×10^{6}	LUNGS
	W	1×10^{-2}	9×10^{-5}	3×10^{6}	LUNGS
SB-125	D	1×10^{-1}	9×10^{-7}	3×10^{4}	R MARROW
	W	1×10^{-2}	8×10^{-8}	3×10^{3}	LUNGS
SB-126	D	1×10^{-1}	5×10^{-7}	2×10^{4}	LLI WALL
	W	1×10^{-2}	1×10^{-7}	5×10^{3}	LUNGS
SB-126M	D	1×10^{-1}	3×10^{-5}	1×10^{6}	LUNGS
	W	1×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
SB-127	D	1×10^{-1}	6×10^{-7}	2×10^{4}	LLI WALL
	W	1×10^{-2}	2×10^{-7}	8×10^{3}	LLI WALL

*15.89 min.

†5.76 d.

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
SB-128	D	1×10^{-1}	7×10^{-5}	2×10^{6}	LUNGS
	W	1×10^{-2}	6×10^{-5}	2×10^{6}	LUNGS
SB-128*	D	1×10^{-1}	1×10^{-6}	5×10^{4}	LUNGS
	W	1×10^{-2}	9×10^{-7}	3×10^{4}	LUNGS
SB-129†	D	1×10^{-1}	3×10^{-6}	1×10^{5}	LUNGS
	W	1×10^{-2}	2×10^{-6}	7×10^{4}	LUNGS
SB-130	D	1×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS
	W	1×10^{-2}	1×10^{-5}	4×10^{5}	LUNGS
SB-131	D	1×10^{-1}	6×10^{-6}	2×10^{5}	THYROID
	W	1×10^{-2}	6×10^{-6}	2×10^{5}	THYROID
TE-116	D	2×10^{-1}	6×10^{-6}	2×10^{5}	LUNGS
	W	2×10^{-1}	5×10^{-6}	2×10^{5}	LUNGS
TE-121	D	2×10^{-1}	1×10^{-6}	4×10^{4}	R MARROW
	W	2×10^{-1}	9×10^{-7}	3×10^{4}	LUNGS
TE-121M	D	2×10^{-1}	6×10^{-8}	2×10^{3}	R MARROW
	W	2×10^{-1}	1×10^{-7}	4×10^{3}	LUNGS
TE-123	D	2×10^{-1}	8×10^{-8}	3×10^{3}	BON SURF
	W	2×10^{-1}	2×10^{-7}	7×10^{3}	BON SURF
TE-123M	D	2×10^{-1}	9×10^{-8}	3×10^{3}	BON SURF
	W	2×10^{-1}	1×10^{-7}	5×10^{3}	LUNGS
TE-125M	D	2×10^{-1}	2×10^{-7}	6×10^{3}	BON SURF
	W	2×10^{-1}	2×10^{-7}	6×10^{3}	LUNGS
TE-127	D	2×10^{-1}	6×10^{-6}	2×10^{5}	LUNGS
	W	2×10^{-1}	4×10^{-6}	1×10^{5}	LUNGS
TE-127M	D	2×10^{-1}	4×10^{-8}	2×10^{3}	R MARROW
	W	2×10^{-1}	5×10^{-8}	2×10^{3}	LUNGS
TE-129	D	2×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS
	W	2×10^{-1}	1×10^{-5}	4×10^{5}	LUNGS
TE-129M	D	2×10^{-1}	6×10^{-8}	2×10^{3}	R MARROW
	W	2×10^{-1}	4×10^{-8}	2×10^{3}	LUNGS
TE-131	D	2×10^{-1}	1×10^{-6}	5×10^{4}	THYROID
	W	2×10^{-1}	1×10^{-6}	5×10^{4}	THYROID
TE-131M	D	2×10^{-1}	1×10^{-7}	4×10^{3}	THYROID
	W	2×10^{-1}	9×10^{-8}	3×10^{3}	THYROID
TE-132	D	2×10^{-1}	6×10^{-8}	2×10^{3}	THYROID
	W	2×10^{-1}	5×10^{-8}	2×10^{3}	THYROID
TE-133	D	2×10^{-1}	6×10^{-6}	2×10^{5}	THYROID
	W	2×10^{-1}	6×10^{-6}	2×10^{5}	THYROID
TE-133M	D	2×10^{-1}	1×10^{-6}	5×10^{4}	THYROID
	W	2×10^{-1}	1×10^{-6}	5×10^{4}	THYROID
TE-134	D	2×10^{-1}	6×10^{-6}	2×10^{5}	THYROID
	W	2×10^{-1}	6×10^{-6}	2×10^{5}	THYROID
I-120	D	1	2×10^{-6}	8×10^{4}	THYROID
I-120M	D	1	6×10^{-6}	2×10^{5}	THYROID
I-121	D	1	4×10^{-6}	2×10^{5}	THYROID
I-123	D	1	2×10^{-6}	6×10^{4}	THYROID
I-124	D	1	2×10^{-8}	7×10^{2}	THYROID
I-125	D	1	2×10^{-8}	6×10^{2}	THYROID
I-126	D	1	9×10^{-9}	3×10^{2}	THYROID
I-128	D	1	2×10^{-5}	9×10^{5}	LUNGS
I-129	D	1	2×10^{-9}	8×10^{1}	THYROID

*10.4 min.
†9.01 h.

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
I-130	D	1	2×10^{-7}	6×10^{3}	THYROID
I-131	D	1	1×10^{-8}	4×10^{2}	THYROID
I-132	D	1	2×10^{-6}	7×10^{4}	THYROID
I-132M	D	1	2×10^{-6}	8×10^{4}	THYROID
I-133	D	1	7×10^{-8}	3×10^{3}	THYROID
I-134	D	1	1×10^{-5}	4×10^{5}	THYROID
I-135	D	1	4×10^{-7}	1×10^{4}	THYROID
CS-125	D	1	3×10^{-5}	1×10^{6}	LUNGS
CS-127	D	1	3×10^{-5}	1×10^{6}	LUNGS
CS-129	D	1	1×10^{-5}	5×10^{5}	R MARROW
CS-130	D	1	4×10^{-5}	1×10^{6}	LUNGS
CS-131	D	1	9×10^{-6}	3×10^{5}	R MARROW
CS-132	D	1	2×10^{-6}	7×10^{4}	GONADS
CS-134	D	1	4×10^{-8}	2×10^{3}	GONADS
CS-134M	D	1	3×10^{-5}	1×10^{6}	LUNGS
CS-135	D	1	5×10^{-7}	2×10^{4}	GONADS
CS-135M	D	1	7×10^{-5}	3×10^{6}	LUNGS
CS-136	D	1	3×10^{-7}	1×10^{4}	GONADS
CS-137	D	1	6×10^{-8}	2×10^{3}	GONADS
CS-138	D	1	1×10^{-5}	4×10^{5}	LUNGS
BA-126	D	1×10^{-1}	3×10^{-6}	1×10^{5}	LUNGS
BA-128	D	1×10^{-1}	4×10^{-7}	1×10^{4}	LLI WALL
BA-131	D	1×10^{-1}	3×10^{-6}	1×10^{5}	LLI WALL
BA-131M	D	1×10^{-1}	2×10^{-4}	9×10^{6}	LUNGS
BA-133	D	1×10^{-1}	9×10^{-8}	3×10^{3}	R MARROW
BA-133M	D	1×10^{-1}	2×10^{-6}	7×10^{4}	LLI WALL
BA-135M	D	1×10^{-1}	3×10^{-6}	1×10^{5}	LLI WALL
BA-139	D	1×10^{-1}	7×10^{-6}	2×10^{5}	LUNGS
BA-140	D	1×10^{-1}	4×10^{-7}	1×10^{4}	LLI WALL
BA-141	D	1×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS
BA-142	D	1×10^{-1}	3×10^{-5}	1×10^{6}	LUNGS
LA-131	D	1×10^{-3}	3×10^{-5}	1×10^{6}	LUNGS
	W	1×10^{-3}	2×10^{-5}	9×10^{5}	LUNGS
LA-132	D	1×10^{-3}	3×10^{-6}	1×10^{5}	LUNGS
	W	1×10^{-3}	3×10^{-6}	1×10^{5}	LUNGS
LA-135	D	1×10^{-3}	5×10^{-5}	2×10^{6}	LIVER
	W	1×10^{-3}	3×10^{-5}	1×10^{6}	LLI WALL
LA-137	D	1×10^{-3}	8×10^{-9}	3×10^{2}	LIVER
	W	1×10^{-3}	3×10^{-8}	1×10^{3}	LIVER
LA-138	D	1×10^{-3}	7×10^{-10}	3×10^{1}	LIVER
	W	1×10^{-3}	3×10^{-9}	1×10^{2}	LIVER
LA-140	D	1×10^{-3}	5×10^{-7}	2×10^{4}	LIVER
	W	1×10^{-3}	3×10^{-7}	1×10^{4}	LLI WALL
LA-141	D	1×10^{-3}	3×10^{-6}	1×10^{5}	LUNGS
	W	1×10^{-3}	2×10^{-6}	7×10^{4}	LUNGS
LA-142	D	1×10^{-3}	6×10^{-6}	2×10^{5}	LUNGS
	W	1×10^{-3}	5×10^{-6}	2×10^{5}	LUNGS
LA-143	D	1×10^{-3}	2×10^{-5}	8×10^{5}	LUNGS
	W	1×10^{-3}	2×10^{-5}	6×10^{5}	LUNGS
CE-134	W	3×10^{-4}	2×10^{-7}	6×10^{3}	LLI WALL
	Y	3×10^{-4}	1×10^{-7}	6×10^{3}	LLI WALL

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m³)	CRITICAL ORGAN
CE-135	W	3×10^{-4}	1×10^{-6}	5×10^{4}	LLI WALL
	Y	3×10^{-4}	1×10^{-6}	4×10^{4}	LLI WALL
CE-137	W	3×10^{-4}	4×10^{-5}	2×10^{6}	LUNGS
	Y	3×10^{-4}	4×10^{-5}	1×10^{6}	LUNGS
CE-137M	W	3×10^{-4}	1×10^{-6}	4×10^{4}	LLI WALL
	Y	3×10^{-4}	8×10^{-7}	3×10^{4}	LLI WALL
CE-139	W	3×10^{-4}	3×10^{-7}	9×10^{3}	LIVER
	Y	3×10^{-4}	1×10^{-7}	4×10^{3}	LUNGS
CE-141	W	3×10^{-4}	2×10^{-7}	6×10^{3}	LUNGS
	Y	3×10^{-4}	1×10^{-7}	4×10^{3}	LUNGS
CE-143	W	3×10^{-4}	5×10^{-7}	2×10^{4}	LLI WALL
	Y	3×10^{-4}	4×10^{-7}	1×10^{4}	LLI WALL
CE-144	W	3×10^{-4}	7×10^{-9}	2×10^{2}	LIVER
	Y	3×10^{-4}	2×10^{-9}	8×10^{1}	LUNGS
PR-136	W	3×10^{-4}	4×10^{-5}	1×10^{6}	LUNGS
	Y	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
PR-137	W	3×10^{-4}	2×10^{-5}	8×10^{5}	LUNGS
	Y	3×10^{-4}	2×10^{-5}	8×10^{5}	LUNGS
PR-138M	W	3×10^{-4}	1×10^{-5}	4×10^{5}	LUNGS
	Y	3×10^{-4}	9×10^{-6}	3×10^{5}	LUNGS
PR-139	W	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
	Y	3×10^{-4}	2×10^{-5}	8×10^{5}	LUNGS
PR-142	W	3×10^{-4}	5×10^{-7}	2×10^{4}	LLI WALL
	Y	3×10^{-4}	4×10^{-7}	2×10^{4}	LLI WALL
PR-142M	W	3×10^{-4}	4×10^{-5}	2×10^{6}	LLI WALL
	Y	3×10^{-4}	3×10^{-5}	1×10^{6}	LLI WALL
PR-143	W	3×10^{-4}	2×10^{-7}	6×10^{3}	LUNGS
	Y	3×10^{-4}	1×10^{-7}	5×10^{3}	LUNGS
PR-144	W	3×10^{-4}	2×10^{-5}	7×10^{5}	LUNGS
	Y	3×10^{-4}	2×10^{-5}	7×10^{5}	LUNGS
PR-145	W	3×10^{-4}	2×10^{-6}	7×10^{4}	LUNGS
	Y	3×10^{-4}	2×10^{-6}	7×10^{4}	LUNGS
PR-147	W	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
	Y	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
ND-136	W	3×10^{-4}	9×10^{-6}	3×10^{5}	LUNGS
	Y	3×10^{-4}	8×10^{-6}	3×10^{5}	LUNGS
ND-138	W	3×10^{-4}	1×10^{-6}	5×10^{4}	LUNGS
	Y	3×10^{-4}	1×10^{-6}	4×10^{4}	LUNGS
ND-139	W	3×10^{-4}	5×10^{-5}	2×10^{6}	LUNGS
	Y	3×10^{-4}	4×10^{-5}	2×10^{6}	LUNGS
ND-139M	W	3×10^{-4}	5×10^{-6}	2×10^{5}	LUNGS
	Y	3×10^{-4}	5×10^{-6}	2×10^{5}	LUNGS
ND-141	W	3×10^{-4}	1×10^{-4}	5×10^{6}	LUNGS
	Y	3×10^{-4}	1×10^{-4}	4×10^{6}	LUNGS
ND-147	W	3×10^{-4}	2×10^{-7}	7×10^{3}	LUNGS
	Y	3×10^{-4}	2×10^{-7}	6×10^{3}	LUNGS
ND-149	W	3×10^{-4}	5×10^{-6}	2×10^{5}	LUNGS
	Y	3×10^{-4}	5×10^{-6}	2×10^{5}	LUNGS
ND-151	W	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
	Y	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
PM-141	W	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
	Y	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
PM-143	W	3×10^{-4}	2×10^{-7}	7×10^{3}	LIVER
	Y	3×10^{-4}	1×10^{-7}	4×10^{3}	LUNGS
PM-144	W	3×10^{-4}	3×10^{-8}	1×10^{3}	LIVER
	Y	3×10^{-4}	2×10^{-8}	9×10^{2}	LUNGS
PM-145	W	3×10^{-4}	5×10^{-8}	2×10^{3}	LIVER
	Y	3×10^{-4}	4×10^{-8}	1×10^{3}	LUNGS
PM-146	W	3×10^{-4}	1×10^{-8}	4×10^{2}	LIVER
	Y	3×10^{-4}	7×10^{-9}	3×10^{2}	LUNGS
PM-147	W	3×10^{-4}	6×10^{-8}	2×10^{3}	BON SURF
	Y	3×10^{-4}	2×10^{-8}	8×10^{2}	LUNGS
PM-148	W	3×10^{-4}	1×10^{-7}	5×10^{3}	LUNGS
	Y	3×10^{-4}	1×10^{-7}	5×10^{3}	LUNGS
PM-148M	W	3×10^{-4}	8×10^{-8}	3×10^{3}	LUNGS
	Y	3×10^{-4}	5×10^{-8}	2×10^{3}	LUNGS
PM-149	W	3×10^{-4}	4×10^{-7}	2×10^{4}	LLI WALL
	Y	3×10^{-4}	4×10^{-7}	1×10^{4}	LLI WALL
PM-150	W	3×10^{-4}	3×10^{-6}	1×10^{5}	LUNGS
	Y	3×10^{-4}	3×10^{-6}	1×10^{5}	LUNGS
PM-151	W	3×10^{-4}	8×10^{-7}	3×10^{4}	LLI WALL
	Y	3×10^{-4}	7×10^{-7}	3×10^{4}	LLI WALL
SM-141	W	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
SM-141M	W	3×10^{-4}	1×10^{-5}	5×10^{5}	LUNGS
SM-142	W	3×10^{-4}	4×10^{-6}	1×10^{5}	LUNGS
SM-145	W	3×10^{-4}	1×10^{-7}	5×10^{3}	LIVER
SM-146	W	3×10^{-4}	1×10^{-11}	5×10^{-1}	BON SURF
SM-147	W	3×10^{-4}	2×10^{-11}	6×10^{-1}	BON SURF
SM-151	W	3×10^{-4}	4×10^{-8}	2×10^{3}	BON SURF
SM-153	W	3×10^{-4}	6×10^{-7}	2×10^{4}	LLI WALL
SM-155	W	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
SM-156	W	3×10^{-4}	2×10^{-6}	7×10^{4}	LUNGS
EU-145	W	1×10^{-3}	9×10^{-7}	3×10^{4}	LUNGS
EU-146	W	1×10^{-3}	6×10^{-7}	2×10^{4}	GONADS
EU-147	W	1×10^{-3}	4×10^{-7}	2×10^{4}	LUNGS
EU-148	W	1×10^{-3}	1×10^{-7}	5×10^{3}	LUNGS
EU-149	W	1×10^{-3}	8×10^{-7}	3×10^{4}	LUNGS
EU-150*	W	1×10^{-3}	2×10^{-6}	8×10^{4}	LUNGS
EU-150†	W	1×10^{-3}	4×10^{-9}	1×10^{2}	LIVER
EU-152	W	1×10^{-3}	5×10^{-9}	2×10^{2}	LIVER
EU-152M	W	1×10^{-3}	2×10^{-6}	6×10^{4}	LUNGS
EU-154	W	1×10^{-3}	4×10^{-9}	1×10^{2}	LIVER
EU-155	W	1×10^{-3}	3×10^{-8}	1×10^{3}	LIVER
EU-156	W	1×10^{-3}	9×10^{-8}	3×10^{3}	LUNGS
EU-157	W	1×10^{-3}	1×10^{-6}	5×10^{4}	LUNGS
EU-158	W	1×10^{-3}	9×10^{-6}	3×10^{5}	LUNGS
GD-145	D	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
	W	3×10^{-4}	3×10^{-5}	9×10^{5}	LUNGS
GD-146	D	3×10^{-4}	4×10^{-8}	1×10^{3}	LIVER
	W	3×10^{-4}	7×10^{-8}	3×10^{3}	LUNGS
GD-147	D	3×10^{-4}	2×10^{-6}	7×10^{4}	LIVER
	W	3×10^{-4}	1×10^{-6}	6×10^{4}	LLI WALL
GD-148	D	3×10^{-4}	3×10^{-12}	1×10^{-1}	BON SURF
	W	3×10^{-4}	1×10^{-11}	5×10^{-1}	BON SURF

*12.62 h.

†34.2 year.

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
GD-149	D	3×10^{-4}	7×10^{-7}	2×10^{4}	R MARROW
	W	3×10^{-4}	7×10^{-7}	3×10^{4}	LUNGS
GD-151	D	3×10^{-4}	1×10^{-7}	5×10^{3}	R MARROW
	W	3×10^{-4}	3×10^{-7}	1×10^{4}	LUNGS
GD-152	D	3×10^{-4}	4×10^{-12}	2×10^{-1}	BON SURF
	W	3×10^{-4}	2×10^{-11}	6×10^{-1}	BON SURF
GD-153	D	3×10^{-4}	5×10^{-8}	2×10^{3}	R MARROW
	W	3×10^{-4}	2×10^{-7}	8×10^{3}	R MARROW
GD-159	D	3×10^{-4}	2×10^{-6}	9×10^{4}	LLI WALL
	W	3×10^{-4}	1×10^{-6}	5×10^{4}	LLI WALL
TB-147	W	3×10^{-4}	6×10^{-6}	2×10^{5}	LUNGS
TB-149	W	3×10^{-4}	1×10^{-7}	4×10^{3}	LUNGS
TB-150	W	3×10^{-4}	4×10^{-6}	1×10^{5}	LUNGS
TB-151	W	3×10^{-4}	4×10^{-6}	1×10^{5}	LUNGS
TB-153	W	3×10^{-4}	2×10^{-6}	9×10^{4}	LLI WALL
TB-154	W	3×10^{-4}	2×10^{-6}	7×10^{4}	LLI WALL
TB-155	W	3×10^{-4}	2×10^{-6}	8×10^{4}	LUNGS
TB-156	W	3×10^{-4}	5×10^{-7}	2×10^{4}	LUNGS
TB-156M*	W	3×10^{-4}	2×10^{-6}	9×10^{4}	LUNGS
TB-156M†	W	3×10^{-4}	8×10^{-6}	3×10^{5}	LUNGS
TB-157	W	3×10^{-4}	1×10^{-7}	5×10^{3}	BON SURF
TB-158	W	3×10^{-4}	5×10^{-9}	2×10^{2}	R MARROW
TB-160	W	3×10^{-4}	6×10^{-8}	2×10^{3}	LUNGS
TB-161	W	3×10^{-4}	4×10^{-7}	1×10^{4}	LUNGS
DY-155	W	3×10^{-4}	9×10^{-6}	3×10^{5}	LUNGS
DY-157	W	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
DY-159	W	3×10^{-4}	7×10^{-7}	3×10^{4}	R MARROW
DY-165	W	3×10^{-4}	7×10^{-6}	3×10^{5}	LUNGS
DY-166	W	3×10^{-4}	2×10^{-7}	6×10^{3}	LLI WALL
HO-155	W	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
HO-157	W	3×10^{-4}	2×10^{-4}	8×10^{6}	LUNGS
HO-159	W	3×10^{-4}	2×10^{-4}	6×10^{6}	LUNGS
HO-161	W	3×10^{-4}	7×10^{-5}	3×10^{6}	LUNGS
HO-162	W	3×10^{-4}	4×10^{-4}	1×10^{7}	LUNGS
HO-162M	W	3×10^{-4}	4×10^{-5}	1×10^{6}	LUNGS
HO-164	W	3×10^{-4}	9×10^{-5}	3×10^{6}	LUNGS
HO-164M	W	3×10^{-4}	4×10^{-5}	2×10^{6}	LUNGS
HO-166	W	3×10^{-4}	4×10^{-7}	2×10^{4}	LLI WALL
HO-166M	W	3×10^{-4}	1×10^{-9}	5×10^{1}	PANCREAS
HO-167	W	3×10^{-4}	1×10^{-5}	4×10^{5}	LUNGS
ER-161	W	3×10^{-4}	2×10^{-5}	6×10^{5}	LUNGS
ER-165	W	3×10^{-4}	6×10^{-5}	2×10^{6}	LUNGS
ER-169	W	3×10^{-4}	6×10^{-7}	2×10^{4}	LUNGS
ER-171	W	3×10^{-4}	2×10^{-6}	9×10^{4}	LUNGS
ER-172	W	3×10^{-4}	4×10^{-7}	1×10^{4}	LLI WALL
TM-162	W	3×10^{-4}	4×10^{-5}	2×10^{6}	LUNGS
TM-166	W	3×10^{-4}	5×10^{-6}	2×10^{5}	LUNGS
TM-167	W	3×10^{-4}	5×10^{-7}	2×10^{4}	LUNGS
TM-170	W	3×10^{-4}	4×10^{-8}	2×10^{3}	LUNGS
TM-171	W	3×10^{-4}	1×10^{-7}	4×10^{3}	BON SURF
TM-172	W	3×10^{-4}	3×10^{-7}	1×10^{4}	LLI WALL

*24.4 h.
†5.0 h.

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
TM-173	W	3×10^{-4}	3×10^{-6}	1×10^{5}	LUNGS
TM-175	W	3×10^{-4}	4×10^{-5}	1×10^{6}	LUNGS
YB-162	W	3×10^{-4}	4×10^{-5}	2×10^{6}	LUNGS
	Y	3×10^{-4}	4×10^{-5}	2×10^{6}	LUNGS
YB-166	W	3×10^{-4}	6×10^{-7}	2×10^{4}	LLI WALL
	Y	3×10^{-4}	5×10^{-7}	2×10^{4}	LLI WALL
YB-167	W	3×10^{-4}	1×10^{-4}	5×10^{6}	LUNGS
	Y	3×10^{-4}	1×10^{-4}	4×10^{6}	LUNGS
YB-169	W	3×10^{-4}	2×10^{-7}	7×10^{3}	LUNGS
	Y	3×10^{-4}	1×10^{-7}	4×10^{3}	LUNGS
YB-175	W	3×10^{-4}	9×10^{-7}	3×10^{4}	LLI WALL
	Y	3×10^{-4}	8×10^{-7}	3×10^{4}	LLI WALL
YB-177	W	3×10^{-4}	7×10^{-6}	3×10^{5}	LUNGS
	Y	3×10^{-4}	7×10^{-6}	3×10^{5}	LUNGS
YB-178	W	3×10^{-4}	6×10^{-6}	2×10^{5}	LUNGS
	Y	3×10^{-4}	6×10^{-6}	2×10^{5}	LUNGS
LU-169	W	3×10^{-4}	2×10^{-6}	6×10^{4}	LUNGS
	Y	3×10^{-4}	1×10^{-6}	5×10^{4}	LUNGS
LU-170	W	3×10^{-4}	9×10^{-7}	3×10^{4}	LLI WALL
	Y	3×10^{-4}	7×10^{-7}	3×10^{4}	LLI WALL
LU-171	W	3×10^{-4}	6×10^{-7}	2×10^{4}	LUNGS
	Y	3×10^{-4}	5×10^{-7}	2×10^{4}	LUNGS
LU-172	W	3×10^{-4}	4×10^{-7}	1×10^{4}	LUNGS
	Y	3×10^{-4}	4×10^{-7}	1×10^{4}	LUNGS
LU-173	W	3×10^{-4}	9×10^{-8}	4×10^{3}	R MARROW
	Y	3×10^{-4}	4×10^{-8}	1×10^{3}	LUNGS
LU-174	W	3×10^{-4}	5×10^{-8}	2×10^{3}	R MARROW
	Y	3×10^{-4}	2×10^{-8}	9×10^{2}	LUNGS
LU-174M	W	3×10^{-4}	1×10^{-7}	4×10^{3}	BON SURF
	Y	3×10^{-4}	3×10^{-8}	1×10^{3}	LUNGS
LU-176	W	3×10^{-4}	2×10^{-9}	7×10^{1}	BON SURF
	Y	3×10^{-4}	2×10^{-9}	6×10^{1}	LUNGS
LU-176M	W	3×10^{-4}	4×10^{-6}	2×10^{5}	LUNGS
	Y	3×10^{-4}	4×10^{-6}	1×10^{5}	LUNGS
LU-177	W	3×10^{-4}	6×10^{-7}	2×10^{4}	LUNGS
	Y	3×10^{-4}	5×10^{-7}	2×10^{4}	LUNGS
LU-177M	W	3×10^{-4}	4×10^{-8}	1×10^{3}	LUNGS
	Y	3×10^{-4}	1×10^{-8}	4×10^{2}	LUNGS
LU-178	W	3×10^{-4}	2×10^{-5}	7×10^{5}	LUNGS
	Y	3×10^{-4}	2×10^{-5}	6×10^{5}	LUNGS
LU-178M	W	3×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
	Y	3×10^{-4}	3×10^{-5}	9×10^{5}	LUNGS
LU-179	W	3×10^{-4}	4×10^{-6}	1×10^{5}	LUNGS
	Y	3×10^{-4}	3×10^{-6}	1×10^{5}	LUNGS
HF-170	D	2×10^{-3}	2×10^{-6}	9×10^{4}	R MARROW
	W	2×10^{-3}	2×10^{-6}	6×10^{4}	LLI WALL
HF-172	D	2×10^{-3}	3×10^{-9}	1×10^{2}	R MARROW
	W	2×10^{-3}	1×10^{-8}	4×10^{2}	R MARROW
HF-173	D	2×10^{-3}	5×10^{-6}	2×10^{5}	R MARROW
	W	2×10^{-3}	4×10^{-6}	2×10^{5}	LLI WALL
HF-175	D	2×10^{-3}	1×10^{-7}	5×10^{3}	R MARROW
	W	2×10^{-3}	3×10^{-7}	1×10^{4}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
HF-177M	D	2×10^{-3}	1×10^{-5}	5×10^{5}	LUNGS
	W	2×10^{-3}	1×10^{-5}	5×10^{5}	LUNGS
HF-178M	D	2×10^{-3}	3×10^{-10}	1×10^{1}	R MARROW
	W	2×10^{-3}	1×10^{-9}	5×10^{1}	R MARROW
HF-179M	D	2×10^{-3}	1×10^{-7}	4×10^{3}	R MARROW
	W	2×10^{-3}	1×10^{-7}	5×10^{3}	LUNGS
HF-180M	D	2×10^{-3}	1×10^{-5}	4×10^{5}	LUNGS
	W	2×10^{-3}	7×10^{-6}	3×10^{5}	LUNGS
HF-181	D	2×10^{-3}	7×10^{-8}	3×10^{3}	R MARROW
	W	2×10^{-3}	1×10^{-7}	4×10^{3}	LUNGS
HF-182	D	2×10^{-3}	3×10^{-10}	1×10^{1}	R MARROW
	W	2×10^{-3}	1×10^{-9}	4×10^{1}	R MARROW
HF-182M	D	2×10^{-3}	3×10^{-5}	1×10^{6}	LUNGS
	W	2×10^{-3}	2×10^{-5}	8×10^{5}	LUNGS
HF-183	D	2×10^{-3}	1×10^{-5}	5×10^{5}	LUNGS
	W	2×10^{-3}	1×10^{-5}	4×10^{5}	LUNGS
HF-184	D	2×10^{-3}	3×10^{-6}	1×10^{5}	LUNGS
	W	2×10^{-3}	2×10^{-6}	7×10^{4}	LUNGS
TA-172	W	1×10^{-3}	2×10^{-5}	7×10^{5}	LUNGS
	Y	1×10^{-3}	2×10^{-5}	6×10^{5}	LUNGS
TA-173	W	1×10^{-3}	5×10^{-6}	2×10^{5}	LUNGS
	Y	1×10^{-3}	4×10^{-6}	2×10^{5}	LUNGS
TA-174	W	1×10^{-3}	1×10^{-5}	5×10^{5}	LUNGS
	Y	1×10^{-3}	1×10^{-5}	5×10^{5}	LUNGS
TA-175	W	1×10^{-3}	6×10^{-6}	2×10^{5}	LUNGS
	Y	1×10^{-3}	5×10^{-6}	2×10^{5}	LUNGS
TA-176	W	1×10^{-3}	5×10^{-6}	2×10^{5}	LUNGS
	Y	1×10^{-3}	5×10^{-6}	2×10^{5}	LUNGS
TA-177	W	1×10^{-3}	5×10^{-6}	2×10^{5}	LLI WALL
	Y	1×10^{-3}	5×10^{-6}	2×10^{5}	LLI WALL
TA-178	W	1×10^{-3}	2×10^{-5}	6×10^{5}	LUNGS
	Y	1×10^{-3}	1×10^{-5}	5×10^{5}	LUNGS
TA-179	W	1×10^{-3}	9×10^{-7}	3×10^{4}	LUNGS
	Y	1×10^{-3}	1×10^{-7}	5×10^{3}	LUNGS
TA-180	W	1×10^{-3}	6×10^{-8}	2×10^{3}	LUNGS
	Y	1×10^{-3}	4×10^{-9}	1×10^{2}	LUNGS
TA-180M	W	1×10^{-3}	2×10^{-5}	6×10^{5}	LUNGS
	Y	1×10^{-3}	2×10^{-5}	6×10^{5}	LUNGS
TA-182	W	1×10^{-3}	5×10^{-8}	2×10^{3}	LUNGS
	Y	1×10^{-3}	2×10^{-8}	8×10^{2}	LUNGS
TA-182M	W	1×10^{-3}	8×10^{-5}	3×10^{6}	LUNGS
	Y	1×10^{-3}	6×10^{-5}	2×10^{6}	LUNGS
TA-183	W	1×10^{-3}	3×10^{-7}	1×10^{4}	LUNGS
	Y	1×10^{-3}	3×10^{-7}	1×10^{4}	LLI WALL
TA-184	W	1×10^{-3}	1×10^{-6}	6×10^{4}	LUNGS
	Y	1×10^{-3}	1×10^{-6}	5×10^{4}	LUNGS
TA-185	W	1×10^{-3}	1×10^{-5}	4×10^{5}	LUNGS
	Y	1×10^{-3}	1×10^{-5}	4×10^{5}	LUNGS
TA-186	W	1×10^{-3}	3×10^{-5}	1×10^{6}	LUNGS
	Y	1×10^{-3}	3×10^{-5}	1×10^{6}	LUNGS
W-176	D	3×10^{-1}	2×10^{-5}	7×10^{5}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
W-177	D	3×10^{-1}	2×10^{-5}	9×10^{5}	LUNGS
W-178	D	3×10^{-1}	7×10^{-6}	2×10^{5}	LLI WALL
W-179	D	3×10^{-1}	3×10^{-4}	1×10^{7}	LUNGS
W-181	D	3×10^{-1}	1×10^{-5}	4×10^{5}	R MARROW
W-185	D	3×10^{-1}	2×10^{-6}	9×10^{4}	LLI WALL
W-187	D	3×10^{-1}	3×10^{-6}	9×10^{4}	LLI WALL
W-188	D	3×10^{-1}	4×10^{-7}	1×10^{4}	KIDNEYS
RE-177	D	8×10^{-1}	6×10^{-5}	2×10^{6}	LUNGS
	W	8×10^{-1}	5×10^{-5}	2×10^{6}	LUNGS
RE-178	D	8×10^{-1}	5×10^{-5}	2×10^{6}	LUNGS
	W	8×10^{-1}	5×10^{-5}	2×10^{6}	LUNGS
RE-181	D	8×10^{-1}	2×10^{-6}	9×10^{4}	S WALL
	W	8×10^{-1}	2×10^{-6}	9×10^{4}	LUNGS
RE-182*	D	8×10^{-1}	4×10^{-6}	2×10^{5}	S WALL
	W	8×10^{-1}	4×10^{-6}	2×10^{5}	LUNGS
RE-182†	D	8×10^{-1}	6×10^{-7}	2×10^{4}	S WALL
	W	8×10^{-1}	6×10^{-7}	2×10^{4}	LUNGS
RE-184	D	8×10^{-1}	8×10^{-7}	3×10^{4}	S WALL
	W	8×10^{-1}	2×10^{-7}	9×10^{3}	LUNGS
RE-184M	D	8×10^{-1}	4×10^{-7}	2×10^{4}	S WALL
	W	8×10^{-1}	6×10^{-8}	2×10^{3}	LUNGS
RE-186	D	8×10^{-1}	5×10^{-7}	2×10^{4}	S WALL
	W	8×10^{-1}	4×10^{-7}	1×10^{4}	LUNGS
RE-186M	D	8×10^{-1}	2×10^{-7}	8×10^{3}	S WALL
	W	8×10^{-1}	2×10^{-8}	8×10^{2}	LUNGS
RE-187	D	8×10^{-1}	1×10^{-4}	4×10^{6}	S WALL
	W	8×10^{-1}	2×10^{-5}	6×10^{5}	LUNGS
RE-188	D	8×10^{-1}	6×10^{-7}	2×10^{4}	S WALL
	W	8×10^{-1}	7×10^{-7}	2×10^{4}	LUNGS
RE-188M	D	8×10^{-1}	3×10^{-5}	1×10^{6}	S WALL
	W	8×10^{-1}	3×10^{-5}	1×10^{6}	LUNGS
RE-189	D	8×10^{-1}	1×10^{-6}	4×10^{4}	S WALL
	W	8×10^{-1}	1×10^{-6}	4×10^{4}	LUNGS
OS-180	D	1×10^{-2}	8×10^{-5}	3×10^{6}	LUNGS
	W	1×10^{-2}	7×10^{-5}	3×10^{6}	LUNGS
	Y	1×10^{-2}	7×10^{-5}	3×10^{6}	LUNGS
OS-181	D	1×10^{-2}	2×10^{-5}	7×10^{5}	LUNGS
	W	1×10^{-2}	1×10^{-5}	5×10^{5}	LUNGS
	Y	1×10^{-2}	1×10^{-5}	5×10^{5}	LUNGS
OS-182	D	1×10^{-2}	2×10^{-6}	9×10^{4}	LLI WALL
	W	1×10^{-2}	1×10^{-6}	5×10^{4}	LLI WALL
	Y	1×10^{-2}	1×10^{-6}	4×10^{4}	LLI WALL
OS-185	D	1×10^{-2}	2×10^{-7}	7×10^{3}	LIVER
	W	1×10^{-2}	3×10^{-7}	1×10^{4}	LUNGS
	Y	1×10^{-2}	1×10^{-7}	4×10^{3}	LUNGS
OS-189M	D	1×10^{-2}	6×10^{-5}	2×10^{6}	LUNGS
	W	1×10^{-2}	4×10^{-5}	2×10^{6}	LUNGS
	Y	1×10^{-2}	4×10^{-5}	2×10^{6}	LUNGS
OS-191	D	1×10^{-2}	8×10^{-7}	3×10^{4}	KIDNEYS
	W	1×10^{-2}	3×10^{-7}	1×10^{4}	LUNGS
	Y	1×10^{-2}	2×10^{-7}	9×10^{3}	LUNGS

*12.7 h.

†64.0 h.

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
OS-191M	D	1×10^{-2}	1×10^{-5}	4×10^{5}	LLI WALL
	W	1×10^{-2}	5×10^{-6}	2×10^{5}	LUNGS
	Y	1×10^{-2}	4×10^{-6}	1×10^{5}	LUNGS
OS-193	D	1×10^{-2}	1×10^{-6}	5×10^{4}	LLI WALL
	W	1×10^{-2}	7×10^{-7}	3×10^{4}	LLI WALL
	Y	1×10^{-2}	6×10^{-7}	2×10^{4}	LLI WALL
OS-194	D	1×10^{-2}	1×10^{-8}	4×10^{2}	KIDNEYS
	W	1×10^{-2}	1×10^{-8}	5×10^{2}	LUNGS
	Y	1×10^{-2}	1×10^{-9}	4×10^{1}	LUNGS
IR-182	D	1×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	W	1×10^{-2}	2×10^{-5}	8×10^{5}	LUNGS
	Y	1×10^{-2}	2×10^{-5}	8×10^{5}	LUNGS
IR-184	D	1×10^{-2}	8×10^{-6}	3×10^{5}	LUNGS
	W	1×10^{-2}	6×10^{-6}	2×10^{5}	LUNGS
	Y	1×10^{-2}	6×10^{-6}	2×10^{5}	LUNGS
IR-185	D	1×10^{-2}	6×10^{-6}	2×10^{5}	LLI WALL
	W	1×10^{-2}	4×10^{-6}	1×10^{5}	LUNGS
	Y	1×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
IR-186	D	1×10^{-2}	4×10^{-6}	1×10^{5}	LLI WALL
	W	1×10^{-2}	3×10^{-6}	1×10^{5}	LLI WALL
	Y	1×10^{-2}	2×10^{-6}	9×10^{4}	LLI WALL
IR-187	D	1×10^{-2}	1×10^{-5}	5×10^{5}	LUNGS
	W	1×10^{-2}	9×10^{-6}	4×10^{5}	LUNGS
	Y	1×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
IR-188	D	1×10^{-2}	2×10^{-6}	8×10^{4}	GONADS
	W	1×10^{-2}	1×10^{-6}	5×10^{4}	LLI WALL
	Y	1×10^{-2}	1×10^{-6}	5×10^{4}	LLI WALL
IR-189	D	1×10^{-2}	2×10^{-6}	7×10^{4}	KIDNEYS
	W	1×10^{-2}	8×10^{-7}	3×10^{4}	LUNGS
	Y	1×10^{-2}	7×10^{-7}	2×10^{4}	LUNGS
IR-190	D	1×10^{-2}	4×10^{-7}	2×10^{4}	LIVER
	W	1×10^{-2}	3×10^{-7}	1×10^{4}	LUNGS
	Y	1×10^{-2}	2×10^{-7}	8×10^{3}	LUNGS
IR-190M	D	1×10^{-2}	1×10^{-4}	4×10^{6}	LIVER
	W	1×10^{-2}	5×10^{-5}	2×10^{6}	LUNGS
	Y	1×10^{-2}	4×10^{-5}	2×10^{6}	LUNGS
IR-192	D	1×10^{-2}	1×10^{-7}	4×10^{3}	KIDNEYS
	W	1×10^{-2}	7×10^{-8}	2×10^{3}	LUNGS
	Y	1×10^{-2}	3×10^{-8}	1×10^{3}	LUNGS
IR-192M	D	1×10^{-2}	3×10^{-8}	1×10^{3}	LIVER
	W	1×10^{-2}	8×10^{-8}	3×10^{3}	LUNGS
	Y	1×10^{-2}	2×10^{-9}	8×10^{1}	LUNGS
IR-194	D	1×10^{-2}	9×10^{-7}	3×10^{4}	LLI WALL
	W	1×10^{-2}	5×10^{-7}	2×10^{4}	LLI WALL
	Y	1×10^{-2}	4×10^{-7}	2×10^{4}	LLI WALL
IR-194M	D	1×10^{-2}	4×10^{-8}	1×10^{3}	LIVER
	W	1×10^{-2}	5×10^{-8}	2×10^{3}	LUNGS
	Y	1×10^{-2}	1×10^{-8}	6×10^{2}	LUNGS
IR-195	D	1×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
	W	1×10^{-2}	8×10^{-6}	3×10^{5}	LUNGS
	Y	1×10^{-2}	7×10^{-6}	3×10^{5}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
IR-195M	D	1×10^{-2}	6×10^{-6}	2×10^{5}	LUNGS
	W	1×10^{-2}	5×10^{-6}	2×10^{5}	LUNGS
	Y	1×10^{-2}	5×10^{-6}	2×10^{5}	LUNGS
PT-186	D	1×10^{-2}	2×10^{-5}	6×10^{5}	LUNGS
PT-188	D	1×10^{-2}	4×10^{-7}	2×10^{4}	KIDNEYS
PT-189	D	1×10^{-2}	1×10^{-5}	5×10^{5}	LLI WALL
PT-191	D	1×10^{-2}	3×10^{-6}	1×10^{5}	KIDNEYS
PT-193	D	1×10^{-2}	4×10^{-6}	1×10^{5}	KIDNEYS
PT-193M	D	1×10^{-2}	2×10^{-6}	6×10^{4}	KIDNEYS
PT-195M	D	1×10^{-2}	1×10^{-6}	4×10^{4}	KIDNEYS
PT-197	D	1×10^{-2}	3×10^{-6}	1×10^{5}	LLI WALL
PT-197M	D	1×10^{-2}	1×10^{-5}	4×10^{5}	LUNGS
PT-199	D	1×10^{-2}	3×10^{-5}	9×10^{5}	LUNGS
PT-200	D	1×10^{-2}	1×10^{-6}	4×10^{4}	LLI WALL
AU-193	D	1×10^{-1}	1×10^{-5}	4×10^{5}	LLI WALL
	W	1×10^{-1}	7×10^{-6}	2×10^{5}	LUNGS
	Y	1×10^{-1}	6×10^{-6}	2×10^{5}	LLI WALL
AU-194	D	1×10^{-1}	3×10^{-6}	1×10^{5}	GONADS
	W	1×10^{-1}	2×10^{-6}	9×10^{4}	LLI WALL
	Y	1×10^{-1}	2×10^{-6}	7×10^{4}	LLI WALL
AU-195	D	1×10^{-1}	4×10^{-6}	1×10^{5}	LLI WALL
	W	1×10^{-1}	2×10^{-7}	8×10^{3}	LUNGS
	Y	1×10^{-1}	6×10^{-8}	2×10^{3}	LUNGS
AU-198	D	1×10^{-1}	1×10^{-6}	4×10^{4}	LLI WALL
	W	1×10^{-1}	5×10^{-7}	2×10^{4}	LLI WALL
	Y	1×10^{-1}	4×10^{-7}	1×10^{4}	LLI WALL
AU-198M	D	1×10^{-1}	8×10^{-7}	3×10^{4}	LLI WALL
	W	1×10^{-1}	3×10^{-7}	1×10^{4}	LUNGS
	Y	1×10^{-1}	3×10^{-7}	1×10^{4}	LLI WALL
AU-199	D	1×10^{-1}	2×10^{-6}	8×10^{4}	LLI WALL
	W	1×10^{-1}	1×10^{-6}	4×10^{4}	LLI WALL
	Y	1×10^{-1}	9×10^{-7}	3×10^{4}	LLI WALL
AU-200	D	1×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS
	W	1×10^{-1}	1×10^{-5}	4×10^{5}	LUNGS
	Y	1×10^{-1}	1×10^{-5}	4×10^{5}	LUNGS
AU-200M	D	1×10^{-1}	1×10^{-6}	5×10^{4}	LLI WALL
	W	1×10^{-1}	9×10^{-7}	3×10^{4}	LLI WALL
	Y	1×10^{-1}	8×10^{-7}	3×10^{4}	LLI WALL
AU-201	D	1×10^{-1}	4×10^{-5}	1×10^{6}	LUNGS
	W	1×10^{-1}	4×10^{-5}	1×10^{6}	LUNGS
	Y	1×10^{-1}	3×10^{-5}	1×10^{6}	LUNGS
HG-193					
INORGANIC	D	2×10^{-2}	2×10^{-5}	6×10^{5}	LUNGS
	W	2×10^{-2}	1×10^{-5}	4×10^{5}	LUNGS
ORGANIC	D	1	1×10^{-5}	6×10^{5}	LUNGS
VAPOR	*		5×10^{-6}	2×10^{5}	LUNGS
HG-193M					
INORGANIC	D	2×10^{-2}	4×10^{-6}	2×10^{5}	LLI WALL
	W	2×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
ORGANIC	D	1	5×10^{-6}	2×10^{5}	LUNGS
VAPOR	*		1×10^{-6}	5×10^{4}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
HG-194					
INORGANIC	D	2×10^{-2}	1×10^{-8}	5×10^{2}	KIDNEYS
	W	2×10^{-2}	4×10^{-8}	2×10^{3}	KIDNEYS
ORGANIC	D	1	9×10^{-9}	3×10^{2}	KIDNEYS
VAPOR	*		8×10^{-9}	3×10^{2}	KIDNEYS
HG-195					
INORGANIC	D	2×10^{-2}	2×10^{-5}	6×10^{5}	LUNGS
	W	2×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
ORGANIC	D	1	2×10^{-5}	6×10^{5}	LUNGS
VAPOR	*		4×10^{-6}	2×10^{5}	LUNGS
HG-195M					
INORGANIC	D	2×10^{-2}	2×10^{-6}	7×10^{4}	LLI WALL
	W	2×10^{-2}	9×10^{-7}	3×10^{4}	LLI WALL
ORGANIC	D	1	1×10^{-6}	6×10^{4}	KIDNEYS
VAPOR	*		7×10^{-7}	3×10^{4}	LUNGS
HG-197					
INORGANIC	D	2×10^{-2}	4×10^{-6}	2×10^{5}	KIDNEYS
	W	2×10^{-2}	2×10^{-6}	8×10^{4}	LLI WALL
ORGANIC	D	1	3×10^{-6}	1×10^{5}	KIDNEYS
VAPOR	*		2×10^{-6}	6×10^{4}	LUNGS
HG-197M					
INORGANIC	D	2×10^{-2}	2×10^{-6}	8×10^{4}	LLI WALL
	W	2×10^{-2}	1×10^{-6}	5×10^{4}	LLI WALL
ORGANIC	D	1	2×10^{-6}	9×10^{4}	KIDNEYS
VAPOR	*		8×10^{-7}	3×10^{4}	LUNGS
HG-199M					
INORGANIC	D	2×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	W	2×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
ORGANIC	D	1	3×10^{-5}	1×10^{6}	LUNGS
VAPOR	*		1×10^{-5}	4×10^{5}	LUNGS
HG-203					
INORGANIC	D	2×10^{-2}	2×10^{-7}	9×10^{3}	KIDNEYS
	W	2×10^{-2}	2×10^{-7}	7×10^{3}	LUNGS
ORGANIC	D	1	1×10^{-7}	5×10^{3}	KIDNEYS
VAPOR	*		2×10^{-7}	6×10^{3}	KIDNEYS
TL-194	D	1	2×10^{-4}	7×10^{6}	LUNGS
TL-194M	D	1	3×10^{-5}	1×10^{6}	LUNGS
TL-195	D	1	3×10^{-5}	1×10^{6}	LUNGS
TL-197	D	1	3×10^{-5}	1×10^{6}	LUNGS
TL-198	D	1	1×10^{-5}	5×10^{5}	LUNGS
TL-198M	D	1	1×10^{-5}	5×10^{5}	LUNGS
TL-199	D	1	2×10^{-5}	8×10^{5}	LUNGS
TL-200	D	1	6×10^{-6}	2×10^{5}	R MARROW

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
TL-201	D	1	1×10^{-5}	4×10^{5}	LUNGS
TL-202	D	1	2×10^{-6}	8×10^{4}	R MARROW
TL-204	D	1	6×10^{-7}	2×10^{4}	KIDNEYS
PB-195M	D	2×10^{-1}	5×10^{-5}	2×10^{6}	LUNGS
PB-198	D	2×10^{-1}	3×10^{-5}	1×10^{6}	LUNGS
PB-199	D	2×10^{-1}	3×10^{-5}	1×10^{6}	LUNGS
PB-200	D	2×10^{-1}	3×10^{-6}	1×10^{5}	R MARROW
PB-201	D	2×10^{-1}	1×10^{-5}	4×10^{5}	R MARROW
PB-202	D	2×10^{-1}	8×10^{-9}	3×10^{2}	R MARROW
PB-202M	D	2×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS
PB-203	D	2×10^{-1}	4×10^{-6}	1×10^{5}	R MARROW
PB-205	D	2×10^{-1}	1×10^{-7}	5×10^{3}	R MARROW
PB-209	D	2×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS
PB-210	D	2×10^{-1}	1×10^{-10}	4	BON SURF
PB-211	D	2×10^{-1}	9×10^{-8}	4×10^{3}	LUNGS
PB-212	D	2×10^{-1}	9×10^{-9}	3×10^{2}	LUNGS
PB-214	D	2×10^{-1}	1×10^{-7}	4×10^{3}	LUNGS
BI-200	D	5×10^{-2}	3×10^{-5}	9×10^{5}	KIDNEYS
	W	5×10^{-2}	2×10^{-5}	9×10^{5}	LUNGS
BI-201	D	5×10^{-2}	8×10^{-6}	3×10^{5}	KIDNEYS
	W	5×10^{-2}	9×10^{-6}	3×10^{5}	LUNGS
BI-202	D	5×10^{-2}	2×10^{-5}	6×10^{5}	KIDNEYS
	W	5×10^{-2}	2×10^{-5}	6×10^{5}	LUNGS
BI-203	D	5×10^{-2}	2×10^{-6}	7×10^{4}	KIDNEYS
	W	5×10^{-2}	3×10^{-6}	1×10^{5}	LUNGS
BI-205	D	5×10^{-2}	5×10^{-7}	2×10^{4}	KIDNEYS
	W	5×10^{-2}	4×10^{-7}	1×10^{4}	LUNGS
BI-206	D	5×10^{-2}	3×10^{-7}	9×10^{3}	KIDNEYS
	W	5×10^{-2}	3×10^{-7}	1×10^{4}	LUNGS
BI-207	D	5×10^{-2}	2×10^{-7}	9×10^{3}	KIDNEYS
	W	5×10^{-2}	5×10^{-8}	2×10^{3}	LUNGS
BI-210	D	5×10^{-2}	3×10^{-8}	1×10^{3}	KIDNEYS
	W	5×10^{-2}	4×10^{-9}	1×10^{2}	LUNGS
BI-210M	D	5×10^{-2}	6×10^{-10}	2×10^{1}	KIDNEYS
	W	5×10^{-2}	1×10^{-10}	4	LUNGS
BI-212	D	5×10^{-2}	5×10^{-8}	2×10^{3}	LUNGS
	W	5×10^{-2}	4×10^{-8}	2×10^{3}	LUNGS
BI-213	D	5×10^{-2}	6×10^{-8}	2×10^{3}	LUNGS
	W	5×10^{-2}	5×10^{-8}	2×10^{3}	LUNGS
BI-214	D	5×10^{-2}	1×10^{-7}	5×10^{3}	LUNGS
	W	5×10^{-2}	1×10^{-7}	5×10^{3}	LUNGS
PO-203	D	1×10^{-1}	2×10^{-5}	9×10^{5}	LUNGS
	W	1×10^{-1}	2×10^{-5}	7×10^{5}	LUNGS
PO-205	D	1×10^{-1}	2×10^{-5}	6×10^{5}	LUNGS
	W	1×10^{-1}	1×10^{-5}	4×10^{5}	LUNGS
PO-207	D	1×10^{-1}	1×10^{-5}	5×10^{5}	LUNGS
	W	1×10^{-1}	1×10^{-5}	4×10^{5}	LUNGS
PO-210	D	1×10^{-1}	8×10^{-11}	3	SPLEEN
	W	1×10^{-1}	1×10^{-10}	5	LUNGS
AT-207	D	1	4×10^{-7}	1×10^{4}	LUNGS
	W	1	3×10^{-7}	1×10^{4}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
AT-211	D	1	1×10^{-8}	4×10^{2}	LUNGS
	W	1	8×10^{-9}	3×10^{2}	LUNGS
FR-222	D	1	7×10^{-8}	2×10^{3}	LUNGS
FR-223	D	1	4×10^{-7}	1×10^{4}	GONADS
RA-223	W	2×10^{-1}	1×10^{-10}	4	LUNGS
RA-224	W	2×10^{-1}	3×10^{-10}	1×10^{1}	LUNGS
RA-225	W	2×10^{-1}	1×10^{-10}	4	LUNGS
RA-226	W	2×10^{-1}	1×10^{-10}	4	LUNGS
RA-227	W	2×10^{-1}	5×10^{-6}	2×10^{5}	LUNGS
RA-228	W	2×10^{-1}	2×10^{-10}	9	LUNGS
AC-224	D	1×10^{-3}	1×10^{-8}	4×10^{2}	BON SURF
	W	1×10^{-3}	7×10^{-9}	3×10^{2}	LUNGS
	Y	1×10^{-3}	7×10^{-9}	3×10^{2}	LUNGS
AC-225	D	1×10^{-3}	1×10^{-10}	4	BON SURF
	W	1×10^{-3}	1×10^{-10}	4	LUNGS
	Y	1×10^{-3}	9×10^{-11}	3	LUNGS
AC-226	D	1×10^{-3}	1×10^{-9}	5×10^{1}	BON SURF
	W	1×10^{-3}	7×10^{-10}	3×10^{1}	LUNGS
	Y	1×10^{-3}	7×10^{-10}	3×10^{1}	LUNGS
AC-227	D	1×10^{-3}	2×10^{-13}	6×10^{-3}	BON SURF
	W	1×10^{-3}	7×10^{-13}	3×10^{-2}	BON SURF
	Y	1×10^{-3}	1×10^{-12}	4×10^{-2}	LUNGS
AC-228	D	1×10^{-3}	4×10^{-9}	1×10^{2}	BON SURF
	W	1×10^{-3}	2×10^{-8}	6×10^{2}	BON SURF
	Y	1×10^{-3}	7×10^{-9}	2×10^{2}	LUNGS
TH-226	W	2×10^{-4}	2×10^{-8}	9×10^{2}	LUNGS
	Y	2×10^{-4}	2×10^{-8}	8×10^{2}	LUNGS
TH-227	W	2×10^{-4}	7×10^{-11}	3	LUNGS
	Y	2×10^{-4}	5×10^{-11}	2	LUNGS
TH-228	W	2×10^{-4}	4×10^{-12}	2×10^{-1}	BON SURF
	Y	2×10^{-4}	2×10^{-12}	9×10^{-2}	LUNGS
TH-229	W	2×10^{-4}	4×10^{-13}	1×10^{-2}	BON SURF
	Y	2×10^{-4}	8×10^{-13}	3×10^{-2}	LUNGS
TH-230	W	2×10^{-4}	3×10^{-12}	1×10^{-1}	BON SURF
	Y	2×10^{-4}	6×10^{-12}	2×10^{-1}	LUNGS
TH-231	W	2×10^{-4}	2×10^{-6}	7×10^{4}	LLI WALL
	Y	2×10^{-4}	2×10^{-6}	6×10^{4}	LLI WALL
TH-232	W	2×10^{-4}	5×10^{-13}	2×10^{-2}	BON SURF
	Y	2×10^{-4}	1×10^{-12}	4×10^{-2}	BON SURF
TH-234	W	2×10^{-4}	4×10^{-8}	1×10^{3}	LUNGS
	Y	2×10^{-4}	3×10^{-8}	1×10^{3}	LUNGS
PA-227	W	1×10^{-3}	2×10^{-8}	6×10^{2}	LUNGS
	Y	1×10^{-3}	2×10^{-8}	6×10^{2}	LUNGS
PA-228	W	1×10^{-3}	5×10^{-9}	2×10^{2}	BON SURF
	Y	1×10^{-3}	2×10^{-9}	7×10^{1}	LUNGS
PA-230	W	1×10^{-3}	9×10^{-10}	3×10^{1}	LUNGS
	Y	1×10^{-3}	5×10^{-10}	2×10^{1}	LUNGS
PA-231	W	1×10^{-3}	6×10^{-13}	2×10^{-2}	BON SURF
	Y	1×10^{-3}	2×10^{-12}	6×10^{-2}	BON SURF
PA-232	W	1×10^{-3}	9×10^{-9}	3×10^{2}	BON SURF
	Y	1×10^{-3}	2×10^{-8}	8×10^{2}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
PA-233	W	1×10^{-3}	1×10^{-7}	5×10^{3}	LUNGS
	Y	1×10^{-3}	1×10^{-7}	4×10^{3}	LUNGS
PA-234	W	1×10^{-3}	2×10^{-6}	7×10^{4}	LUNGS
	Y	1×10^{-3}	2×10^{-6}	7×10^{4}	LUNGS
U-230	D	5×10^{-2}	1×10^{-10}	5	KIDNEYS
	W	5×10^{-2}	5×10^{-11}	2	LUNGS
	Y	2×10^{-3}	4×10^{-11}	1	LUNGS
U-231	D	5×10^{-2}	2×10^{-6}	8×10^{4}	KIDNEYS
	W	5×10^{-2}	1×10^{-6}	5×10^{4}	LUNGS
	Y	2×10^{-3}	1×10^{-6}	4×10^{4}	LUNGS
U-232	D	5×10^{-2}	9×10^{-11}	3	BON SURF
	W	5×10^{-2}	7×10^{-11}	3	LUNGS
	Y	2×10^{-3}	1×10^{-12}	4×10^{-2}	LUNGS
U-233	D	5×10^{-2}	4×10^{-10}	1×10^{1}	KIDNEYS
	W	5×10^{-2}	1×10^{-10}	4	LUNGS
	Y	2×10^{-3}	6×10^{-12}	2×10^{-1}	LUNGS
U-234	D	5×10^{-2}	4×10^{-10}	1×10^{1}	KIDNEYS
	W	5×10^{-2}	1×10^{-10}	4	LUNGS
	Y	2×10^{-3}	6×10^{-12}	2×10^{-1}	LUNGS
U-235	D	5×10^{-2}	4×10^{-10}	1×10^{1}	KIDNEYS
	W	5×10^{-2}	1×10^{-10}	4	LUNGS
	Y	2×10^{-3}	6×10^{-12}	2×10^{-1}	LUNGS
U-236	D	5×10^{-2}	4×10^{-10}	1×10^{1}	KIDNEYS
	W	5×10^{-2}	1×10^{-10}	4	LUNGS
	Y	2×10^{-3}	6×10^{-12}	2×10^{-1}	LUNGS
U-237	D	5×10^{-2}	7×10^{-7}	3×10^{4}	KIDNEYS
	W	5×10^{-2}	4×10^{-7}	1×10^{4}	LUNGS
	Y	2×10^{-3}	4×10^{-7}	1×10^{4}	LUNGS
U-238	D	5×10^{-2}	4×10^{-10}	2×10^{1}	KIDNEYS
	W	5×10^{-2}	1×10^{-10}	4	LUNGS
	Y	2×10^{-3}	6×10^{-12}	2×10^{-1}	LUNGS
U-239	D	5×10^{-2}	4×10^{-5}	1×10^{6}	LUNGS
	W	5×10^{-2}	3×10^{-5}	1×10^{6}	LUNGS
	Y	2×10^{-3}	3×10^{-5}	1×10^{6}	LUNGS
U-240	D	5×10^{-2}	1×10^{-6}	4×10^{4}	LLI WALL
	W	5×10^{-2}	7×10^{-7}	3×10^{4}	LUNGS
	Y	2×10^{-3}	7×10^{-7}	3×10^{4}	LLI WALL
NP-232	W	1×10^{-2}	1×10^{-6}	4×10^{4}	BON SURF
NP-233	W	1×10^{-2}	5×10^{-4}	2×10^{7}	LUNGS
NP-234	W	1×10^{-2}	1×10^{-6}	4×10^{4}	LUNGS
NP-235	W	1×10^{-2}	4×10^{-7}	2×10^{4}	LIVER
NP-236*	W	1×10^{-2}	1×10^{-11}	4×10^{-1}	BON SURF
NP-236†	W	1×10^{-2}	2×10^{-8}	6×10^{2}	BON SURF
NP-237	W	1×10^{-2}	2×10^{-12}	9×10^{-2}	BON SURF
NP-238	W	1×10^{-2}	4×10^{-8}	1×10^{3}	BON SURF
NP-239	W	1×10^{-2}	6×10^{-7}	2×10^{4}	LLI WALL
NP-240	W	1×10^{-2}	1×10^{-5}	5×10^{5}	LUNGS
PU-234	W	1×10^{-4}	4×10^{-8}	1×10^{3}	LUNGS
	Y	1×10^{-5}	3×10^{-8}	1×10^{3}	LUNGS
PU-235	W	1×10^{-4}	4×10^{-4}	2×10^{7}	LUNGS
	Y	1×10^{-5}	4×10^{-4}	1×10^{7}	LUNGS

*115 × 10^3 year.

†22.5 h.

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
PU-236	W	1×10^{-4}	7×10^{-12}	3×10^{-1}	BON SURF
	Y	1×10^{-5}	9×10^{-12}	3×10^{-1}	LUNGS
PU-237	W	1×10^{-4}	8×10^{-7}	3×10^{4}	LUNGS
	Y	1×10^{-5}	5×10^{-7}	2×10^{4}	LUNGS
PU-238	W	1×10^{-4}	3×10^{-12}	9×10^{-2}	BON SURF
	Y	1×10^{-5}	5×10^{-12}	2×10^{-1}	LUNGS
PU-239	W	1×10^{-4}	2×10^{-12}	8×10^{-2}	BON SURF
	Y	1×10^{-5}	5×10^{-12}	2×10^{-1}	LUNGS
PU-240	W	1×10^{-4}	2×10^{-12}	8×10^{-2}	BON SURF
	Y	1×10^{-5}	5×10^{-12}	2×10^{-1}	LUNGS
PU-241	W	1×10^{-4}	1×10^{-10}	4	BON SURF
	Y	1×10^{-5}	3×10^{-10}	1×10^{1}	BON SURF
PU-242	W	1×10^{-4}	2×10^{-12}	9×10^{-2}	BON SURF
	Y	1×10^{-5}	6×10^{-12}	2×10^{-1}	LUNGS
PU-243	W	1×10^{-4}	9×10^{-6}	3×10^{5}	LUNGS
	Y	1×10^{-5}	7×10^{-6}	3×10^{5}	LUNGS
PU-244	W	1×10^{-4}	2×10^{-12}	9×10^{-2}	BON SURF
	Y	1×10^{-5}	6×10^{-12}	2×10^{-1}	LUNGS
PU-245	W	1×10^{-4}	1×10^{-6}	5×10^{4}	LUNGS
	Y	1×10^{-5}	1×10^{-6}	4×10^{4}	LUNGS
AM-237	W	5×10^{-4}	4×10^{-5}	2×10^{6}	LUNGS
AM-238	W	5×10^{-4}	1×10^{-6}	4×10^{4}	BON SURF
AM-239	W	5×10^{-4}	4×10^{-6}	1×10^{5}	LUNGS
AM-240	W	5×10^{-4}	1×10^{-6}	5×10^{4}	LLI WALL
AM-241	W	5×10^{-4}	2×10^{-12}	8×10^{-2}	BON SURF
AM-242	W	5×10^{-4}	3×10^{-8}	1×10^{3}	LUNGS
AM-242M	W	5×10^{-4}	2×10^{-12}	8×10^{-2}	BON SURF
AM-243	W	5×10^{-4}	2×10^{-12}	8×10^{-2}	BON SURF
AM-244	W	5×10^{-4}	7×10^{-8}	3×10^{3}	BON SURF
AM-244M	W	5×10^{-4}	2×10^{-6}	6×10^{4}	BON SURF
AM-245	W	5×10^{-4}	1×10^{-5}	5×10^{5}	LUNGS
AM-246	W	5×10^{-4}	2×10^{-5}	6×10^{5}	LUNGS
AM-246M	W	5×10^{-4}	3×10^{-5}	1×10^{6}	LUNGS
CM-238	W	5×10^{-4}	2×10^{-7}	7×10^{3}	LUNGS
CM-240	W	5×10^{-4}	2×10^{-10}	8	LUNGS
CM-241	W	5×10^{-4}	1×10^{-8}	4×10^{2}	BON SURF
CM-242	W	5×10^{-4}	1×10^{-10}	4	LUNGS
CM-243	W	5×10^{-4}	3×10^{-12}	1×10^{-1}	BON SURF
CM-244	W	5×10^{-4}	4×10^{-12}	2×10^{-1}	BON SURF
CM-245	W	5×10^{-4}	2×10^{-12}	8×10^{-2}	BON SURF
CM-246	W	5×10^{-4}	2×10^{-12}	8×10^{-2}	BON SURF
CM-247	W	5×10^{-4}	2×10^{-12}	9×10^{-2}	BON SURF
CM-248	W	5×10^{-4}	6×10^{-13}	2×10^{-2}	BON SURF
CM-249	W	5×10^{-4}	6×10^{-6}	2×10^{5}	BON SURF
BK-245	W	5×10^{-4}	4×10^{-7}	1×10^{4}	LUNGS
BK-246	W	5×10^{-4}	2×10^{-6}	7×10^{4}	LLI WALL
BK-247	W	5×10^{-4}	2×10^{-12}	8×10^{-2}	BON SURF
BK-249	W	5×10^{-4}	9×10^{-10}	3×10^{1}	BON SURF
BK-250	W	5×10^{-4}	2×10^{-7}	7×10^{3}	BON SURF
CF-244	W	5×10^{-4}	1×10^{-7}	4×10^{3}	LUNGS
	Y	5×10^{-4}	8×10^{-8}	3×10^{3}	LUNGS

TABLE 1. (CONT.)

NUCLIDE	LUNG CLASS	f_1	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN
CF-246	W	5×10^{-4}	2×10^{-9}	7×10^{1}	LUNGS
	Y	5×10^{-4}	1×10^{-9}	5×10^{1}	LUNGS
CF-248	W	5×10^{-4}	4×10^{-11}	1	BON SURF
	Y	5×10^{-4}	2×10^{-11}	6×10^{-1}	LUNGS
CF-249	W	5×10^{-4}	2×10^{-12}	8×10^{-2}	BON SURF
	Y	5×10^{-4}	5×10^{-12}	2×10^{-1}	LUNGS
CF-250	W	5×10^{-4}	5×10^{-12}	2×10^{-1}	BON SURF
	Y	5×10^{-4}	6×10^{-12}	2×10^{-1}	LUNGS
CF-251	W	5×10^{-4}	2×10^{-12}	8×10^{-2}	BON SURF
	Y	5×10^{-4}	5×10^{-12}	2×10^{-1}	LUNGS
CF-252	W	5×10^{-4}	1×10^{-11}	4×10^{-1}	BON SURF
	Y	5×10^{-4}	6×10^{-12}	2×10^{-1}	LUNGS
CF-253	W	5×10^{-4}	4×10^{-10}	2×10^{1}	LUNGS
	Y	5×10^{-4}	2×10^{-10}	9	LUNGS
CF-254	W	5×10^{-4}	5×10^{-12}	2×10^{-1}	LUNGS
	Y	5×10^{-4}	3×10^{-12}	1×10^{-1}	LUNGS
ES-250	W	5×10^{-4}	3×10^{-7}	1×10^{4}	BON SURF
ES-251	W	5×10^{-4}	4×10^{-7}	2×10^{4}	LUNGS
ES-253	W	5×10^{-4}	3×10^{-10}	1×10^{1}	LUNGS
ES-254	W	5×10^{-4}	4×10^{-11}	2	BON SURF
ES-254M	W	5×10^{-4}	2×10^{-9}	7×10^{1}	LUNGS
FM-252	W	5×10^{-4}	3×10^{-9}	1×10^{2}	LUNGS
FM-253	W	5×10^{-4}	2×10^{-9}	7×10^{1}	LUNGS
FM-254	W	5×10^{-4}	2×10^{-8}	6×10^{2}	LUNGS
FM-255	W	5×10^{-4}	3×10^{-9}	1×10^{2}	LUNGS
FM-257	W	5×10^{-4}	8×10^{-11}	3	LUNGS
MD-257	W	5×10^{-4}	3×10^{-8}	1×10^{3}	LUNGS
MD-258	W	5×10^{-4}	1×10^{-10}	4	LUNGS

[a]The lung clearance classes D, W, or Y correspond to clearance halftimes from the pulmonary region of the lung on the order of days, weeks, or years, respectively. Compounds other than particulate forms are denoted by "*" and defined in the first column; for example, see ^{11}C. In such cases, an f_1 value is not stated because these compounds enter body fluids directly from the lung. See also the information in Table 4.

[b]The following abbreviations for organs and tissues are noted:

BON SURF	endosteal tissues within 10 μm of bone surfaces
LLI WALL	wall of the lower large intestine
R MARROW	red (active) marrow
S WALL	wall of the stomach
SI WALL	wall of the small intestine
SOF TIS	soft tissues
ULI WALL	wall of the upper large intestine

TABLE 2. RADIOACTIVITY CONCENTRATION GUIDES FOR OCCUPATIONAL EXPOSURE TO RADIONUCLIDES IN WATER*

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
H-3				
TRIT.WATER		3×10^{-1}	1×10^{10}	SOFT TIS
BE-7	5×10^{-3}	9×10^{-2}	3×10^{9}	GONADS
BE-10	5×10^{-3}	1×10^{-3}	4×10^{7}	LLI WALL
C-11				
LAB.COMP.		1	5×10^{10}	GONADS
C-14				
LAB.COMP.		9×10^{-3}	3×10^{8}	GONADS
F-18	1	5×10^{-2}	2×10^{9}	S WALL
NA-22	1	1×10^{-3}	4×10^{7}	R MARROW
NA-24	1	1×10^{-2}	5×10^{8}	S WALL
MG-28	5×10^{-1}	1×10^{-3}	4×10^{7}	LLI WALL
AL-26	1×10^{-2}	5×10^{-4}	2×10^{7}	LLI WALL
SI-31	1×10^{-2}	2×10^{-2}	6×10^{8}	ULI WALL
SI-32	1×10^{-2}	2×10^{-3}	9×10^{7}	LLI WALL
P-32	8×10^{-1}	6×10^{-4}	2×10^{7}	R MARROW
P-33	8×10^{-1}	1×10^{-2}	4×10^{8}	R MARROW
S-35	8×10^{-1}	3×10^{-2}	1×10^{9}	LLI WALL
	1×10^{-1}	7×10^{-3}	2×10^{8}	LLI WALL
CL-36	1	6×10^{-3}	2×10^{8}	GONADS
CL-38	1	2×10^{-2}	6×10^{8}	S WALL
CL-39	1	2×10^{-2}	9×10^{8}	S WALL
K-40	1	1×10^{-3}	4×10^{7}	GONADS
K-42	1	8×10^{-3}	3×10^{8}	S WALL
K-43	1	2×10^{-2}	9×10^{8}	S WALL
K-44	1	2×10^{-2}	8×10^{8}	S WALL
K-45	1	4×10^{-2}	1×10^{9}	S WALL
CA-41	3×10^{-1}	3×10^{-3}	1×10^{8}	R MARROW
CA-45	3×10^{-1}	1×10^{-3}	5×10^{7}	R MARROW
CA-47	3×10^{-1}	1×10^{-3}	4×10^{7}	LLI WALL
SC-43	1×10^{-4}	1×10^{-2}	5×10^{8}	ULI WALL
SC-44	1×10^{-4}	7×10^{-3}	3×10^{8}	ULI WALL
SC-44M	1×10^{-4}	6×10^{-4}	2×10^{7}	LLI WALL
SC-46	1×10^{-4}	1×10^{-3}	5×10^{7}	LLI WALL
SC-47	1×10^{-4}	2×10^{-3}	9×10^{7}	LLI WALL
SC-48	1×10^{-4}	1×10^{-3}	5×10^{7}	LLI WALL
SC-49	1×10^{-4}	3×10^{-2}	1×10^{9}	S WALL
TI-44	1×10^{-2}	4×10^{-4}	1×10^{7}	LLI WALL
TI-45	1×10^{-2}	2×10^{-2}	6×10^{8}	ULI WALL
V-47	1×10^{-2}	3×10^{-2}	1×10^{9}	S WALL
V-48	1×10^{-2}	1×10^{-3}	4×10^{7}	LLI WALL
V-49	1×10^{-2}	8×10^{-2}	3×10^{9}	LLI WALL
CR-48	1×10^{-1}	1×10^{-2}	5×10^{8}	LLI WALL
	1×10^{-2}	1×10^{-2}	5×10^{8}	LLI WALL
CR-49	1×10^{-1}	4×10^{-2}	1×10^{9}	S WALL
	1×10^{-2}	4×10^{-2}	1×10^{9}	S WALL
CR-51	1×10^{-1}	6×10^{-2}	2×10^{9}	LLI WALL
	1×10^{-2}	5×10^{-2}	2×10^{9}	LLI WALL
MN-51	1×10^{-1}	2×10^{-2}	9×10^{8}	S WALL
MN-52	1×10^{-1}	2×10^{-3}	6×10^{7}	LLI WALL

*See notes at end of Table 1.

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
MN-52M	1×10^{-1}	3×10^{-2}	1×10^{9}	S WALL
MN-53	1×10^{-1}	8×10^{-2}	3×10^{9}	LLI WALL
MN-54	1×10^{-1}	5×10^{-3}	2×10^{8}	GONADS
MN-56	1×10^{-1}	1×10^{-2}	4×10^{8}	ULI WALL
FE-52	1×10^{-1}	2×10^{-3}	6×10^{7}	ULI WALL
FE-55	1×10^{-1}	3×10^{-2}	1×10^{9}	SPLEEN
FE-59	1×10^{-1}	2×10^{-3}	6×10^{7}	LLI WALL
FE-60	1×10^{-1}	1×10^{-4}	5×10^{6}	GONADS
CO-55	5×10^{-2}	2×10^{-3}	8×10^{7}	LLI WALL
	3×10^{-1}	3×10^{-3}	1×10^{8}	LLI WALL
CO-56	5×10^{-2}	1×10^{-3}	4×10^{7}	LLI WALL
	3×10^{-1}	1×10^{-3}	5×10^{7}	GONADS
CO-57	5×10^{-2}	1×10^{-2}	4×10^{8}	LLI WALL
	3×10^{-1}	1×10^{-2}	5×10^{8}	LLI WALL
CO-58	5×10^{-2}	4×10^{-3}	1×10^{8}	LLI WALL
	3×10^{-1}	4×10^{-3}	2×10^{8}	LLI WALL
CO-58M	5×10^{-2}	9×10^{-2}	3×10^{9}	LLI WALL
	3×10^{-1}	1×10^{-1}	4×10^{9}	LLI WALL
CO-60	5×10^{-2}	1×10^{-3}	5×10^{7}	LLI WALL
	3×10^{-1}	7×10^{-4}	3×10^{7}	GONADS
CO-60M	5×10^{-2}	1	4×10^{10}	S WALL
	3×10^{-1}	1	4×10^{10}	S WALL
CO-61	5×10^{-2}	4×10^{-2}	1×10^{9}	S WALL
	3×10^{-1}	4×10^{-2}	1×10^{9}	S WALL
CO-62M	5×10^{-2}	4×10^{-2}	2×10^{9}	S WALL
	3×10^{-1}	4×10^{-2}	2×10^{9}	S WALL
NI-56	5×10^{-2}	3×10^{-3}	1×10^{8}	GONADS
NI-57	5×10^{-2}	3×10^{-3}	1×10^{8}	LLI WALL
NI-59	5×10^{-2}	5×10^{-2}	2×10^{9}	LLI WALL
NI-63	5×10^{-2}	2×10^{-2}	6×10^{8}	LLI WALL
NI-65	5×10^{-2}	2×10^{-2}	6×10^{8}	ULI WALL
NI-66	5×10^{-2}	4×10^{-4}	2×10^{7}	LLI WALL
CU-60	5×10^{-1}	3×10^{-2}	1×10^{9}	S WALL
CU-61	5×10^{-1}	3×10^{-2}	1×10^{9}	ULI WALL
CU-64	5×10^{-1}	2×10^{-2}	7×10^{8}	LLI WALL
CU-67	5×10^{-1}	5×10^{-3}	2×10^{8}	LLI WALL
ZN-62	5×10^{-1}	3×10^{-3}	1×10^{8}	LLI WALL
ZN-63	5×10^{-1}	3×10^{-2}	1×10^{9}	S WALL
ZN-65	5×10^{-1}	1×10^{-3}	4×10^{7}	R MARROW
ZN-69	5×10^{-1}	7×10^{-2}	3×10^{9}	S WALL
ZN-69M	5×10^{-1}	6×10^{-3}	2×10^{8}	LLI WALL
ZN-71M	5×10^{-1}	1×10^{-2}	5×10^{8}	ULI WALL
ZN-72	5×10^{-1}	1×10^{-3}	6×10^{7}	LLI WALL
GA-65	1×10^{-3}	5×10^{-2}	2×10^{9}	S WALL
GA-66	1×10^{-3}	2×10^{-3}	7×10^{7}	LLI WALL
GA-67	1×10^{-3}	9×10^{-3}	3×10^{8}	LLI WALL
GA-68	1×10^{-3}	2×10^{-2}	9×10^{8}	S WALL
GA-70	1×10^{-3}	6×10^{-2}	2×10^{9}	S WALL
GA-72	1×10^{-3}	2×10^{-3}	8×10^{7}	LLI WALL
GA-73	1×10^{-3}	8×10^{-3}	3×10^{8}	ULI WALL
GE-66	1	6×10^{-2}	2×10^{9}	S WALL

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
GE-67	1	3×10^{-2}	1×10^{9}	S WALL
GE-68	1	2×10^{-2}	7×10^{8}	KIDNEYS
GE-69	1	4×10^{-2}	2×10^{9}	S WALL
GE-71	1	2	7×10^{10}	S WALL
GE-75	1	4×10^{-2}	2×10^{9}	S WALL
GE-77	1	2×10^{-2}	6×10^{8}	S WALL
GE-78	1	3×10^{-2}	9×10^{8}	S WALL
AS-69	5×10^{-1}	3×10^{-2}	1×10^{9}	S WALL
AS-70	5×10^{-1}	2×10^{-2}	7×10^{8}	S WALL
AS-71	5×10^{-1}	6×10^{-3}	2×10^{8}	LLI WALL
AS-72	5×10^{-1}	1×10^{-3}	5×10^{7}	LLI WALL
AS-73	5×10^{-1}	9×10^{-3}	3×10^{8}	LLI WALL
AS-74	5×10^{-1}	2×10^{-3}	7×10^{7}	LLI WALL
AS-76	5×10^{-1}	1×10^{-3}	5×10^{7}	LLI WALL
AS-77	5×10^{-1}	5×10^{-3}	2×10^{8}	LLI WALL
AS-78	5×10^{-1}	1×10^{-2}	5×10^{8}	S WALL
SE-70	8×10^{-1}	2×10^{-2}	8×10^{8}	S WALL
	5×10^{-2}	2×10^{-2}	8×10^{8}	S WALL
SE-73	8×10^{-1}	2×10^{-2}	8×10^{8}	ULI WALL
	5×10^{-2}	6×10^{-3}	2×10^{8}	ULI WALL
SE-73M	8×10^{-1}	1×10^{-1}	4×10^{9}	S WALL
	5×10^{-2}	8×10^{-2}	3×10^{9}	ULI WALL
SE-75	8×10^{-1}	2×10^{-3}	8×10^{7}	KIDNEYS
	5×10^{-2}	8×10^{-3}	3×10^{8}	LLI WALL
SE-79	8×10^{-1}	1×10^{-3}	4×10^{7}	KIDNEYS
	5×10^{-2}	5×10^{-3}	2×10^{8}	LLI WALL
SE-81	8×10^{-1}	7×10^{-2}	3×10^{9}	S WALL
	5×10^{-2}	7×10^{-2}	3×10^{9}	S WALL
SE-81M	8×10^{-1}	4×10^{-2}	2×10^{9}	S WALL
	5×10^{-2}	4×10^{-2}	2×10^{9}	S WALL
SE-83	8×10^{-1}	5×10^{-2}	2×10^{9}	S WALL
	5×10^{-2}	5×10^{-2}	2×10^{9}	S WALL
BR-74	1	2×10^{-2}	9×10^{8}	S WALL
BR-74M	1	1×10^{-2}	5×10^{8}	S WALL
BR-75	1	3×10^{-2}	1×10^{9}	S WALL
BR-76	1	1×10^{-2}	4×10^{8}	S WALL
BR-77	1	6×10^{-2}	2×10^{9}	R MARROW
BR-80	1	6×10^{-2}	2×10^{9}	S WALL
BR-80M	1	2×10^{-2}	9×10^{8}	S WALL
BR-82	1	1×10^{-2}	4×10^{8}	GONADS
BR-83	1	5×10^{-2}	2×10^{9}	S WALL
BR-84	1	2×10^{-2}	8×10^{8}	S WALL
RB-79	1	4×10^{-2}	1×10^{9}	S WALL
RB-81	1	5×10^{-2}	2×10^{9}	S WALL
RB-81M	1	3×10^{-1}	9×10^{9}	S WALL
RB-82M	1	3×10^{-2}	1×10^{9}	S WALL
RB-83	1	2×10^{-3}	7×10^{7}	R MARROW
RB-84	1	1×10^{-3}	5×10^{7}	R MARROW
RB-86	1	1×10^{-3}	5×10^{7}	R MARROW
RB-87	1	2×10^{-3}	9×10^{7}	R MARROW
RB-88	1	2×10^{-2}	7×10^{8}	S WALL

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
RB-89	1	4×10^{-2}	2×10^{9}	S WALL
SR-80	3×10^{-1}	8×10^{-3}	3×10^{8}	S WALL
	1×10^{-2}	8×10^{-3}	3×10^{8}	S WALL
SR-81	3×10^{-1}	3×10^{-2}	1×10^{9}	S WALL
	1×10^{-2}	3×10^{-2}	1×10^{9}	S WALL
SR-83	3×10^{-1}	4×10^{-3}	2×10^{8}	LLI WALL
	1×10^{-2}	3×10^{-3}	1×10^{8}	LLI WALL
SR-85	3×10^{-1}	8×10^{-3}	3×10^{8}	GONADS
	1×10^{-2}	8×10^{-3}	3×10^{8}	LLI WALL
SR-85M	3×10^{-1}	6×10^{-1}	2×10^{10}	S WALL
	1×10^{-2}	6×10^{-1}	2×10^{10}	S WALL
SR-87M	3×10^{-1}	1×10^{-1}	4×10^{9}	ULI WALL
	1×10^{-2}	9×10^{-2}	3×10^{9}	ULI WALL
SR-89	3×10^{-1}	7×10^{-4}	3×10^{7}	LLI WALL
	1×10^{-2}	5×10^{-4}	2×10^{7}	LLI WALL
SR-90	3×10^{-1}	3×10^{-5}	9×10^{5}	R MARROW
	1×10^{-2}	6×10^{-4}	2×10^{7}	LLI WALL
SR-91	3×10^{-1}	4×10^{-3}	1×10^{8}	LLI WALL
	1×10^{-2}	3×10^{-3}	1×10^{8}	LLI WALL
SR-92	3×10^{-1}	5×10^{-3}	2×10^{8}	ULI WALL
	1×10^{-2}	4×10^{-3}	1×10^{8}	ULI WALL
Y-86	1×10^{-4}	3×10^{-3}	1×10^{8}	LLI WALL
Y-86M	1×10^{-4}	5×10^{-2}	2×10^{9}	LLI WALL
Y-87	1×10^{-4}	3×10^{-3}	1×10^{8}	LLI WALL
Y-88	1×10^{-4}	2×10^{-3}	7×10^{7}	GONADS
Y-90	1×10^{-4}	5×10^{-4}	2×10^{7}	LLI WALL
Y-90M	1×10^{-4}	9×10^{-3}	3×10^{8}	LLI WALL
Y-91	1×10^{-4}	5×10^{-4}	2×10^{7}	LLI WALL
Y-91M	1×10^{-4}	3×10^{-1}	1×10^{10}	S WALL
Y-92	1×10^{-4}	4×10^{-3}	2×10^{8}	ULI WALL
Y-93	1×10^{-4}	2×10^{-3}	6×10^{7}	LLI WALL
Y-94	1×10^{-4}	2×10^{-2}	9×10^{8}	S WALL
Y-95	1×10^{-4}	4×10^{-2}	1×10^{9}	S WALL
ZR-86	2×10^{-3}	2×10^{-3}	9×10^{7}	LLI WALL
ZR-88	2×10^{-3}	7×10^{-3}	3×10^{8}	LLI WALL
ZR-89	2×10^{-3}	3×10^{-3}	9×10^{7}	LLI WALL
ZR-93	2×10^{-3}	5×10^{-3}	2×10^{8}	BON SURF
ZR-95	2×10^{-3}	2×10^{-3}	7×10^{7}	LLI WALL
ZR-97	2×10^{-3}	8×10^{-4}	3×10^{7}	LLI WALL
NB-88	1×10^{-2}	5×10^{-2}	2×10^{9}	S WALL
NB-89*	1×10^{-2}	1×10^{-2}	4×10^{8}	ULI WALL
NB-89†	1×10^{-2}	2×10^{-2}	7×10^{8}	S WALL
NB-90	1×10^{-2}	2×10^{-3}	8×10^{7}	LLI WALL
NB-93M	1×10^{-2}	1×10^{-2}	4×10^{8}	LLI WALL
NB-94	1×10^{-2}	1×10^{-3}	4×10^{7}	LLI WALL
NB-95	1×10^{-2}	4×10^{-3}	1×10^{8}	LLI WALL
NB-95M	1×10^{-2}	2×10^{-3}	8×10^{7}	LLI WALL
NB-96	1×10^{-2}	2×10^{-3}	8×10^{7}	LLI WALL
NB-97	1×10^{-2}	4×10^{-2}	1×10^{9}	S WALL
NB-98	1×10^{-2}	2×10^{-2}	8×10^{8}	S WALL
MO-90	8×10^{-1}	1×10^{-2}	5×10^{8}	LLI WALL
	5×10^{-2}	4×10^{-3}	1×10^{8}	LLI WALL

*122 min.
†66 min.

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
MO-93	8×10^{-1}	8×10^{-3}	3×10^{8}	LIVER
	5×10^{-2}	3×10^{-2}	1×10^{9}	LLI WALL
MO-93M	8×10^{-1}	3×10^{-2}	1×10^{9}	GONADS
	5×10^{-2}	1×10^{-2}	4×10^{8}	ULI WALL
MO-99	8×10^{-1}	5×10^{-3}	2×10^{8}	LLI WALL
	5×10^{-2}	1×10^{-3}	4×10^{7}	LLI WALL
MO-101	8×10^{-1}	5×10^{-2}	2×10^{9}	S WALL
	5×10^{-2}	5×10^{-2}	2×10^{9}	S WALL
TC-93	8×10^{-1}	9×10^{-2}	3×10^{9}	S WALL
TC-93M	8×10^{-1}	1×10^{-1}	5×10^{9}	S WALL
TC-94	8×10^{-1}	3×10^{-2}	1×10^{9}	S WALL
TC-94M	8×10^{-1}	2×10^{-2}	8×10^{8}	S WALL
TC-96	8×10^{-1}	6×10^{-3}	2×10^{8}	S WALL
TC-96M	8×10^{-1}	4×10^{-1}	1×10^{10}	S WALL
TC-97	8×10^{-1}	4×10^{-2}	2×10^{9}	S WALL
TC-97M	8×10^{-1}	5×10^{-3}	2×10^{8}	S WALL
TC-98	8×10^{-1}	2×10^{-3}	7×10^{7}	S WALL
TC-99	8×10^{-1}	4×10^{-3}	2×10^{8}	S WALL
TC-99M	8×10^{-1}	2×10^{-1}	8×10^{9}	S WALL
TC-101	8×10^{-1}	1×10^{-1}	4×10^{9}	S WALL
TC-104	8×10^{-1}	2×10^{-2}	9×10^{8}	S WALL
RU-94	5×10^{-2}	3×10^{-2}	1×10^{9}	SI WALL
RU-97	5×10^{-2}	2×10^{-2}	6×10^{8}	LLI WALL
RU-103	5×10^{-2}	2×10^{-3}	8×10^{7}	LLI WALL
RU-105	5×10^{-2}	9×10^{-3}	3×10^{8}	ULI WALL
RU-106	5×10^{-2}	2×10^{-4}	8×10^{6}	LLI WALL
RH-99	5×10^{-2}	4×10^{-3}	2×10^{8}	LLI WALL
RH-99M	5×10^{-2}	5×10^{-2}	2×10^{9}	ULI WALL
RH-100	5×10^{-2}	4×10^{-3}	2×10^{8}	GONADS
RH-101	5×10^{-2}	6×10^{-3}	2×10^{8}	LLI WALL
RH-101M	5×10^{-2}	1×10^{-2}	4×10^{8}	LLI WALL
RH-102	5×10^{-2}	1×10^{-3}	5×10^{7}	GONADS
RH-102M	5×10^{-2}	2×10^{-3}	6×10^{7}	LLI WALL
RH-103M	5×10^{-2}	6×10^{-1}	2×10^{10}	S WALL
RH-105	5×10^{-2}	4×10^{-3}	1×10^{8}	LLI WALL
RH-106M	5×10^{-2}	2×10^{-2}	8×10^{8}	ULI WALL
RH-107	5×10^{-2}	8×10^{-2}	3×10^{9}	S WALL
PD-100	5×10^{-3}	2×10^{-3}	8×10^{7}	LLI WALL
PD-101	5×10^{-3}	3×10^{-2}	1×10^{9}	ULI WALL
PD-103	5×10^{-3}	6×10^{-3}	2×10^{8}	LLI WALL
PD-107	5×10^{-3}	3×10^{-2}	1×10^{9}	LLI WALL
PD-109	5×10^{-3}	3×10^{-3}	1×10^{8}	LLI WALL
AG-102	5×10^{-2}	5×10^{-2}	2×10^{9}	S WALL
AG-103	5×10^{-2}	6×10^{-2}	2×10^{9}	S WALL
AG-104	5×10^{-2}	6×10^{-2}	2×10^{9}	S WALL
AG-104M	5×10^{-2}	4×10^{-2}	2×10^{9}	S WALL
AG-105	5×10^{-2}	6×10^{-3}	2×10^{8}	LLI WALL
AG-106	5×10^{-2}	6×10^{-2}	2×10^{9}	S WALL
AG-106M	5×10^{-2}	2×10^{-3}	7×10^{7}	GONADS
AG-108M	5×10^{-2}	2×10^{-3}	7×10^{7}	LLI WALL
AG-110M	5×10^{-2}	1×10^{-3}	5×10^{7}	LLI WALL

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m³)	CRITICAL ORGAN
AG-111	5×10^{-2}	1×10^{-3}	4×10^{7}	LLI WALL
AG-112	5×10^{-2}	6×10^{-3}	2×10^{8}	ULI WALL
AG-115	5×10^{-2}	4×10^{-2}	1×10^{9}	S WALL
CD-104	5×10^{-2}	6×10^{-2}	2×10^{9}	ULI WALL
CD-107	5×10^{-2}	3×10^{-2}	1×10^{9}	ULI WALL
CD-109	5×10^{-2}	4×10^{-4}	1×10^{7}	KIDNEYS
CD-113	5×10^{-2}	2×10^{-5}	9×10^{5}	KIDNEYS
CD-113M	5×10^{-2}	3×10^{-5}	1×10^{6}	KIDNEYS
CD-115	5×10^{-2}	1×10^{-3}	4×10^{7}	LLI WALL
CD-115M	5×10^{-2}	5×10^{-4}	2×10^{7}	LLI WALL
CD-117	5×10^{-2}	8×10^{-3}	3×10^{8}	ULI WALL
CD-117M	5×10^{-2}	9×10^{-3}	3×10^{8}	ULI WALL
IN-109	2×10^{-2}	4×10^{-2}	2×10^{9}	ULI WALL
IN-110*	2×10^{-2}	1×10^{-2}	5×10^{8}	GONADS
IN-110†	2×10^{-2}	3×10^{-2}	1×10^{9}	S WALL
IN-111	2×10^{-2}	7×10^{-3}	3×10^{8}	LLI WALL
IN-112	2×10^{-2}	2×10^{-1}	7×10^{9}	S WALL
IN-113M	2×10^{-2}	1×10^{-1}	4×10^{9}	S WALL
IN-114M	2×10^{-2}	3×10^{-4}	1×10^{7}	LLI WALL
IN-115	2×10^{-2}	3×10^{-5}	1×10^{6}	R MARROW
IN-115M	2×10^{-2}	3×10^{-2}	1×10^{9}	ULI WALL
IN-116M	2×10^{-2}	4×10^{-2}	2×10^{9}	S WALL
IN-117	2×10^{-2}	7×10^{-2}	3×10^{9}	S WALL
IN-117M	2×10^{-2}	2×10^{-2}	9×10^{8}	ULI WALL
IN-119M	2×10^{-2}	4×10^{-2}	1×10^{9}	S WALL
SN-110	2×10^{-2}	6×10^{-3}	2×10^{8}	ULI WALL
SN-111	2×10^{-2}	1×10^{-1}	4×10^{9}	S WALL
SN-113	2×10^{-2}	2×10^{-3}	7×10^{7}	LLI WALL
SN-117M	2×10^{-2}	2×10^{-3}	7×10^{7}	LLI WALL
SN-119M	2×10^{-2}	4×10^{-3}	1×10^{8}	LLI WALL
SN-121	2×10^{-2}	6×10^{-3}	2×10^{8}	LLI WALL
SN-121M	2×10^{-2}	3×10^{-3}	1×10^{8}	LLI WALL
SN-123	2×10^{-2}	6×10^{-4}	2×10^{7}	LLI WALL
SN-123M	2×10^{-2}	5×10^{-2}	2×10^{9}	S WALL
SN-125	2×10^{-2}	4×10^{-4}	1×10^{7}	LLI WALL
SN-126	2×10^{-2}	3×10^{-4}	1×10^{7}	LLI WALL
SN-127	2×10^{-2}	2×10^{-2}	6×10^{8}	ULI WALL
SN-128	2×10^{-2}	2×10^{-2}	7×10^{8}	S WALL
SB-115	1×10^{-1}	9×10^{-2}	3×10^{9}	S WALL
	1×10^{-2}	9×10^{-2}	3×10^{9}	S WALL
SB-116M	1×10^{-1}	5×10^{-2}	2×10^{9}	S WALL
	1×10^{-2}	5×10^{-2}	2×10^{9}	S WALL
SB-117	1×10^{-1}	2×10^{-1}	6×10^{9}	ULI WALL
	1×10^{-2}	2×10^{-1}	6×10^{9}	ULI WALL
SB-118M	1×10^{-1}	2×10^{-2}	6×10^{8}	ULI WALL
	1×10^{-2}	1×10^{-2}	6×10^{8}	ULI WALL
SB-119	1×10^{-1}	2×10^{-2}	7×10^{8}	LLI WALL
	1×10^{-2}	2×10^{-2}	7×10^{8}	LLI WALL
SB-120‡	1×10^{-1}	1×10^{-1}	5×10^{9}	S WALL
	1×10^{-2}	1×10^{-1}	5×10^{9}	S WALL
SB-120§	1×10^{-1}	2×10^{-3}	9×10^{7}	LLI WALL
	1×10^{-2}	2×10^{-3}	8×10^{7}	LLI WALL

*4.9 h.

†69.1 min.

‡15.89 min.

§5.76 d.

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
SB-122	1×10^{-1}	8×10^{-4}	3×10^{7}	LLI WALL
	1×10^{-2}	7×10^{-4}	3×10^{7}	LLI WALL
SB-124	1×10^{-1}	7×10^{-4}	3×10^{7}	LLI WALL
	1×10^{-2}	6×10^{-4}	2×10^{7}	LLI WALL
SB-124M	1×10^{-1}	3×10^{-1}	1×10^{10}	S WALL
	1×10^{-2}	3×10^{-1}	1×10^{10}	S WALL
SB-125	1×10^{-1}	3×10^{-3}	9×10^{7}	LLI WALL
	1×10^{-2}	2×10^{-3}	9×10^{7}	LLI WALL
SB-126	1×10^{-1}	8×10^{-4}	3×10^{7}	LLI WALL
	1×10^{-2}	8×10^{-4}	3×10^{7}	LLI WALL
SB-126M	1×10^{-1}	6×10^{-2}	2×10^{9}	S WALL
	1×10^{-2}	6×10^{-2}	2×10^{9}	S WALL
SB-127	1×10^{-1}	8×10^{-4}	3×10^{7}	LLI WALL
	1×10^{-2}	8×10^{-4}	3×10^{7}	LLI WALL
SB-128	1×10^{-1}	9×10^{-2}	3×10^{9}	S WALL
	1×10^{-2}	9×10^{-2}	3×10^{9}	S WALL
SB-128*	1×10^{-1}	2×10^{-3}	9×10^{7}	ULI WALL
	1×10^{-2}	2×10^{-3}	8×10^{7}	ULI WALL
SB-129†	1×10^{-1}	5×10^{-3}	2×10^{8}	ULI WALL
	1×10^{-2}	5×10^{-3}	2×10^{8}	ULI WALL
SB-130	1×10^{-1}	3×10^{-2}	1×10^{9}	S WALL
	1×10^{-2}	3×10^{-2}	1×10^{9}	S WALL
SB-131	1×10^{-1}	3×10^{-2}	1×10^{9}	S WALL
	1×10^{-2}	3×10^{-2}	1×10^{9}	S WALL
TE-116	2×10^{-1}	2×10^{-2}	6×10^{8}	ULI WALL
TE-121	2×10^{-1}	8×10^{-3}	3×10^{8}	GONADS
TE-121M	2×10^{-1}	1×10^{-3}	5×10^{7}	R MARROW
TE-123	2×10^{-1}	2×10^{-3}	6×10^{7}	BON SURF
TE-123M	2×10^{-1}	2×10^{-3}	8×10^{7}	BON SURF
TE-125M	2×10^{-1}	3×10^{-3}	1×10^{8}	LLI WALL
TE-127	2×10^{-1}	1×10^{-2}	4×10^{8}	LLI WALL
TE-127M	2×10^{-1}	9×10^{-4}	3×10^{7}	R MARROW
TE-129	2×10^{-1}	4×10^{-2}	1×10^{9}	S WALL
TE-129M	2×10^{-1}	6×10^{-4}	2×10^{7}	LLI WALL
TE-131	2×10^{-1}	7×10^{-3}	3×10^{8}	THYROID
TE-131M	2×10^{-1}	7×10^{-4}	3×10^{7}	THYROID
TE-132	2×10^{-1}	5×10^{-4}	2×10^{7}	THYROID
TE-133	2×10^{-1}	3×10^{-2}	1×10^{9}	THYROID
TE-133M	2×10^{-1}	7×10^{-3}	3×10^{8}	THYROID
TE-134	2×10^{-1}	3×10^{-2}	1×10^{9}	THYROID
I-120	1	9×10^{-3}	3×10^{8}	THYROID
I-120M	1	1×10^{-2}	5×10^{8}	S WALL
I-121	1	2×10^{-2}	8×10^{8}	THYROID
I-123	1	7×10^{-3}	2×10^{8}	THYROID
I-124	1	1×10^{-4}	4×10^{6}	THYROID
I-125	1	9×10^{-5}	3×10^{6}	THYROID
I-126	1	5×10^{-5}	2×10^{6}	THYROID
I-128	1	4×10^{-2}	2×10^{9}	S WALL
I-129	1	1×10^{-5}	4×10^{5}	THYROID
I-130	1	7×10^{-4}	3×10^{7}	THYROID
I-131	1	6×10^{-5}	2×10^{6}	THYROID

*10.4 min.
†9.01 h.

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
I-132	1	8×10^{-3}	3×10^{8}	THYROID
I-132M	1	8×10^{-3}	3×10^{8}	THYROID
I-133	1	3×10^{-4}	1×10^{7}	THYROID
I-134	1	3×10^{-2}	1×10^{9}	S WALL
I-135	1	2×10^{-3}	6×10^{7}	THYROID
CS-125	1	6×10^{-2}	2×10^{9}	S WALL
CS-127	1	2×10^{-1}	6×10^{9}	S WALL
CS-129	1	8×10^{-2}	3×10^{9}	R MARROW
CS-130	1	7×10^{-2}	3×10^{9}	S WALL
CS-131	1	5×10^{-2}	2×10^{9}	R MARROW
CS-132	1	9×10^{-3}	3×10^{8}	GONADS
CS-134	1	2×10^{-4}	9×10^{6}	GONADS
CS-134M	1	1×10^{-1}	5×10^{9}	S WALL
CS-135	1	3×10^{-3}	1×10^{8}	GONADS
CS-135M	1	1×10^{-1}	5×10^{9}	S WALL
CS-136	1	2×10^{-3}	6×10^{7}	GONADS
CS-137	1	4×10^{-4}	1×10^{7}	GONADS
CS-138	1	2×10^{-2}	8×10^{8}	S WALL
BA-126	1×10^{-1}	1×10^{-2}	4×10^{8}	S WALL
BA-128	1×10^{-1}	6×10^{-4}	2×10^{7}	LLI WALL
BA-131	1×10^{-1}	5×10^{-3}	2×10^{8}	LLI WALL
BA-131M	1×10^{-1}	4×10^{-1}	2×10^{10}	S WALL
BA-133	1×10^{-1}	3×10^{-3}	1×10^{8}	R MARROW
BA-133M	1×10^{-1}	3×10^{-3}	1×10^{8}	LLI WALL
BA-135M	1×10^{-1}	3×10^{-3}	1×10^{8}	LLI WALL
BA-139	1×10^{-1}	2×10^{-2}	8×10^{8}	S WALL
BA-140	1×10^{-1}	6×10^{-4}	2×10^{7}	LLI WALL
BA-141	1×10^{-1}	4×10^{-2}	1×10^{9}	S WALL
BA-142	1×10^{-1}	7×10^{-2}	3×10^{9}	S WALL
LA-131	1×10^{-3}	8×10^{-2}	3×10^{9}	S WALL
LA-132	1×10^{-3}	6×10^{-3}	2×10^{8}	ULI WALL
LA-135	1×10^{-3}	8×10^{-2}	3×10^{9}	LLI WALL
LA-137	1×10^{-3}	3×10^{-2}	1×10^{9}	LLI WALL
LA-138	1×10^{-3}	3×10^{-3}	1×10^{8}	LIVER
LA-140	1×10^{-3}	8×10^{-4}	3×10^{7}	LLI WALL
LA-141	1×10^{-3}	6×10^{-3}	2×10^{8}	ULI WALL
LA-142	1×10^{-3}	2×10^{-2}	6×10^{8}	S WALL
LA-143	1×10^{-3}	4×10^{-2}	1×10^{9}	S WALL
CE-134	3×10^{-4}	5×10^{-4}	2×10^{7}	LLI WALL
CE-135	3×10^{-4}	3×10^{-3}	1×10^{8}	LLI WALL
CE-137	3×10^{-4}	1×10^{-1}	4×10^{9}	ULI WALL
CE-137M	3×10^{-4}	3×10^{-3}	1×10^{8}	LLI WALL
CE-139	3×10^{-4}	6×10^{-3}	2×10^{8}	LLI WALL
CE-141	3×10^{-4}	2×10^{-3}	6×10^{7}	LLI WALL
CE-143	3×10^{-4}	1×10^{-3}	5×10^{7}	LLI WALL
CE-144	3×10^{-4}	2×10^{-4}	8×10^{6}	LLI WALL
PR-136	3×10^{-4}	6×10^{-2}	2×10^{9}	S WALL
PR-137	3×10^{-4}	8×10^{-2}	3×10^{9}	S WALL
PR-138M	3×10^{-4}	3×10^{-2}	1×10^{9}	ULI WALL
PR-139	3×10^{-4}	8×10^{-2}	3×10^{9}	ULI WALL
PR-142	3×10^{-4}	1×10^{-3}	4×10^{7}	LLI WALL

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
PR-142M	3×10^{-4}	9×10^{-2}	3×10^{9}	LLI WALL
PR-143	3×10^{-4}	1×10^{-3}	4×10^{7}	LLI WALL
PR-144	3×10^{-4}	4×10^{-2}	1×10^{9}	S WALL
PR-145	3×10^{-4}	5×10^{-3}	2×10^{8}	ULI WALL
PR-147	3×10^{-4}	6×10^{-2}	2×10^{9}	S WALL
ND-136	3×10^{-4}	3×10^{-2}	1×10^{9}	S WALL
ND-138	3×10^{-4}	3×10^{-3}	1×10^{8}	ULI WALL
ND-139	3×10^{-4}	1×10^{-1}	5×10^{9}	S WALL
ND-139M	3×10^{-4}	1×10^{-2}	4×10^{8}	ULI WALL
ND-141	3×10^{-4}	3×10^{-1}	1×10^{10}	ULI WALL
ND-147	3×10^{-4}	1×10^{-3}	4×10^{7}	LLI WALL
ND-149	3×10^{-4}	3×10^{-2}	9×10^{8}	ULI WALL
ND-151	3×10^{-4}	8×10^{-2}	3×10^{9}	S WALL
PM-141	3×10^{-4}	5×10^{-2}	2×10^{9}	S WALL
PM-143	3×10^{-4}	1×10^{-2}	4×10^{8}	LLI WALL
PM-144	3×10^{-4}	3×10^{-3}	1×10^{8}	GONADS
PM-145	3×10^{-4}	2×10^{-2}	6×10^{8}	LLI WALL
PM-146	3×10^{-4}	2×10^{-3}	8×10^{7}	LLI WALL
PM-147	3×10^{-4}	5×10^{-3}	2×10^{8}	LLI WALL
PM-148	3×10^{-4}	5×10^{-4}	2×10^{7}	LLI WALL
PM-148M	3×10^{-4}	1×10^{-3}	4×10^{7}	LLI WALL
PM-149	3×10^{-4}	1×10^{-3}	5×10^{7}	LLI WALL
PM-150	3×10^{-4}	1×10^{-2}	4×10^{8}	ULI WALL
PM-151	3×10^{-4}	2×10^{-3}	8×10^{7}	LLI WALL
SM-141	3×10^{-4}	5×10^{-2}	2×10^{9}	S WALL
SM-141M	3×10^{-4}	3×10^{-2}	1×10^{9}	S WALL
SM-142	3×10^{-4}	1×10^{-2}	5×10^{8}	S WALL
SM-145	3×10^{-4}	7×10^{-3}	3×10^{8}	LLI WALL
SM-146	3×10^{-4}	5×10^{-5}	2×10^{6}	BON SURF
SM-147	3×10^{-4}	6×10^{-5}	2×10^{6}	BON SURF
SM-151	3×10^{-4}	1×10^{-2}	5×10^{8}	LLI WALL
SM-153	3×10^{-4}	2×10^{-3}	7×10^{7}	LLI WALL
SM-155	3×10^{-4}	6×10^{-2}	2×10^{9}	S WALL
SM-156	3×10^{-4}	7×10^{-3}	3×10^{8}	LLI WALL
EU-145	1×10^{-3}	4×10^{-3}	1×10^{8}	LLI WALL
EU-146	1×10^{-3}	2×10^{-3}	8×10^{7}	LLI WALL
EU-147	1×10^{-3}	4×10^{-3}	2×10^{8}	LLI WALL
EU-148	1×10^{-3}	2×10^{-3}	8×10^{7}	GONADS
EU-149	1×10^{-3}	2×10^{-2}	6×10^{8}	LLI WALL
EU-150*	1×10^{-3}	5×10^{-3}	2×10^{8}	LLI WALL
EU-150†	1×10^{-3}	2×10^{-3}	9×10^{7}	LLI WALL
EU-152	1×10^{-3}	1×10^{-3}	5×10^{7}	LLI WALL
EU-152M	1×10^{-3}	4×10^{-3}	2×10^{8}	LLI WALL
EU-154	1×10^{-3}	8×10^{-4}	3×10^{7}	LLI WALL
EU-155	1×10^{-3}	4×10^{-3}	2×10^{8}	LLI WALL
EU-156	1×10^{-3}	6×10^{-4}	2×10^{7}	LLI WALL
EU-157	1×10^{-3}	3×10^{-3}	1×10^{8}	LLI WALL
EU-158	1×10^{-3}	2×10^{-2}	9×10^{8}	S WALL
GD-145	3×10^{-4}	5×10^{-2}	2×10^{9}	S WALL
GD-146	3×10^{-4}	2×10^{-3}	6×10^{7}	LLI WALL
GD-147	3×10^{-4}	4×10^{-3}	2×10^{8}	LLI WALL

*12.62 h.

†34.2 year.

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
GD-148	3×10^{-4}	4×10^{-5}	2×10^{6}	BON SURF
GD-149	3×10^{-4}	4×10^{-3}	1×10^{8}	LLI WALL
GD-151	3×10^{-4}	7×10^{-3}	3×10^{8}	LLI WALL
GD-152	3×10^{-4}	6×10^{-5}	2×10^{6}	BON SURF
GD-153	3×10^{-4}	5×10^{-3}	2×10^{8}	LLI WALL
GD-159	3×10^{-4}	3×10^{-3}	1×10^{8}	LLI WALL
TB-147	3×10^{-4}	2×10^{-2}	9×10^{8}	ULI WALL
TB-149	3×10^{-4}	1×10^{-2}	4×10^{8}	ULI WALL
TB-150	3×10^{-4}	1×10^{-2}	4×10^{8}	ULI WALL
TB-151	3×10^{-4}	8×10^{-3}	3×10^{8}	LLI WALL
TB-153	3×10^{-4}	7×10^{-3}	3×10^{8}	LLI WALL
TB-154	3×10^{-4}	5×10^{-3}	2×10^{8}	LLI WALL
TB-155	3×10^{-4}	8×10^{-3}	3×10^{8}	LLI WALL
TB-156	3×10^{-4}	2×10^{-3}	7×10^{7}	LLI WALL
TB-156M*	3×10^{-4}	1×10^{-2}	4×10^{8}	LLI WALL
TB-156M†	3×10^{-4}	3×10^{-2}	1×10^{9}	LLI WALL
TB-157	3×10^{-4}	5×10^{-2}	2×10^{9}	LLI WALL
TB-158	3×10^{-4}	2×10^{-3}	7×10^{7}	LLI WALL
TB-160	3×10^{-4}	9×10^{-4}	3×10^{7}	LLI WALL
TB-161	3×10^{-4}	2×10^{-3}	6×10^{7}	LLI WALL
DY-155	3×10^{-4}	3×10^{-2}	9×10^{8}	LLI WALL
DY-157	3×10^{-4}	5×10^{-2}	2×10^{9}	GONADS
DY-159	3×10^{-4}	2×10^{-2}	6×10^{8}	LLI WALL
DY-165	3×10^{-4}	3×10^{-2}	1×10^{9}	ULI WALL
DY-166	3×10^{-4}	7×10^{-4}	2×10^{7}	LLI WALL
HO-155	3×10^{-4}	8×10^{-2}	3×10^{9}	S WALL
HO-157	3×10^{-4}	4×10^{-1}	1×10^{10}	S WALL
HO-159	3×10^{-4}	3×10^{-1}	1×10^{10}	S WALL
HO-161	3×10^{-4}	2×10^{-1}	8×10^{9}	ULI WALL
HO-162	3×10^{-4}	6×10^{-1}	2×10^{10}	S WALL
HO-162M	3×10^{-4}	1×10^{-1}	4×10^{9}	S WALL
HO-164	3×10^{-4}	2×10^{-1}	8×10^{9}	S WALL
HO-164M	3×10^{-4}	1×10^{-1}	5×10^{9}	S WALL
HO-166	3×10^{-4}	1×10^{-3}	4×10^{7}	LLI WALL
HO-166M	3×10^{-4}	1×10^{-3}	5×10^{7}	LLI WALL
HO-167	3×10^{-4}	3×10^{-2}	1×10^{9}	ULI WALL
ER-161	3×10^{-4}	3×10^{-2}	1×10^{9}	ULI WALL
ER-165	3×10^{-4}	1×10^{-1}	6×10^{9}	ULI WALL
ER-169	3×10^{-4}	3×10^{-3}	1×10^{8}	LLI WALL
ER-171	3×10^{-4}	6×10^{-3}	2×10^{8}	ULI WALL
ER-172	3×10^{-4}	1×10^{-3}	5×10^{7}	LLI WALL
TM-162	3×10^{-4}	7×10^{-2}	3×10^{9}	S WALL
TM-166	3×10^{-4}	1×10^{-2}	4×10^{8}	ULI WALL
TM-167	3×10^{-4}	2×10^{-3}	9×10^{7}	LLI WALL
TM-170	3×10^{-4}	9×10^{-4}	3×10^{7}	LLI WALL
TM-171	3×10^{-4}	1×10^{-2}	4×10^{8}	LLI WALL
TM-172	3×10^{-4}	8×10^{-4}	3×10^{7}	LLI WALL
TM-173	3×10^{-4}	7×10^{-3}	3×10^{8}	ULI WALL
TM-175	3×10^{-4}	7×10^{-2}	3×10^{9}	S WALL
YB-162	3×10^{-4}	1×10^{-1}	4×10^{9}	S WALL
YB-166	3×10^{-4}	2×10^{-3}	7×10^{7}	LLI WALL

*24.4 h.
†5.0 h.

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
YB-167	3×10^{-4}	3×10^{-1}	1×10^{10}	S WALL
YB-169	3×10^{-4}	2×10^{-3}	8×10^{7}	LLI WALL
YB-175	3×10^{-4}	3×10^{-3}	1×10^{8}	LLI WALL
YB-177	3×10^{-4}	3×10^{-2}	1×10^{9}	ULI WALL
YB-178	3×10^{-4}	2×10^{-2}	9×10^{8}	SI WALL
LU-169	3×10^{-4}	5×10^{-3}	2×10^{8}	LLI WALL
LU-170	3×10^{-4}	2×10^{-3}	9×10^{7}	LLI WALL
LU-171	3×10^{-4}	3×10^{-3}	1×10^{8}	LLI WALL
LU-172	3×10^{-4}	2×10^{-3}	6×10^{7}	LLI WALL
LU-173	3×10^{-4}	6×10^{-3}	2×10^{8}	LLI WALL
LU-174	3×10^{-4}	6×10^{-3}	2×10^{8}	LLI WALL
LU-174M	3×10^{-4}	2×10^{-3}	9×10^{7}	LLI WALL
LU-176	3×10^{-4}	9×10^{-4}	3×10^{7}	LLI WALL
LU-176M	3×10^{-4}	1×10^{-2}	5×10^{8}	ULI WALL
LU-177	3×10^{-4}	2×10^{-3}	8×10^{7}	LLI WALL
LU-177M	3×10^{-4}	9×10^{-4}	3×10^{7}	LLI WALL
LU-178	3×10^{-4}	4×10^{-2}	1×10^{9}	S WALL
LU-178M	3×10^{-4}	5×10^{-2}	2×10^{9}	S WALL
LU-179	3×10^{-4}	1×10^{-2}	4×10^{8}	ULI WALL
HF-170	2×10^{-3}	5×10^{-3}	2×10^{8}	LLI WALL
HF-172	2×10^{-3}	2×10^{-3}	7×10^{7}	LLI WALL
HF-173	2×10^{-3}	1×10^{-2}	4×10^{8}	LLI WALL
HF-175	2×10^{-3}	4×10^{-3}	2×10^{8}	LLI WALL
HF-177M	2×10^{-3}	3×10^{-2}	1×10^{9}	S WALL
HF-178M	2×10^{-3}	7×10^{-4}	2×10^{7}	R MARROW
HF-179M	2×10^{-3}	1×10^{-3}	5×10^{7}	LLI WALL
HF-180M	2×10^{-3}	2×10^{-2}	6×10^{8}	ULI WALL
HF-181	2×10^{-3}	1×10^{-3}	5×10^{7}	LLI WALL
HF-182	2×10^{-3}	6×10^{-4}	2×10^{7}	R MARROW
HF-182M	2×10^{-3}	7×10^{-2}	2×10^{9}	S WALL
HF-183	2×10^{-3}	4×10^{-2}	1×10^{9}	S WALL
HF-184	2×10^{-3}	4×10^{-3}	2×10^{8}	LLI WALL
TA-172	1×10^{-3}	4×10^{-2}	2×10^{9}	S WALL
TA-173	1×10^{-3}	1×10^{-2}	5×10^{8}	ULI WALL
TA-174	1×10^{-3}	5×10^{-2}	2×10^{9}	S WALL
TA-175	1×10^{-3}	1×10^{-2}	5×10^{8}	ULI WALL
TA-176	1×10^{-3}	1×10^{-2}	4×10^{8}	ULI WALL
TA-177	1×10^{-3}	2×10^{-2}	6×10^{8}	LLI WALL
TA-178	1×10^{-3}	4×10^{-2}	2×10^{9}	ULI WALL
TA-179	1×10^{-3}	3×10^{-2}	1×10^{9}	LLI WALL
TA-180	1×10^{-3}	2×10^{-3}	7×10^{7}	LLI WALL
TA-180M	1×10^{-3}	4×10^{-2}	2×10^{9}	ULI WALL
TA-182	1×10^{-3}	1×10^{-3}	4×10^{7}	LLI WALL
TA-182M	1×10^{-3}	2×10^{-1}	6×10^{9}	S WALL
TA-183	1×10^{-3}	1×10^{-3}	4×10^{7}	LLI WALL
TA-184	1×10^{-3}	4×10^{-3}	1×10^{8}	ULI WALL
TA-185	1×10^{-3}	3×10^{-2}	1×10^{9}	S WALL
TA-186	1×10^{-3}	6×10^{-2}	2×10^{9}	S WALL
W-176	1×10^{-2}	3×10^{-2}	1×10^{9}	ULI WALL
	3×10^{-1}	3×10^{-2}	1×10^{9}	ULI WALL
W-177	1×10^{-2}	5×10^{-2}	2×10^{9}	ULI WALL
	3×10^{-1}	6×10^{-2}	2×10^{9}	ULI WALL

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
W-178	1×10^{-2}	6×10^{-3}	2×10^{8}	LLI WALL
	3×10^{-1}	9×10^{-3}	3×10^{8}	LLI WALL
W-179	1×10^{-2}	7×10^{-1}	3×10^{10}	S WALL
	3×10^{-1}	7×10^{-1}	3×10^{10}	S WALL
W-181	1×10^{-2}	2×10^{-2}	8×10^{8}	LLI WALL
	3×10^{-1}	3×10^{-2}	1×10^{9}	LLI WALL
W-185	1×10^{-2}	2×10^{-3}	9×10^{7}	LLI WALL
	3×10^{-1}	3×10^{-3}	1×10^{8}	LLI WALL
W-187	1×10^{-2}	2×10^{-3}	9×10^{7}	LLI WALL
	3×10^{-1}	3×10^{-3}	1×10^{8}	LLI WALL
W-188	1×10^{-2}	4×10^{-4}	2×10^{7}	LLI WALL
	3×10^{-1}	6×10^{-4}	2×10^{7}	LLI WALL
RE-177	8×10^{-1}	1×10^{-1}	4×10^{9}	S WALL
RE-178	8×10^{-1}	8×10^{-2}	3×10^{9}	S WALL
RE-181	8×10^{-1}	1×10^{-2}	4×10^{8}	S WALL
RE-182*	8×10^{-1}	2×10^{-2}	7×10^{8}	S WALL
RE-182†	8×10^{-1}	4×10^{-3}	1×10^{8}	S WALL
RE-184	8×10^{-1}	5×10^{-3}	2×10^{8}	S WALL
RE-184M	8×10^{-1}	3×10^{-3}	1×10^{8}	S WALL
RE-186	8×10^{-1}	3×10^{-3}	1×10^{8}	S WALL
RE-186M	8×10^{-1}	1×10^{-3}	5×10^{7}	S WALL
RE-187	8×10^{-1}	7×10^{-1}	2×10^{10}	S WALL
RE-188	8×10^{-1}	3×10^{-3}	1×10^{8}	S WALL
RE-188M	8×10^{-1}	1×10^{-1}	4×10^{9}	S WALL
RE-189	8×10^{-1}	5×10^{-3}	2×10^{8}	S WALL
OS-180	1×10^{-2}	1×10^{-1}	5×10^{9}	S WALL
OS-181	1×10^{-2}	4×10^{-2}	1×10^{9}	ULI WALL
OS-182	1×10^{-2}	4×10^{-3}	1×10^{8}	LLI WALL
OS-185	1×10^{-2}	5×10^{-3}	2×10^{8}	LLI WALL
OS-189M	1×10^{-2}	1×10^{-1}	4×10^{9}	ULI WALL
OS-191	1×10^{-2}	2×10^{-3}	8×10^{7}	LLI WALL
OS-191M	1×10^{-2}	2×10^{-2}	6×10^{8}	LLI WALL
OS-193	1×10^{-2}	2×10^{-3}	6×10^{7}	LLI WALL
OS-194	1×10^{-2}	5×10^{-4}	2×10^{7}	LLI WALL
IR-182	1×10^{-2}	4×10^{-2}	2×10^{9}	S WALL
IR-184	1×10^{-2}	2×10^{-2}	6×10^{8}	ULI WALL
IR-185	1×10^{-2}	9×10^{-3}	3×10^{8}	LLI WALL
IR-186	1×10^{-2}	6×10^{-3}	2×10^{8}	LLI WALL
IR-187	1×10^{-2}	2×10^{-2}	8×10^{8}	LLI WALL
IR-188	1×10^{-2}	4×10^{-3}	2×10^{8}	LLI WALL
IR-189	1×10^{-2}	6×10^{-3}	2×10^{8}	LLI WALL
IR-190	1×10^{-2}	2×10^{-3}	6×10^{7}	LLI WALL
IR-190M	1×10^{-2}	4×10^{-1}	1×10^{10}	LLI WALL
IR-192	1×10^{-2}	1×10^{-3}	4×10^{7}	LLI WALL
IR-192M	1×10^{-2}	1×10^{-2}	5×10^{8}	GONADS
IR-194	1×10^{-2}	1×10^{-3}	4×10^{7}	LLI WALL
IR-194M	1×10^{-2}	1×10^{-3}	4×10^{7}	LLI WALL
IR-195	1×10^{-2}	3×10^{-2}	1×10^{9}	ULI WALL
IR-195M	1×10^{-2}	1×10^{-2}	5×10^{8}	ULI WALL
PT-186	1×10^{-2}	3×10^{-2}	1×10^{9}	ULI WALL
PT-188	1×10^{-2}	2×10^{-3}	8×10^{7}	LLI WALL

*12.7 h.

†64.0 h.

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
PT-189	1×10^{-2}	2×10^{-2}	8×10^{8}	LLI WALL
PT-191	1×10^{-2}	5×10^{-3}	2×10^{8}	LLI WALL
PT-193	1×10^{-2}	4×10^{-2}	2×10^{9}	LLI WALL
PT-193M	1×10^{-2}	3×10^{-3}	1×10^{8}	LLI WALL
PT-195M	1×10^{-2}	2×10^{-3}	8×10^{7}	LLI WALL
PT-197	1×10^{-2}	4×10^{-3}	1×10^{8}	LLI WALL
PT-197M	1×10^{-2}	3×10^{-2}	1×10^{9}	ULI WALL
PT-199	1×10^{-2}	5×10^{-2}	2×10^{9}	S WALL
PT-200	1×10^{-2}	1×10^{-3}	5×10^{7}	LLI WALL
AU-193	1×10^{-1}	1×10^{-2}	5×10^{8}	LLI WALL
AU-194	1×10^{-1}	6×10^{-3}	2×10^{8}	LLI WALL
AU-195	1×10^{-1}	6×10^{-3}	2×10^{8}	LLI WALL
AU-198	1×10^{-1}	1×10^{-3}	5×10^{7}	LLI WALL
AU-198M	1×10^{-1}	1×10^{-3}	4×10^{7}	LLI WALL
AU-199	1×10^{-1}	3×10^{-3}	1×10^{8}	LLI WALL
AU-200	1×10^{-1}	3×10^{-2}	1×10^{9}	S WALL
AU-200M	1×10^{-1}	2×10^{-3}	8×10^{7}	LLI WALL
AU-201	1×10^{-1}	8×10^{-2}	3×10^{9}	S WALL
HG-193				
INORGANIC	2×10^{-2}	3×10^{-2}	1×10^{9}	ULI WALL
ORGANIC	1	9×10^{-2}	3×10^{9}	S WALL
	4×10^{-1}	4×10^{-2}	2×10^{9}	ULI WALL
HG-193M				
INORGANIC	2×10^{-2}	6×10^{-3}	2×10^{8}	LLI WALL
ORGANIC	1	3×10^{-2}	9×10^{8}	KIDNEYS
	4×10^{-1}	9×10^{-3}	3×10^{8}	LLI WALL
HG-194				
INORGANIC	2×10^{-2}	3×10^{-3}	9×10^{7}	KIDNEYS
ORGANIC	1	5×10^{-5}	2×10^{6}	KIDNEYS
	4×10^{-1}	1×10^{-4}	4×10^{6}	KIDNEYS
HG-195				
INORGANIC	2×10^{-2}	3×10^{-2}	1×10^{9}	LLI WALL
ORGANIC	1	9×10^{-2}	3×10^{9}	KIDNEYS
	4×10^{-1}	4×10^{-2}	1×10^{9}	LLI WALL
HG-195M				
INORGANIC	2×10^{-2}	3×10^{-3}	1×10^{8}	LLI WALL
ORGANIC	1	8×10^{-3}	3×10^{8}	KIDNEYS
	4×10^{-1}	4×10^{-3}	2×10^{8}	LLI WALL
HG-197				
INORGANIC	2×10^{-2}	6×10^{-3}	2×10^{8}	LLI WALL
ORGANIC	1	2×10^{-2}	6×10^{8}	KIDNEYS
	4×10^{-1}	1×10^{-2}	4×10^{8}	LLI WALL
HG-197M				
INORGANIC	2×10^{-2}	3×10^{-3}	1×10^{8}	LLI WALL
ORGANIC	1	1×10^{-2}	4×10^{8}	KIDNEYS
	4×10^{-1}	5×10^{-3}	2×10^{8}	LLI WALL

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
HG-199M				
INORGANIC	2×10^{-2}	7×10^{-2}	3×10^{9}	S WALL
ORGANIC	1	7×10^{-2}	3×10^{9}	S WALL
	4×10^{-1}	7×10^{-2}	3×10^{9}	S WALL
HG-203				
INORGANIC	2×10^{-2}	3×10^{-3}	1×10^{8}	LLI WALL
ORGANIC	1	8×10^{-4}	3×10^{7}	KIDNEYS
	4×10^{-1}	2×10^{-3}	7×10^{7}	KIDNEYS
TL-194	1	3×10^{-1}	1×10^{10}	S WALL
TL-194M	1	5×10^{-2}	2×10^{9}	S WALL
TL-195	1	9×10^{-2}	3×10^{9}	S WALL
TL-197	1	1×10^{-1}	5×10^{9}	S WALL
TL-198	1	6×10^{-2}	2×10^{9}	S WALL
TL-198M	1	5×10^{-2}	2×10^{9}	S WALL
TL-199	1	1×10^{-1}	5×10^{9}	S WALL
TL-200	1	3×10^{-2}	1×10^{9}	R MARROW
TL-201	1	5×10^{-2}	2×10^{9}	KIDNEYS
TL-202	1	1×10^{-2}	5×10^{8}	R MARROW
TL-204	1	3×10^{-3}	1×10^{8}	KIDNEYS
PB-195M	2×10^{-1}	9×10^{-2}	3×10^{9}	S WALL
PB-198	2×10^{-1}	9×10^{-2}	3×10^{9}	ULI WALL
PB-199	2×10^{-1}	7×10^{-2}	2×10^{9}	ULI WALL
PB-200	2×10^{-1}	5×10^{-3}	2×10^{8}	LLI WALL
PB-201	2×10^{-1}	2×10^{-2}	7×10^{8}	LLI WALL
PB-202	2×10^{-1}	2×10^{-4}	7×10^{6}	R MARROW
PB-202M	2×10^{-1}	3×10^{-2}	9×10^{8}	ULI WALL
PB-203	2×10^{-1}	8×10^{-3}	3×10^{8}	LLI WALL
PB-205	2×10^{-1}	3×10^{-3}	1×10^{8}	R MARROW
PB-209	2×10^{-1}	4×10^{-2}	2×10^{9}	ULI WALL
PB-210	2×10^{-1}	2×10^{-6}	8×10^{4}	BON SURF
PB-211	2×10^{-1}	1×10^{-2}	5×10^{8}	S WALL
PB-212	2×10^{-1}	3×10^{-4}	1×10^{7}	BON SURF
PB-214	2×10^{-1}	2×10^{-2}	6×10^{8}	S WALL
BI-200	5×10^{-2}	6×10^{-2}	2×10^{9}	S WALL
BI-201	5×10^{-2}	3×10^{-2}	1×10^{9}	ULI WALL
BI-202	5×10^{-2}	4×10^{-2}	2×10^{9}	ULI WALL
BI-203	5×10^{-2}	7×10^{-3}	2×10^{8}	LLI WALL
BI-205	5×10^{-2}	3×10^{-3}	1×10^{8}	LLI WALL
BI-206	5×10^{-2}	1×10^{-3}	5×10^{7}	LLI WALL
BI-207	5×10^{-2}	2×10^{-3}	6×10^{7}	LLI WALL
BI-210	5×10^{-2}	1×10^{-3}	4×10^{7}	LLI WALL
BI-210M	5×10^{-2}	5×10^{-5}	2×10^{6}	KIDNEYS
BI-212	5×10^{-2}	9×10^{-3}	3×10^{8}	S WALL
BI-213	5×10^{-2}	1×10^{-2}	4×10^{8}	S WALL
BI-214	5×10^{-2}	2×10^{-2}	6×10^{8}	S WALL
PO-203	1×10^{-1}	8×10^{-2}	3×10^{9}	S WALL
PO-205	1×10^{-1}	7×10^{-2}	2×10^{9}	ULI WALL
PO-207	1×10^{-1}	2×10^{-2}	8×10^{8}	ULI WALL
PO-210	1×10^{-1}	3×10^{-6}	1×10^{5}	SPLEEN

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
AT-207	1	2×10^{-2}	8×10^{8}	R MARROW
AT-211	1	5×10^{-4}	2×10^{7}	GONADS
FR-222	1	7×10^{-3}	3×10^{8}	S WALL
FR-223	1	2×10^{-3}	8×10^{7}	GONADS
RA-223	2×10^{-1}	2×10^{-5}	6×10^{5}	BON SURF
RA-224	2×10^{-1}	3×10^{-5}	1×10^{6}	BON SURF
RA-225	2×10^{-1}	3×10^{-5}	1×10^{6}	BON SURF
RA-226	2×10^{-1}	7×10^{-6}	3×10^{5}	BON SURF
RA-227	2×10^{-1}	5×10^{-2}	2×10^{9}	S WALL
RA-228	2×10^{-1}	8×10^{-6}	3×10^{5}	R MARROW
AC-224	1×10^{-3}	2×10^{-3}	8×10^{7}	LLI WALL
AC-225	1×10^{-3}	5×10^{-5}	2×10^{6}	LLI WALL
AC-226	1×10^{-3}	1×10^{-4}	5×10^{6}	LLI WALL
AC-227	1×10^{-3}	7×10^{-7}	3×10^{4}	BON SURF
AC-228	1×10^{-3}	6×10^{-3}	2×10^{8}	ULI WALL
TH-226	2×10^{-4}	5×10^{-3}	2×10^{8}	S WALL
TH-227	2×10^{-4}	2×10^{-4}	6×10^{6}	LLI WALL
TH-228	2×10^{-4}	2×10^{-5}	8×10^{5}	BON SURF
TH-229	2×10^{-4}	2×10^{-6}	8×10^{4}	BON SURF
TH-230	2×10^{-4}	1×10^{-5}	5×10^{5}	BON SURF
TH-231	2×10^{-4}	4×10^{-3}	2×10^{8}	LLI WALL
TH-232	2×10^{-4}	3×10^{-6}	1×10^{5}	BON SURF
TH-234	2×10^{-4}	3×10^{-4}	1×10^{7}	LLI WALL
PA-227	1×10^{-3}	4×10^{-3}	2×10^{8}	S WALL
PA-228	1×10^{-3}	3×10^{-3}	1×10^{8}	LLI WALL
PA-230	1×10^{-3}	2×10^{-3}	8×10^{7}	LLI WALL
PA-231	1×10^{-3}	7×10^{-7}	3×10^{4}	BON SURF
PA-232	1×10^{-3}	3×10^{-3}	1×10^{8}	LLI WALL
PA-233	1×10^{-3}	1×10^{-3}	5×10^{7}	LLI WALL
PA-234	1×10^{-3}	5×10^{-3}	2×10^{8}	ULI WALL
U-230	5×10^{-2}	1×10^{-5}	4×10^{5}	KIDNEYS
	2×10^{-3}	5×10^{-5}	2×10^{6}	LLI WALL
U-231	5×10^{-2}	5×10^{-3}	2×10^{8}	LLI WALL
	2×10^{-3}	5×10^{-3}	2×10^{8}	LLI WALL
U-232	5×10^{-2}	7×10^{-6}	3×10^{5}	BON SURF
	2×10^{-3}	2×10^{-4}	7×10^{6}	BON SURF
U-233	5×10^{-2}	3×10^{-5}	1×10^{6}	KIDNEYS
	2×10^{-3}	3×10^{-4}	1×10^{7}	LLI WALL
U-234	5×10^{-2}	3×10^{-5}	1×10^{6}	KIDNEYS
	2×10^{-3}	3×10^{-4}	1×10^{7}	LLI WALL
U-235	5×10^{-2}	3×10^{-5}	1×10^{6}	KIDNEYS
	2×10^{-3}	3×10^{-4}	1×10^{7}	LLI WALL
U-236	5×10^{-2}	3×10^{-5}	1×10^{6}	KIDNEYS
	2×10^{-3}	3×10^{-4}	1×10^{7}	LLI WALL
U-237	5×10^{-2}	2×10^{-3}	6×10^{7}	LLI WALL
	2×10^{-3}	2×10^{-3}	6×10^{7}	LLI WALL
U-238	5×10^{-2}	4×10^{-5}	1×10^{6}	KIDNEYS
	2×10^{-3}	3×10^{-4}	1×10^{7}	LLI WALL
U-239	5×10^{-2}	8×10^{-2}	3×10^{9}	S WALL
	2×10^{-3}	8×10^{-2}	3×10^{9}	S WALL
U-240	5×10^{-2}	2×10^{-3}	6×10^{7}	LLI WALL
	2×10^{-3}	2×10^{-3}	6×10^{7}	LLI WALL

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
NP-232	1×10^{-2}	1×10^{-1}	4×10^{9}	BON SURF
NP-233	1×10^{-2}	1	4×10^{10}	S WALL
NP-234	1×10^{-2}	4×10^{-3}	1×10^{8}	LLI WALL
NP-235	1×10^{-2}	2×10^{-2}	9×10^{8}	LLI WALL
NP-236*	1×10^{-2}	1×10^{-6}	5×10^{4}	BON SURF
NP-236†	1×10^{-2}	2×10^{-3}	7×10^{7}	BON SURF
NP-237	1×10^{-2}	3×10^{-7}	1×10^{4}	BON SURF
NP-238	1×10^{-2}	2×10^{-3}	6×10^{7}	LLI WALL
NP-239	1×10^{-2}	2×10^{-3}	6×10^{7}	LLI WALL
NP-240	1×10^{-2}	4×10^{-2}	1×10^{9}	S WALL
PU-234	1×10^{-4}	1×10^{-2}	5×10^{8}	LLI WALL
	1×10^{-5}	1×10^{-2}	5×10^{8}	LLI WALL
PU-235	1×10^{-4}	1	4×10^{10}	S WALL
	1×10^{-5}	1	4×10^{10}	S WALL
PU-236	1×10^{-4}	8×10^{-5}	3×10^{6}	BON SURF
	1×10^{-5}	2×10^{-4}	9×10^{6}	LLI WALL
PU-237	1×10^{-4}	1×10^{-2}	5×10^{8}	LLI WALL
	1×10^{-5}	1×10^{-2}	5×10^{8}	LLI WALL
PU-238	1×10^{-4}	3×10^{-5}	1×10^{6}	BON SURF
	1×10^{-5}	3×10^{-4}	1×10^{7}	LLI WALL
PU-239	1×10^{-4}	2×10^{-5}	9×10^{5}	BON SURF
	1×10^{-5}	2×10^{-4}	9×10^{6}	BON SURF
PU-240	1×10^{-4}	2×10^{-5}	9×10^{5}	BON SURF
	1×10^{-5}	2×10^{-4}	9×10^{6}	BON SURF
PU-241	1×10^{-4}	1×10^{-3}	4×10^{7}	BON SURF
	1×10^{-5}	1×10^{-2}	4×10^{8}	BON SURF
PU-242	1×10^{-4}	3×10^{-5}	9×10^{5}	BON SURF
	1×10^{-5}	3×10^{-4}	9×10^{6}	BON SURF
PU-243	1×10^{-4}	2×10^{-2}	9×10^{8}	ULI WALL
	1×10^{-5}	2×10^{-2}	9×10^{8}	ULI WALL
PU-244	1×10^{-4}	3×10^{-5}	9×10^{5}	BON SURF
	1×10^{-5}	2×10^{-4}	7×10^{6}	LLI WALL
PU-245	1×10^{-4}	3×10^{-3}	1×10^{8}	LLI WALL
	1×10^{-5}	3×10^{-3}	1×10^{8}	LLI WALL
AM-237	5×10^{-4}	2×10^{-1}	6×10^{9}	S WALL
AM-238	5×10^{-4}	1×10^{-1}	5×10^{9}	ULI WALL
AM-239	5×10^{-4}	9×10^{-3}	3×10^{8}	LLI WALL
AM-240	5×10^{-4}	4×10^{-3}	1×10^{8}	LLI WALL
AM-241	5×10^{-4}	5×10^{-6}	2×10^{5}	BON SURF
AM-242	5×10^{-4}	6×10^{-3}	2×10^{8}	LLI WALL
AM-242M	5×10^{-4}	5×10^{-6}	2×10^{5}	BON SURF
AM-243	5×10^{-4}	5×10^{-6}	2×10^{5}	BON SURF
AM-244	5×10^{-4}	5×10^{-3}	2×10^{8}	LLI WALL
AM-244M	5×10^{-4}	7×10^{-2}	2×10^{9}	S WALL
AM-245	5×10^{-4}	6×10^{-2}	2×10^{9}	ULI WALL
AM-246	5×10^{-4}	4×10^{-2}	1×10^{9}	S WALL
AM-246M	5×10^{-4}	6×10^{-2}	2×10^{9}	S WALL
CM-238	5×10^{-4}	3×10^{-2}	1×10^{9}	ULI WALL
CM-240	5×10^{-4}	2×10^{-4}	9×10^{6}	LLI WALL
CM-241	5×10^{-4}	2×10^{-3}	6×10^{7}	LLI WALL
CM-242	5×10^{-4}	2×10^{-4}	8×10^{6}	BON SURF

*115 × 10^3 year.
†22.5 h.

TABLE 2. (CONT.)

NUCLIDE	f_1	RCG-water (μCi/cc)	RCG-water (Bq/m^3)	CRITICAL ORGAN
CM-243	5×10^{-4}	7×10^{-6}	3×10^{5}	BON SURF
CM-244	5×10^{-4}	9×10^{-6}	3×10^{5}	BON SURF
CM-245	5×10^{-4}	5×10^{-6}	2×10^{5}	BON SURF
CM-246	5×10^{-4}	5×10^{-6}	2×10^{5}	BON SURF
CM-247	5×10^{-4}	5×10^{-6}	2×10^{5}	BON SURF
CM-248	5×10^{-4}	1×10^{-6}	5×10^{4}	BON SURF
CM-249	5×10^{-4}	7×10^{-2}	3×10^{9}	S WALL
BK-245	5×10^{-4}	2×10^{-3}	9×10^{7}	LLI WALL
BK-246	5×10^{-4}	5×10^{-3}	2×10^{8}	LLI WALL
BK-247	5×10^{-4}	4×10^{-6}	2×10^{5}	BON SURF
BK-249	5×10^{-4}	2×10^{-3}	7×10^{7}	BON SURF
BK-250	5×10^{-4}	2×10^{-2}	7×10^{8}	ULI WALL
CF-244	5×10^{-4}	3×10^{-2}	1×10^{9}	S WALL
CF-246	5×10^{-4}	4×10^{-4}	2×10^{7}	LLI WALL
CF-248	5×10^{-4}	7×10^{-5}	3×10^{6}	BON SURF
CF-249	5×10^{-4}	4×10^{-6}	2×10^{5}	BON SURF
CF-250	5×10^{-4}	1×10^{-5}	4×10^{5}	BON SURF
CF-251	5×10^{-4}	4×10^{-6}	2×10^{5}	BON SURF
CF-252	5×10^{-4}	2×10^{-5}	9×10^{5}	BON SURF
CF-253	5×10^{-4}	2×10^{-3}	7×10^{7}	LLI WALL
CF-254	5×10^{-4}	5×10^{-6}	2×10^{5}	LLI WALL
ES-250	5×10^{-4}	2×10^{-1}	6×10^{9}	ULI WALL
ES-251	5×10^{-4}	9×10^{-3}	3×10^{8}	LLI WALL
ES-253	5×10^{-4}	2×10^{-4}	8×10^{6}	LLI WALL
ES-254	5×10^{-4}	8×10^{-5}	3×10^{6}	BON SURF
ES-254M	5×10^{-4}	3×10^{-4}	1×10^{7}	LLI WALL
FM-252	5×10^{-4}	6×10^{-4}	2×10^{7}	LLI WALL
FM-253	5×10^{-4}	2×10^{-3}	6×10^{7}	LLI WALL
FM-254	5×10^{-4}	5×10^{-3}	2×10^{8}	ULI WALL
FM-255	5×10^{-4}	6×10^{-4}	2×10^{7}	LLI WALL
FM-257	5×10^{-4}	2×10^{-4}	7×10^{6}	BON SURF
MD-257	5×10^{-4}	2×10^{-2}	8×10^{8}	ULI WALL
MD-258	5×10^{-4}	2×10^{-4}	7×10^{6}	LLI WALL

TABLE 3. RADIOACTIVITY CONCENTRATION GUIDES FOR OCCUPATIONAL SUBMERSION IN A RADIOACTIVE CLOUD*

NUCLIDE	RCG-air (μCi/cc)	RCG-air (Bq/m^3)	CRITICAL ORGAN	DOSE RATE $\frac{rem/h}{\mu Ci/cc}$
H-3	2×10^{-1}	8×10^{9}	LUNG	3.7×10^{-2}
AR-37	5×10^{-1}	2×10^{10}	LUNG	1.4×10^{-2}
AR-39	1×10^{-4}	4×10^{6}	SKIN	1.4×10^{2}
AR-41	2×10^{-6}	9×10^{4}	LENS	1.1×10^{3}
KR-74	2×10^{-6}	9×10^{4}	LENS	1.0×10^{3}
KR-76	7×10^{-6}	3×10^{5}	R MARROW	3.6×10^{2}
KR-77	3×10^{-6}	1×10^{5}	LENS	8.5×10^{2}
KR-79	1×10^{-5}	5×10^{5}	LENS	2.0×10^{2}
KR-81	4×10^{-4}	2×10^{7}	LENS	5.9
KR-83M	4×10^{-3}	1×10^{8}	LENS	6.3×10^{-1}
KR-85	9×10^{-5}	3×10^{6}	SKIN	1.7×10^{2}
KR-85M	2×10^{-5}	6×10^{5}	R MARROW	1.6×10^{2}
KR-87	2×10^{-6}	9×10^{4}	LENS	1.0×10^{3}
KR-88	1×10^{-6}	6×10^{4}	LENS	1.7×10^{3}
XE-120	7×10^{-6}	3×10^{5}	LENS	3.4×10^{2}
XE-121	2×10^{-6}	6×10^{4}	LENS	1.6×10^{3}
XE-122	5×10^{-5}	2×10^{6}	LENS	4.8×10^{1}
XE-123	5×10^{-6}	2×10^{5}	LENS	5.1×10^{2}
XE-125	1×10^{-5}	4×10^{5}	R MARROW	2.3×10^{2}
XE-127	1×10^{-5}	4×10^{5}	R MARROW	2.5×10^{2}
XE-129M	9×10^{-5}	3×10^{6}	LENS	2.9×10^{1}
XE-131M	2×10^{-4}	8×10^{6}	LENS	1.1×10^{1}
XE-133	6×10^{-5}	2×10^{6}	R MARROW	4.0×10^{1}
XE-133M	9×10^{-5}	3×10^{6}	LENS	2.8×10^{1}
XE-135	1×10^{-5}	4×10^{5}	R MARROW	2.3×10^{2}
XE-135M	7×10^{-6}	3×10^{5}	LENS	3.4×10^{2}
XE-138	2×10^{-6}	9×10^{4}	LENS	1.0×10^{3}

*See notes at end of Table 1.

APPENDIX B

APPENDIX B

ADVANCES IN DOSIMETRIC MODELS FOR RADIONUCLIDE INTAKE

Dosimetry models are mathematical representations of the metabolic, anatomical, physiological, and radiobiological processes that affect estimates of radiation dose to tissues of the body. In this appendix the state of dosimetry modeling as represented in ICRP Publication 30 (ICRP 1979a) is briefly reviewed with particular emphasis on advances over the dosimetry system of ICRP Publication 2 (ICRP 1959). In recent years the International System of Units (SI) has begun to replace the older conventional dosimetric units (ICRU 1980). In the discussion below, the conventional units are used, and SI units are given in parentheses.

Dosimetric quantities

The International Commission on Radiological Units and Measurements (ICRU) is the recognized organization involved in selecting and defining radiation quantities and units. The reader should consult ICRU Report 33 for authoritative definitions (ICRU 1980).

Absorbed Dose: The absorbed dose, D, is the quotient of $d\bar{\epsilon}$ by dm, where $d\bar{\epsilon}$ is the mean energy imparted by ionizing radiation to matter of mass dm. Absorbed dose in an organ of the body is generally estimated by averaging the energy imparted over the entire mass of the organ. The special unit of absorbed dose is the rad (gray, Gy).

Dose Equivalent: For purposes of radiation protection, it is desirable to modify the absorbed dose quantity to obtain a quantity that expresses on a common scale, for all types of ionizing radiation, the effect to be inferred per unit dose. The dose equivalent, H, is the product of D, Q, and N at the point of interest in tissue where D is absorbed dose, Q is the quality factor, and N is the product of all other modifying factors:

$$H = DQN \ .$$

The special unit of dose equivalent is the rem (sievert, Sv).

Quality Factor: In past radiation protection recommendations by national and international groups, the relative biological effectiveness, *RBE*, was used to modify the absorbed dose. The resulting quantity was referred to as the *RBE* dose (ICRP 1959, NCRP 1959). To avoid confusion, usage of *RBE* is now restricted to radiobiology. The *RBE* of the radiation under study is defined as the ratio of the absorbed dose of a reference radiation to the absorbed dose of the radiation under study that would produce an equivalent radiobiological response. The term quality factor (denoted by Q) is now used in radiation protection to modify absorbed dose to obtain dose equivalent and is independent of the organ or tissue or of the biological endpoint under consideration. Values of the quality factor are given in ICRP Publication 21 (ICRP 1973b) as a continuous function of the collision-stopping power of charged particles in water. Since the uncertainties involved in estimating dose equivalent are large relative to the variation in stopping power for a particular radiation, Q is usually assigned a constant value for each particular type of radiation. The quality factors used in ICRP Publication 30 are

$Q =$ 1 for beta particles, electrons, and all electromagnetic radiations,
$Q =$ 10 for spontaneous fission neutrons and protons,
$Q =$ 20 for alpha particles, recoil particles, and fission fragments.

In ICRP Publication 2, a quality factor (then called *RBE*) of 10 was recommended for alpha radiation, and other modifying factors, N, had the value 1 or 5. The ICRP now recommends that the product of all other modifying factors, N, should be taken as 1 (ICRP 1977).

Committed Dose Equivalent: For radiation exposures involving inhalation or ingestion of radionuclides, it is useful to evaluate the total dose equivalent associated with the intake over a working lifetime. The committed dose equivalent, $H_{50,T}$, is defined as the total dose equivalent in tissue T for the 50-year period following the intake of the radionuclide, that is, the 50-year integral of the time-dependent dose equivalent rate, $\dot{H}_T$. For radionuclides retained briefly in the body, either as a result of a short physical half-life or rapid biological elimination, the committed dose equivalent will be delivered within a relatively short time following the intake. For long-lived radionuclides with tenacious retention in the body, the dose equivalent rate will be nearly constant throughout the post-intake period so that the committed dose equivalent will be experienced over the entire 50-year period.

Formulations for calculating dose equivalent

The basic formulations employed in the calculation of dose–equivalent are outlined below as adopted from ICRP Publication 30. For a detailed discussion of the calculational procedures and associated data, the reader is referred to that document (ICRP 1979a).

Internal Exposure: The committed dose equivalent in organ T due to inhalation or ingestion of a radionuclide is given by

$$H_{50,T} = K \sum_s U_s \, SEE(T \leftarrow S) \; ,$$

where

U_s is the total number of nuclear transformations of the nuclide under consideration occurring in source organ S over a period of 50 years per unit intake,

$SEE(T \leftarrow S)$ is the specific effective energy deposited per unit mass of target tissue T per nuclear transformation in source organ S.

The summation is over all source organs S, that is, all organs where activity resides during its sojourn in the body. The numerical value of the constant K depends on the units desired for $H_{50,T}$ and those specified for U_s and *SEE*. In Publication 30, U_s is expressed in nuclear transformations per Bq, *SEE* in MeV/g-nuclear transformation, and *K* corresponds to 1.6 $\times 10^{-10}$ Sv-g/MeV, so that $H_{50,T}$ is expressed in Sv/Bq.

The quantity *SEE* defines the energy imparted to tissue *T* due to radiations emitted in source organ *S*. This factor embodies the relevant details of the radiations emitted in nuclear transformations of the radionuclide, including their quality factor, as well as the distribution of absorbed energy among body tissues.

The quantity U_s represents the number of nuclear transformations per unit intake of a radionuclide occurring in source organ *S* over a 50-year period. This quantity is proportional to the total energy released in the source organ per unit intake. It is computed as the integral of the time-dependent activity residing in the organ and thus reflects the metabolism of the radionuclide in the body.

Submersion: Some radionuclides are not metabolized to an appreciable extent by the body, and thus limits for their airborne concentration are based on irradiation of tissues from radiations incident upon the body. The nuclides in this category primarily comprise radioisotopes of the noble gas elements. The dose rate $\dot{H}_T$ to tissue *T* per unit airborne concentration in a semi-infinite cloud is computed as

$$\dot{H}_T = K\, SEE(T \leftarrow C) \ ,$$

where $SEE(T \leftarrow C)$ is the specific energy absorbed per gram of target tissue *T* per nuclear transformation per m^3 occurring in the cloud *C* (MeV-m^3/g-nuclear transformation). If the airborne concentration is expressed in Bq/m^3 and the numerical constant *K* is 5.8×10^{-7}, the $\dot{H}_T$ is expressed in the units Sv/h per Bq/m^3.

Dosimetric models and parametric data

Dosimetric models and their supportive data have advanced considerably in the last two decades. In this section the various components of the dosimetric analysis are reviewed with particular emphasis on the advances since the issuance of ICRP Publication 2 (ICRP 1959).

a. Nuclear decay data. Knowledge of the radiations emitted during the nuclear transformation process is essential to the computation of dose equivalent. Data describing these radiations enter into consideration through the *SEE* factor defined above. Considerable refinements in nuclear decay data have been made in the past 20 years through both experimental and theoretical studies. Information as basic as the physical half-life of a radionuclide has undergone considerable revision in some instances.

b. Reference Man. A well-defined characterization of man in terms of both anatomical and physiological parameters is needed to establish concentration guides. The recommendations of Publication 2 were based on Standard Man as defined in that publication. The ICRP, noting the need for a more detailed representation, formed a Task Group on Reference Man whose report, Publication 23 (ICRP 1975), provides the basic anatomical and physiological data required for dosimetric evaluations.

c. Inhalation model. The recommendations of ICRP Publication 2 were based on a simple model for deposition of inhaled material which gave no consideration to the size of particles making up the aerosol. In all cases, 75% of the inhaled activity was assumed to be deposited in the lung. The physical-chemical nature of the aerosol, which determines its clearance from the lung, was classified simply as "soluble" or "insoluble." Soluble materials were considered to clear rapidly enough that the dose to the lung could be ignored in deriving *RCGs*. On the other hand, insoluble materials were assumed not to be absorbed by the body; thus, only the dose to lung and segments of the GI tract were considered in deriving the *RCGs* for these materials.

The limitations of the inhalation model were soon recognized and the ICRP established a Task Group on Lung Dynamics to formulate a more detailed model (ICRP 1966). The detailed model, referred to as the Task Group Lung Model (TGLM), considers the respiratory system to consist of a nasopharyngeal, tracheobronchial, and a pulmonary region. The regions are interconnected with one another as well as with the blood, the GI tract, and the lymphatic system. The fraction of the inhaled aerosol deposited in each region is a function of the activity median aerodynamic diameter (*AMAD*) of the aerosol. The aerosol is assigned to one of three classes to define its clearance from the lung. The classes, denoted by D, W, and Y, correspond to clearance times for the pulmonary region of the lung on the order of days, weeks, and years, respectively. The reader is referred to the task group report (ICRP 1966) and subsequent ICRP publications (ICRP 1972, 1979a) for further details.

d. Gastrointestinal Tract. The tract is represented by a series of four segments, the stomach, the small intestine, the upper large intestine, and the lower large intestine. In the model presented in Publication 2, material was assumed to reside in the stomach for 1 h and then move to the small intestine. Movement of material through the small and large intestines was assumed to be continuous and linear. The dose to the wall of each intestine segment was calculated at the entrance to the segment. In the dosimetric model for the GI tract used in Publication 30, transit times through the segments were revised as recommended by Eve (1966), and the masses of the wall and contents (and the transit times) correspond to the values given in ICRP Publication 23 (ICRP 1975). Ingested material is no longer classified as simply soluble or insoluble. The transport of material through the tract is modeled with exponential clearance from the segments. The potential absorption of material into body fluids, generally taken to occur within the small intestine, is characterized by the numerical values for the fractional absorption from the tract (the f_1 parameter). The dose to each segment of the tract is computed as an average over the mass of the wall of that segment.

e. Metabolic models. Central to the development of dose estimates is information characterizing the translocation of material from body fluids into organs of the body and its retention in these organs. In Publication 2, radionuclides entering blood were taken to be deposited instantaneously in organs, and retention in an organ was characterized by a single biological halftime, that is, the time over which one-half the initial deposition would be eliminated by biological processes. Even though it was known that this approximation failed to represent the retention of many radionuclides, the approach was adopted for calculational convenience. To provide an element of conservatism, the longest halftime of an observed multi-exponential retention was assumed in the calculations. In the years following the issuance of Publication 2, considerable effort has been expended to refine the understanding of metabolic processes through studies involving man and animals. Today the distribution and retention of many of the radionuclides in the body are much better defined than at the time Publication 2 was issued. For example, the metabolic model of the alkaline-earth elements presented in ICRP Publication 20 (ICRP 1973a) is the most sophisticated metabolic model used in radiation protection in that many processes governing their metabolism are identified and contained in the model.

f. Estimation of Energy Deposition. The dose equivalent to organs of the body depends on the energies and intensities of the various radiations emitted in nuclear transformations, the distribution of the radionuclide among organs of the body, and the deposition of the energy in organs and surrounding tissues. In Publication 2 the dose equivalent rate in an organ was based only on the activity present in that organ; the contribution to the dose from activity in nearby organs was not considered. The fraction of photon energy absorbed in an organ was based on an assumed effective radius for the organ. With the advent of high-speed computers and with increased knowledge of the physical processes governing the interaction of radiation with matter, it has been possible to develop detailed calculations of the energy deposition throughout the body. Such information has been widely used within the nuclear medicine community for a number of years and has been incorporated into ICRP Publication 30.

g. Bone Seekers. The skeletal burden of bone seekers in ICRP Publication 2 was based on an equivalence with 0.1 μg ^{226}Ra. The biological equivalence was based on a comparison of the effective energy deposited in the skeleton for the radionuclide in question with that of ^{226}Ra. For all nuclides that emit particulate radiation, other than radium and its decay products, a modifying factor of $N=5$ was applied in computing the effective energy. This was done because of lack of knowledge regarding the deposition pattern within the skeleton and its relationship to the skeletal tissues at risk. This approach avoided the complex dosimetry problems represented by the skeleton by substituting experience with radium in man.

Following the issuance of ICRP Publication 2, considerable effort has been directed toward the dosimetry of bone seekers. There is now general agreement that the radiosensitive tissues of the skeleton are the hematopoietic stem cells of the active (red) marrow and the osteogenic cells, particularly those on the endosteal surfaces of bone (ICRP 1968). Developing blood cells are found in various stages of maturation within the active marrow; hence, active marrow is of concern with respect to leukemia. The need to limit the dose to this tissue was recognized in Publication 2 but was not implicitly treated in developing the recommendations for bone-seeking radionuclides. The osteogenic cells are the precursors of cells involved in the formation of new bone (osteoblasts) and the resorption of bone (osteoclasts) and thus are of concern with respect to induction of bone cancer. The location of the osteogenic cells in the skeleton is not well defined; for dosimetric considerations, the ICRP has calculated the dose equivalent averaged over a 10-μm layer of soft tissue adjacent to the surface of bone (ICRP 1977). In calculating the dose to these tissues, radionuclides must be classified according to their residence site in the skeleton, that is, either volume or surface seekers. Therefore, it is now possible to address the skeletal tissues of concern in a dosimetric analysis, so that the modifying factor N now can be taken as 1.

h. Submersion. In Publication 2 the total body dose (whole body) from nuclides not significantly metabolized, generally noble gas radioelements, was used to limit their airborne concentration. Photon radiation and beta particles of energy greater than 0.1 MeV were assumed to contribute to this dose quantity. In the case of low-energy beta emitters, the airborne concentration was limited by the dose to the skin and no consideration was given to a depth dose. The dosimetric analysis in Publication 30 for this exposure mode considers the shielding of body organs due to the overlying tissues.

In this brief discussion the general features of the current computational approach of radiation dosimetry have been outlined. We focused on the major features in current dosimetric considerations within the context of Reference Man. Estimates of dose to individuals who, through anatomical, metabolic, or other aspects, depart from this characterization, may well be quite different. In the event of a significant intake by a worker, efforts should be undertaken to determine the particular factors which govern the dose to that individual worker.

APPENDIX C

APPENDIX C

SUPPORTIVE DATA AND INFORMATION

Tabulated in Table 4 of this report are data and information which are of a supportive nature to the Radioactivity Concentration Guides (*RCGs*) presented in Appendix A, Tables 1 and 2. Some of the terms used in Table 4 are defined below.

Nuclide/Half-life:

> The radionuclide and its half-life are shown in the first column of the table. The time units m, h, d, and y correspond to minutes, hours, days, and years, respectively. The radionuclide designation follows conventional practice with the symbol *m* denoting metastable state. In some instances, for example, ^{182}Re, the half-life needs to be referred to in establishing the unambiguous identification of the radionuclide.

Lung Class, f_1, and Compounds:

> These data identify the characterization of the chemical form assumed in the calculations. In the case of inhalation (abbreviated inh.), the lung clearance class [D (days), W (weeks), or Y (years)] and the fractional uptake from the small intestine to blood (f_1) are shown as well as the identification of assigned compounds. In the case of ingestion (abbreviated ing.), no lung clearance class is shown. This information is an abstract of the metabolism discussion from ICRP Publication 30 (ICRP 1979a, 1980, 1981c) and is presented only as a general guide. The user should consult the more detailed discussion in ICRP Publication 30 before making any decision on classification of compounds in the workplace.

Annual Intake:

> The limiting annual intake of the radionuclide in microcuries through inhalation or ingestion that would result in a dose to the critical organ equal to its *RPG* in the 50th year of continuous intake. Note that the numerical value is dependent on the chemical form of the inhaled or ingested material.

Body Burden:

> The total activity in microcuries present in the body, including the respiratory and GI tracts, after 50 years of continuous intake at the limiting annual intake by Reference Man. The numerical value depends on the exposure mode and the chemical form of the material.

% sys:

Denotes the percentage of the body burden that has been absorbed into body fluids, the systemic burden, and thus excludes activity residing in the respiratory or GI tract.

H_{50}:

The committed dose equivalent per unit intake for the critical organ identified in Appendix A, Tables 1 and 2. Note that the numerical value also can be interpreted as the annual dose equivalent after 50 years of continued annual intake of unit activity, rem per μCi/year.

TABLE 4. ANNUAL INTAKE, BODY BURDEN, AND COMMITTED DOSE EQUIVALENT FOR OCCUPATIONAL INHALATION OR INGESTION OF RADIONUCLIDES

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/μCi)
H-3 (12.35y)								
TRIT.WATER	inh.	*		Tritiated vapor	8×10^{4}	3×10^{3}	(100)	6.3×10^{-5}
	ing.			Tritiated water	8×10^{4}	3×10^{3}	(100)	6.3×10^{-5}
BE-7 (53.3d)	inh.	W	5×10^{-3}	All other compounds	2×10^{4}	5×10^{2}	(33)	8.0×10^{-4}
		Y	5×10^{-3}	Oxides, halides and nitrates	1×10^{4}	4×10^{2}	(2)	1.4×10^{-3}
	ing.		5×10^{-3}	All compounds	2×10^{4}	1×10^{2}	(9)	2.1×10^{-4}
BE-10 (1.6×10^{6}y)	inh.	W	5×10^{-3}	All other compounds	8×10^{1}	3×10^{1}	(90)	6.5×10^{-2}
		Y	5×10^{-3}	Oxides, halides and nitrates	5	4	(18)	2.9
	ing.		5×10^{-3}	All compounds	3×10^{2}	6	(73)	4.8×10^{-2}
C-11 (20.38m)								
DIOXIDE	inh.	*		Carbon dioxide	6×10^{5}	2×10^{1}	(100)	8.2×10^{-6}
LAB.COMP.	inh.	*		Labelled organic compounds	4×10^{5}	2×10^{1}	(100)	1.3×10^{-5}
	ing.			Labelled organic compounds	4×10^{5}	2×10^{1}	(100)	1.3×10^{-5}
MONOXIDE	inh.	*		Carbon monoxide	1×10^{6}	2×10^{1}	(100)	4.6×10^{-6}
C-14 (5730y)								
DIOXIDE	inh.	*		Carbon dioxide	2×10^{5}	4×10^{2}	(100)	2.4×10^{-5}
LAB.COMP.	inh.	*		Labelled organic compounds	2×10^{3}	4×10^{2}	(100)	2.1×10^{-3}
	ing.			Labelled organic compounds	2×10^{3}	4×10^{2}	(100)	2.1×10^{-3}
MONOXIDE	inh.	*		Carbon monoxide	2×10^{6}	4×10^{2}	(100)	2.9×10^{-6}
F-18 (109.77m)	inh.	D	1	See ICRP Task Group report on Lung Dynamics	4×10^{4}	7	(54)	4.0×10^{-4}
		W	1	See ICRP Task Group report on Lung Dynamics	3×10^{4}	4	(26)	4.8×10^{-4}
		Y	1	See ICRP Task Group report on Lung Dynamics	3×10^{4}	3	(14)	5.2×10^{-4}
	ing.		1	All compounds	1×10^{4}	4	(73)	1.1×10^{-3}

*See notes at end of Table 1.

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN		H_{50} (rem/ μCi)
						(μCi)	(% sys)	
NA-22 (2.602y)	inh.	D	1	All compounds	5×10^{2}	1×10^{1}	(98)	1.0×10^{-2}
	ing.		1	All compounds	3×10^{2}	1×10^{1}	(100)	1.6×10^{-2}
NA-24 (15.00h)	inh.	D	1	All compounds	3×10^{3}	5	(78)	4.6×10^{-3}
	ing.		1	All compounds	3×10^{3}	8	(95)	4.4×10^{-3}
MG-28 (20.91h)	inh.	D	5×10^{-1}	All other compounds	1×10^{3}	2	(70)	1.1×10^{-2}
		W	5×10^{-1}	Oxides, hydroxides, halides and nitrates	7×10^{2}	1	(33)	2.2×10^{-2}
	ing.		5×10^{-1}	All compounds	3×10^{2}	7×10^{-1}	(51)	5.3×10^{-2}
AL-26 (7.16×10^{5}y)	inh.	D	1×10^{-2}	All other compounds	3×10^{1}	6	(99)	1.5×10^{-1}
		W	1×10^{-2}	Oxides, hydroxides, carbides, halides and nitrates	4×10^{1}	4	(59)	3.6×10^{-1}
	ing.		1×10^{-2}	All compounds	1×10^{2}	1	(46)	1.1×10^{-1}
SI-31 (157.3m)	inh.	D	1×10^{-2}	All other compounds	1×10^{4}	4	(41)	1.1×10^{-3}
		W	1×10^{-2}	Oxides, hydroxides, carbides and nitrate	1×10^{4}	2	(16)	1.3×10^{-3}
		Y	1×10^{-2}	Aluminosilicate glass aerosol	1×10^{4}	2	(1)	1.4×10^{-3}
	ing.		1×10^{-2}	All compounds	5×10^{3}	2	(0)	3.2×10^{-3}
SI-32 (450y)	inh.	D	1×10^{-2}	All other compounds	2×10^{2}	3×10^{1}	(99)	2.1×10^{-2}
		W	1×10^{-2}	Oxides, hydroxides, carbides and nitrate	4×10^{1}	3	(47)	3.8×10^{-1}
		Y	1×10^{-2}	Aluminosilicate glass aerosol	2	1	(2)	8.4
	ing.		1×10^{-2}	All compounds	7×10^{2}	5	(34)	2.3×10^{-2}
P-32 (14.29d)	inh.	D	8×10^{-1}	All other compounds	2×10^{2}	4	(96)	2.2×10^{-2}
		W	8×10^{-1}	Phosphates of some particular elements	2×10^{2}	3	(63)	9.5×10^{-2}
	ing.		8×10^{-1}	All compounds	2×10^{2}	4	(96)	3.0×10^{-2}
P-33 (25.4d)	inh.	D	8×10^{-1}	All other compounds	4×10^{3}	1×10^{2}	(98)	1.4×10^{-3}
		W	8×10^{-1}	Phosphates of some particular elements	1×10^{3}	3×10^{1}	(65)	1.6×10^{-2}
	ing.		8×10^{-1}	All compounds	3×10^{3}	1×10^{2}	(97)	1.8×10^{-3}
S-35 (87.44d)	inh.	D	8×10^{-1}	See ICRP Task Group report on Lung Dynamics	2×10^{4}	3×10^{2}	(96)	7.5×10^{-4}
		W	8×10^{-1}	See ICRP Task Group report on Lung Dynamics	8×10^{2}	3×10^{1}	(38)	1.9×10^{-2}
	ing.		8×10^{-1}	All inorganic compounds	7×10^{3}	2×10^{2}	(95)	2.1×10^{-3}
			1×10^{-1}	Elemental sulphur	2×10^{3}	1×10^{1}	(39)	8.3×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
GAS	inh.	*		SO_2, COS, H_2S or CS_2	1×10^4	4×10^2	(100)	3.5×10^{-4}
CL-36 (3.01×10⁵y)	inh.	D	1	See ICRP Task Group report on Lung Dynamics	3×10^3	7×10^1	(98)	1.9×10^{-3}
		W	1	See ICRP Task Group report on Lung Dynamics	9×10^1	5	(44)	1.7×10^{-1}
	ing.		1	All compounds	2×10^3	7×10^1	(100)	3.0×10^{-3}
CL-38 (37.21m)	inh.	D	1	See ICRP Task Group report on Lung Dynamics	2×10^4	1	(41)	8.1×10^{-4}
		W	1	See ICRP Task Group report on Lung Dynamics	2×10^4	6×10^{-1}	(16)	9.0×10^{-4}
	ing.		1	All compounds	5×10^3	5×10^{-1}	(47)	3.3×10^{-3}
CL-39 (55.6m)	inh.	D	1	See ICRP Task Group report on Lung Dynamics	2×10^4	2	(46)	6.5×10^{-4}
		W	1	See ICRP Task Group report on Lung Dynamics	2×10^4	1	(19)	7.4×10^{-4}
	ing.		1	All compounds	7×10^3	1	(57)	2.3×10^{-3}
K-40	inh.	D	1	All compounds	4×10^2	3×10^1	(99)	1.2×10^{-2}
(1.28×10⁹y)	ing.		1	All compounds	3×10^2	3×10^1	(100)	1.9×10^{-2}
K-42	inh.	D	1	All compounds	2×10^3	2	(76)	8.0×10^{-3}
(12.36h)	ing.		1	All compounds	2×10^3	5	(95)	6.6×10^{-3}
K-43	inh.	D	1	All compounds	5×10^3	1×10^1	(83)	2.8×10^{-3}
(22.6h)	ing.		1	All compounds	6×10^3	2×10^1	(97)	2.3×10^{-3}
K-44	inh.	D	1	All compounds	3×10^4	9×10^{-1}	(34)	5.0×10^{-4}
(22.13m)	ing.		1	All compounds	6×10^3	4×10^{-1}	(35)	2.5×10^{-3}
K-45	inh.	D	1	All compounds	5×10^4	1	(33)	3.1×10^{-4}
(20m)	ing.		1	All compounds	1×10^4	5×10^{-1}	(32)	1.6×10^{-3}
CA-41	inh.	W	3×10^{-1}	All compounds	8×10^2	2×10^3	(98)	6.0×10^{-3}
(1.4×10⁵y)	ing.		3×10^{-1}	All compounds	8×10^2	2×10^3	(100)	6.6×10^{-3}
CA-45	inh.	W	3×10^{-1}	All compounds	4×10^2	4×10^1	(74)	3.6×10^{-2}
(163d)	ing.		3×10^{-1}	All compounds	4×10^2	4×10^1	(96)	1.3×10^{-2}
CA-47	inh.	W	3×10^{-1}	All compounds	5×10^2	3	(39)	2.9×10^{-2}
(4.53d)	ing.		3×10^{-1}	All compounds	3×10^2	2	(59)	4.7×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
SC-43	inh.	Y	1×10^{-4}	All compounds	1×10^{4}	3	(1)	1.3×10^{-3}
(3.891h)	ing.		1×10^{-4}	All compounds	4×10^{3}	2	(0)	4.0×10^{-3}
SC-44	inh.	Y	1×10^{-4}	All compounds	6×10^{3}	2	(1)	2.4×10^{-3}
(3.927h)	ing.		1×10^{-4}	All compounds	2×10^{3}	1	(0)	7.7×10^{-3}
SC-44M	inh.	Y	1×10^{-4}	All compounds	4×10^{2}	1	(1)	3.7×10^{-2}
(58.6h)	ing.		1×10^{-4}	All compounds	2×10^{2}	6×10^{-1}	(0)	9.1×10^{-2}
SC-46	inh.	Y	1×10^{-4}	All compounds	9×10^{1}	4	(4)	1.7×10^{-1}
(83.83d)	ing.		1×10^{-4}	All compounds	4×10^{2}	2	(1)	3.8×10^{-2}
SC-47	inh.	Y	1×10^{-4}	All compounds	2×10^{3}	6	(1)	9.4×10^{-3}
(3.351d)	ing.		1×10^{-4}	All compounds	7×10^{2}	2	(0)	2.3×10^{-2}
SC-48	inh.	Y	1×10^{-4}	All compounds	1×10^{3}	3	(1)	1.5×10^{-2}
(43.7h)	ing.		1×10^{-4}	All compounds	4×10^{2}	1	(0)	4.1×10^{-2}
SC-49	inh.	Y	1×10^{-4}	All compounds	2×10^{4}	1	(1)	7.6×10^{-4}
(57.4m)	ing.		1×10^{-4}	All compounds	7×10^{3}	1	(0)	2.0×10^{-3}
TI-44	inh.	D	1×10^{-2}	All other compounds	1×10^{1}	1×10^{1}	(100)	4.5×10^{-1}
(47.3y)		W	1×10^{-2}	Oxides, hydroxides, carbides, halides and nitrates	3×10^{1}	9	(89)	5.4×10^{-1}
		Y	1×10^{-2}	$SrTiO_3$	2	1	(18)	7.3
	ing.		1×10^{-2}	All compounds	1×10^{2}	3	(83)	1.4×10^{-1}
TI-45	inh.	D	1×10^{-2}	All other compounds	2×10^{4}	5	(42)	8.7×10^{-4}
(3.08h)		W	1×10^{-2}	Oxides, hydroxides, carbides, halides and nitrates	1×10^{4}	3	(16)	1.1×10^{-3}
		Y	1×10^{-2}	$SrTiO_3$	1×10^{4}	3	(1)	1.2×10^{-3}
	ing.		1×10^{-2}	All compounds	5×10^{3}	2	(0)	3.2×10^{-3}
V-47	inh.	D	1×10^{-2}	All other compounds	4×10^{4}	2	(29)	3.9×10^{-4}
(32.6m)		W	1×10^{-2}	Oxides, hydroxides, carbides and halides	4×10^{4}	1	(13)	4.3×10^{-4}
	ing.		1×10^{-2}	All compounds	9×10^{3}	8×10^{-1}	(0)	1.7×10^{-3}
V-48	inh.	D	1×10^{-2}	All other compounds	6×10^{2}	6	(88)	8.4×10^{-3}
(16.238d)		W	1×10^{-2}	Oxides, hydroxides, carbides and halides	4×10^{2}	4	(15)	4.2×10^{-2}
	ing.		1×10^{-2}	All compounds	3×10^{2}	1	(4)	5.0×10^{-2}
V-49	inh.	D	1×10^{-2}	All other compounds	8×10^{3}	1×10^{3}	(99)	6.1×10^{-4}
(330d)		W	1×10^{-2}	Oxides, hydroxides, carbides and halides	6×10^{3}	5×10^{2}	(59)	2.3×10^{-3}
	ing.		1×10^{-2}	All compounds	2×10^{4}	2×10^{2}	(44)	6.8×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
CR-48 (22.96h)	inh.	D	1×10^{-1}	All other compounds	1×10^{4}	2×10^{1}	(61)	4.5×10^{-4}
		W	1×10^{-1}	Halides and nitrates	5×10^{3}	9	(16)	2.9×10^{-3}
		Y	1×10^{-1}	Oxides and hydroxides	4×10^{3}	7	(6)	3.5×10^{-3}
	ing.		1×10^{-1}	Hexavalent compounds	4×10^{3}	1×10^{1}	(10)	3.7×10^{-3}
			1×10^{-2}	Trivalent compounds	4×10^{3}	9	(1)	4.0×10^{-3}
CR-49 (42.09m)	inh.	D	1×10^{-1}	All other compounds	4×10^{4}	3	(32)	3.8×10^{-4}
		W	1×10^{-1}	Halides and nitrates	4×10^{4}	2	(14)	4.2×10^{-4}
		Y	1×10^{-1}	Oxides and hydroxides	3×10^{4}	1	(1)	4.5×10^{-4}
	ing.		1×10^{-1}	Hexavalent compounds	1×10^{4}	1	(1)	1.5×10^{-3}
			1×10^{-2}	Trivalent compounds	1×10^{4}	1	(0)	1.5×10^{-3}
CR-51 (27.704d)	inh.	D	1×10^{-1}	All other compounds	5×10^{4}	9×10^{2}	(93)	1.0×10^{-4}
		W	1×10^{-1}	Halides and nitrates	1×10^{4}	2×10^{2}	(25)	1.4×10^{-3}
		Y	1×10^{-1}	Oxides and hydroxides	8×10^{3}	2×10^{2}	(9)	2.0×10^{-3}
	ing.		1×10^{-1}	Hexavalent compounds	2×10^{4}	1×10^{2}	(45)	9.2×10^{-4}
			1×10^{-2}	Trivalent compounds	2×10^{4}	7×10^{1}	(7)	1.0×10^{-3}
MN-51 (46.2m)	inh.	D	1×10^{-1}	All other compounds	2×10^{4}	2	(33)	6.1×10^{-4}
		W	1×10^{-1}	Oxides, hydroxides, halides and nitrates	2×10^{4}	1	(14)	6.9×10^{-4}
	ing.		1×10^{-1}	All compounds	6×10^{3}	8×10^{-1}	(1)	2.3×10^{-3}
MN-52 (5.591d)	inh.	D	1×10^{-1}	All other compounds	1×10^{3}	1×10^{1}	(87)	4.4×10^{-3}
		W	1×10^{-1}	Oxides, hydroxides, halides and nitrates	1×10^{3}	6	(27)	1.6×10^{-2}
	ing.		1×10^{-1}	All compounds	5×10^{2}	2	(30)	3.3×10^{-2}
MN-52M (21.1m)	inh.	D	1×10^{-1}	All other compounds	4×10^{4}	1	(28)	3.8×10^{-4}
		W	1×10^{-1}	Oxides, hydroxides, halides and nitrates	4×10^{4}	8×10^{-1}	(12)	4.1×10^{-4}
	ing.		1×10^{-1}	All compounds	8×10^{3}	5×10^{-1}	(0)	1.9×10^{-3}
MN-53 (3.7×10^{6}y)	inh.	D	1×10^{-1}	All other compounds	1×10^{4}	7×10^{2}	(98)	4.1×10^{-3}
		W	1×10^{-1}	Oxides, hydroxides, halides and nitrates	5×10^{3}	3×10^{2}	(36)	3.2×10^{-3}
	ing.		1×10^{-1}	All compounds	2×10^{4}	3×10^{2}	(73)	7.1×10^{-4}
MN-54 (312.5d)	inh.	D	1×10^{-1}	All other compounds	8×10^{2}	4×10^{1}	(98)	6.1×10^{-3}
		W	1×10^{-1}	Oxides, hydroxides, halides and nitrates	6×10^{2}	3×10^{1}	(36)	2.5×10^{-2}
	ing.		1×10^{-1}	All compounds	1×10^{3}	2×10^{1}	(71)	3.5×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
MN-56 (2.5785h)	inh. D	1×10^{-1}	All other compounds	9×10^{3}	2	(41)	1.6×10^{-3}
	W	1×10^{-1}	Oxides, hydroxides, halides and nitrates	8×10^{3}	1	(16)	2.0×10^{-3}
	ing.	1×10^{-1}	All compounds	3×10^{3}	1	(4)	5.1×10^{-3}
FE-52 (8.275h)	inh. D	1×10^{-1}	All other compounds	2×10^{3}	2	(53)	6.3×10^{-3}
	W	1×10^{-1}	Oxides, hydroxides and halides	2×10^{3}	1	(17)	9.4×10^{-3}
	ing.	1×10^{-1}	All compounds	5×10^{2}	6×10^{-1}	(8)	3.2×10^{-2}
FE-55 (2.7y)	inh. D	1×10^{-1}	All other compounds	1×10^{3}	2×10^{3}	(100)	1.0×10^{-2}
	W	1×10^{-1}	Oxides, hydroxides and halides	4×10^{3}	2×10^{3}	(93)	3.9×10^{-3}
	ing.	1×10^{-1}	All compounds	7×10^{3}	2×10^{3}	(98)	2.1×10^{-3}
FE-59 (44.529d)	inh. D	1×10^{-1}	All other compounds	4×10^{2}	3×10^{1}	(99)	1.2×10^{-2}
	W	1×10^{-1}	Oxides, hydroxides and halides	3×10^{2}	1×10^{1}	(58)	5.1×10^{-2}
	ing.	1×10^{-1}	All compounds	5×10^{2}	1×10^{1}	(80)	3.1×10^{-2}
FE-60 (1×10^{5}y)	inh. D	1×10^{-1}	All other compounds	8	3×10^{1}	(100)	6.4×10^{-1}
	W	1×10^{-1}	Oxides, hydroxides and halides	2×10^{1}	3×10^{1}	(97)	2.2×10^{-1}
	ing.	1×10^{-1}	All compounds	4×10^{1}	3×10^{1}	(99)	1.3×10^{-1}
CO-55 (17.54h)	inh. W	5×10^{-2}	All other compounds	2×10^{3}	3	(12)	6.5×10^{-3}
	Y	5×10^{-2}	Oxides, hydroxides, halides and nitrates	2×10^{3}	2	(2)	7.7×10^{-3}
	ing.	5×10^{-2}	Oxides, hydroxides, and other trace inorganic compounds	6×10^{2}	1	(4)	2.7×10^{-2}
		3×10^{-1}	All other inorganic and organic compounds	7×10^{2}	1	(25)	2.1×10^{-2}
CO-56 (78.76d)	inh. W	5×10^{-2}	All other compounds	1×10^{2}	4	(22)	1.0×10^{-1}
	Y	5×10^{-2}	Oxides, hydroxides, halides and nitrates	7×10^{1}	3	(3)	2.2×10^{-1}
	ing.	5×10^{-2}	Oxides, hydroxides, and other trace inorganic compounds	3×10^{2}	2	(36)	5.0×10^{-2}
		3×10^{-1}	All other inorganic and organic compounds	3×10^{2}	6	(82)	1.5×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
CO-57 (270.9d)	inh. W	5×10^{-2}	All other compounds	1×10^{3}	4×10^{1}	(33)	1.5×10^{-2}
	Y	5×10^{-2}	Oxides, hydroxides, halides and nitrates	2×10^{2}	3×10^{1}	(3)	6.3×10^{-2}
	ing.	5×10^{-2}	Oxides, hydroxides, and other trace inorganic compounds	3×10^{3}	3×10^{1}	(54)	4.7×10^{-3}
		3×10^{-1}	All other inorganic and organic compounds	4×10^{3}	1×10^{2}	(91)	4.0×10^{-3}
CO-58 (70.80d)	inh. W	5×10^{-2}	All other compounds	5×10^{2}	1×10^{1}	(21)	2.9×10^{-2}
	Y	5×10^{-2}	Oxides, hydroxides, halides and nitrates	3×10^{2}	1×10^{1}	(3)	5.9×10^{-2}
	ing.	5×10^{-2}	Oxides, hydroxides, and other trace inorganic compounds	1×10^{3}	7	(34)	1.5×10^{-2}
		3×10^{-1}	All other inorganic and organic compounds	1×10^{3}	2×10^{1}	(81)	1.2×10^{-2}
CO-58M (9.15h)	inh. W	5×10^{-2}	All other compounds	5×10^{4}	3×10^{1}	(13)	3.3×10^{-4}
	Y	5×10^{-2}	Oxides, hydroxides, halides and nitrates	3×10^{4}	2×10^{1}	(2)	5.0×10^{-4}
	ing.	5×10^{-2}	Oxides, hydroxides, and other trace inorganic compounds	2×10^{4}	3×10^{1}	(3)	6.0×10^{-4}
		3×10^{-1}	All other inorganic and organic compounds	3×10^{4}	4×10^{1}	(21)	4.8×10^{-4}
CO-60 (5.271y)	inh. W	5×10^{-2}	All other compounds	1×10^{2}	8	(52)	1.3×10^{-1}
	Y	5×10^{-2}	Oxides, hydroxides, halides and nitrates	1×10^{1}	4	(4)	1.3
	ing.	5×10^{-2}	Oxides, hydroxides, and other trace inorganic compounds	4×10^{2}	6	(74)	4.1×10^{-2}
		3×10^{-1}	All other inorganic and organic compounds	2×10^{2}	1×10^{1}	(96)	2.7×10^{-2}
CO-60M (10.47m)	inh. W	5×10^{-2}	All other compounds	1×10^{6}	1×10^{1}	(8)	1.1×10^{-5}
	Y	5×10^{-2}	Oxides, hydroxides, halides and nitrates	1×10^{6}	9	(0)	1.5×10^{-5}
	ing.	5×10^{-2}	Oxides, hydroxides, and other trace inorganic compounds	3×10^{5}	9	(0)	5.0×10^{-5}
		3×10^{-1}	All other inorganic and organic compounds	3×10^{5}	9	(0)	5.0×10^{-5}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
CO-61 (1.65h)	inh. W	5×10^{-2}	All other compounds	2×10^{4}	2	(15)	6.8×10^{-4}
	Y	5×10^{-2}	Oxides, hydroxides, halides and nitrates	2×10^{4}	2	(1)	7.3×10^{-4}
	ing.	5×10^{-2}	Oxides, hydroxides, and other trace inorganic compounds	1×10^{4}	3	(1)	1.4×10^{-3}
		3×10^{-1}	All other inorganic and organic compounds	1×10^{4}	3	(9)	1.4×10^{-3}
CO-62M (13.91m)	inh. W	5×10^{-2}	All other compounds	6×10^{4}	8×10^{-1}	(10)	2.5×10^{-4}
	Y	5×10^{-2}	Oxides, hydroxides, halides and nitrates	6×10^{4}	7×10^{-1}	(1)	2.6×10^{-4}
	ing.	5×10^{-2}	Oxides, hydroxides, and other trace inorganic compounds	1×10^{4}	4×10^{-1}	(0)	1.3×10^{-3}
		3×10^{-1}	All other inorganic and organic compounds	1×10^{4}	4×10^{-1}	(1)	1.3×10^{-3}
NI-56 (6.10d)	inh. D	5×10^{-2}	All other compounds	2×10^{3}	8	(76)	2.9×10^{-3}
	W	5×10^{-2}	Oxides, hydroxides and carbides	1×10^{3}	7	(12)	1.4×10^{-2}
	ing.	5×10^{-2}	All compounds	8×10^{2}	4	(9)	6.0×10^{-3}
VAPOR	inh. *		Nickel carbonyl	1×10^{3}	1×10^{1}	(95)	4.1×10^{-3}
NI-57 (36.08h)	inh. D	5×10^{-2}	All other compounds	4×10^{3}	8	(53)	3.5×10^{-3}
	W	5×10^{-2}	Oxides, hydroxides and carbides	2×10^{3}	5	(9)	6.4×10^{-3}
	ing.	5×10^{-2}	All compounds	7×10^{2}	2	(4)	2.1×10^{-2}
VAPOR	inh. *		Nickel carbonyl	7×10^{3}	2×10^{1}	(86)	2.1×10^{-3}
NI-59 (7.5×10^{4}y)	inh. D	5×10^{-2}	All other compounds	4×10^{3}	3×10^{3}	(100)	1.3×10^{-3}
	W	5×10^{-2}	Oxides, hydroxides and carbides	3×10^{3}	8×10^{2}	(86)	4.4×10^{-3}
	ing.	5×10^{-2}	All compounds	2×10^{4}	1×10^{3}	(94)	1.0×10^{-3}
VAPOR	inh. *		Nickel carbonyl	2×10^{3}	3×10^{3}	(100)	2.7×10^{-3}
NI-63 (96y)	inh. D	5×10^{-2}	All other compounds	2×10^{3}	1×10^{3}	(100)	3.0×10^{-3}
	W	5×10^{-2}	Oxides, hydroxides and carbides	1×10^{3}	3×10^{2}	(85)	1.1×10^{-2}
	ing.	5×10^{-2}	All compounds	4×10^{3}	3×10^{2}	(94)	3.4×10^{-3}
VAPOR	inh. *		Nickel carbonyl	8×10^{2}	1×10^{3}	(100)	6.3×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
NI-65 (2.520h)	inh.	D	5×10^{-2}	All other compounds	1×10^{4}	3	(35)	1.2×10^{-3}
		W	5×10^{-2}	Oxides, hydroxides and carbides	1×10^{4}	2	(13)	1.4×10^{-3}
	ing.		5×10^{-2}	All compounds	4×10^{3}	2	(2)	3.5×10^{-3}
VAPOR	inh.	*		Nickel carbonyl	6×10^{3}	2	(46)	2.5×10^{-3}
NI-66 (54.6h)	inh.	D	5×10^{-2}	All other compounds	8×10^{2}	2	(59)	2.0×10^{-2}
		W	5×10^{-2}	Oxides, hydroxides and carbides	4×10^{2}	1	(10)	4.3×10^{-2}
	ing.		5×10^{-2}	All compounds	1×10^{2}	4×10^{-1}	(5)	1.3×10^{-1}
VAPOR	inh.	*		Nickel carbonyl	2×10^{3}	6	(89)	8.8×10^{-3}
CU-60 (23.2m)	inh.	D	5×10^{-1}	All other inorganic compounds	4×10^{4}	1	(29)	3.6×10^{-4}
		W	5×10^{-1}	Sulphides, halides and nitrates	4×10^{4}	9×10^{-1}	(12)	3.8×10^{-4}
		Y	5×10^{-1}	Oxides and hydroxides	4×10^{4}	8×10^{-1}	(1)	4.1×10^{-4}
	ing.		5×10^{-1}	All compounds	8×10^{3}	5×10^{-1}	(4)	1.8×10^{-3}
CU-61 (3.408h)	inh.	D	5×10^{-1}	All other inorganic compounds	2×10^{4}	6	(49)	8.1×10^{-4}
		W	5×10^{-1}	Sulphides, halides and nitrates	1×10^{4}	4	(22)	1.0×10^{-3}
		Y	5×10^{-1}	Oxides and hydroxides	1×10^{4}	3	(9)	1.1×10^{-3}
	ing.		5×10^{-1}	All compounds	7×10^{3}	4	(30)	2.1×10^{-3}
CU-64 (12.701h)	inh.	D	5×10^{-1}	All other inorganic compounds	2×10^{4}	3×10^{1}	(66)	7.5×10^{-4}
		W	5×10^{-1}	Sulphides, halides and nitrates	1×10^{4}	1×10^{1}	(32)	1.2×10^{-3}
		Y	5×10^{-1}	Oxides and hydroxides	1×10^{4}	1×10^{1}	(23)	1.3×10^{-3}
	ing.		5×10^{-1}	All compounds	5×10^{3}	1×10^{1}	(48)	2.8×10^{-3}
CU-67 (61.86h)	inh.	D	5×10^{-1}	All other inorganic compounds	8×10^{3}	5×10^{1}	(86)	1.8×10^{-3}
		W	5×10^{-1}	Sulphides, halides and nitrates	3×10^{3}	1×10^{1}	(48)	5.6×10^{-3}
		Y	5×10^{-1}	Oxides and hydroxides	3×10^{3}	1×10^{1}	(42)	5.9×10^{-3}
	ing.		5×10^{-1}	All compounds	1×10^{3}	9	(71)	1.0×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
ZN-62 (9.26h)	inh. Y	5×10^{-1}	Most compounds	1×10^{3}	1	(20)	1.0×10^{-2}
	ing.	5×10^{-1}	All compounds	7×10^{2}	1	(44)	2.0×10^{-2}
ZN-63 (38.1m)	inh. Y	5×10^{-1}	Most compounds	2×10^{4}	9×10^{-1}	(1)	6.1×10^{-4}
	ing.	5×10^{-1}	All compounds	7×10^{3}	8×10^{-1}	(8)	2.1×10^{-3}
ZN-65 (243.9d)	inh. Y	5×10^{-1}	Most compounds	2×10^{2}	5×10^{1}	(53)	7.8×10^{-2}
	ing.	5×10^{-1}	All compounds	3×10^{2}	7×10^{1}	(99)	1.7×10^{-2}
ZN-69 (57m)	inh. Y	5×10^{-1}	Most compounds	5×10^{4}	3	(2)	3.0×10^{-4}
	ing.	5×10^{-1}	All compounds	2×10^{4}	3	(12)	7.9×10^{-4}
ZN-69M (13.76h)	inh. Y	5×10^{-1}	Most compounds	4×10^{3}	4	(24)	3.7×10^{-3}
	ing.	5×10^{-1}	All compounds	2×10^{3}	3	(49)	8.8×10^{-3}
ZN-71M (3.92h)	inh. Y	5×10^{-1}	Most compounds	7×10^{3}	2	(11)	2.2×10^{-3}
	ing.	5×10^{-1}	All compounds	3×10^{3}	2	(32)	4.3×10^{-3}
ZN-72 (46.5h)	inh. Y	5×10^{-1}	Most compounds	8×10^{2}	3	(39)	1.9×10^{-2}
	ing.	5×10^{-1}	All compounds	4×10^{2}	2	(67)	3.7×10^{-2}
GA-65 (15.2m)	inh. D	1×10^{-3}	All other compounds	7×10^{4}	2	(25)	2.0×10^{-4}
	W	1×10^{-3}	Oxides, hydroxides, carbides, halides and nitrates	7×10^{4}	1	(10)	2.1×10^{-4}
	ing.	1×10^{-3}	All compounds	1×10^{4}	6×10^{-1}	(0)	1.1×10^{-3}
GA-66 (9.40h)	inh. D	1×10^{-3}	All other compounds	3×10^{3}	3	(51)	5.0×10^{-3}
	W	1×10^{-3}	Oxides, hydroxides, carbides, halides and nitrates	2×10^{3}	1	(14)	7.7×10^{-3}
	ing.	1×10^{-3}	All compounds	6×10^{2}	7×10^{-1}	(0)	2.7×10^{-2}
GA-67 (78.26h)	inh. D	1×10^{-3}	All other compounds	1×10^{4}	8×10^{1}	(79)	1.0×10^{-3}
	W	1×10^{-3}	Oxides, hydroxides, carbides, halides and nitrates	7×10^{3}	3×10^{1}	(16)	2.1×10^{-3}
	ing.	1×10^{-3}	All compounds	3×10^{3}	1×10^{1}	(0)	5.9×10^{-3}
GA-68 (68.0m)	inh. D	1×10^{-3}	All other compounds	2×10^{4}	2	(35)	7.0×10^{-4}
	W	1×10^{-3}	Oxides, hydroxides, carbides, halides and nitrates	2×10^{4}	1	(15)	8.0×10^{-4}
	ing.	1×10^{-3}	All compounds	7×10^{3}	1	(0)	2.2×10^{-3}
GA-70 (21.15m)	inh. D	1×10^{-3}	All other compounds	8×10^{4}	2	(28)	2.0×10^{-4}
	W	1×10^{-3}	Oxides, hydroxides, carbides, halides and nitrates	7×10^{4}	1	(12)	2.1×10^{-4}
	ing.	1×10^{-3}	All compounds	2×10^{4}	9×10^{-1}	(0)	9.2×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
GA-72 (14.1h)	inh. D	1×10^{-3}	All other compounds	4×10^{3}	5	(56)	4.3×10^{-3}
	W	1×10^{-3}	Oxides, hydroxides, carbides, halides and nitrates	2×10^{3}	3	(14)	6.2×10^{-3}
	ing.	1×10^{-3}	All compounds	6×10^{2}	1	(0)	2.6×10^{-2}
GA-73 (4.91h)	inh. D	1×10^{-3}	All other compounds	1×10^{4}	5	(45)	1.5×10^{-3}
	W	1×10^{-3}	Oxides, hydroxides, carbides, halides and nitrates	7×10^{3}	3	(15)	2.0×10^{-3}
	ing.	1×10^{-3}	All compounds	2×10^{3}	2	(0)	6.5×10^{-3}
GE-66 (2.27h)	inh. D	1	All other compounds	1×10^{4}	2	(54)	1.3×10^{-3}
	W	1	Oxides, sulphides and halides	7×10^{3}	1	(26)	2.1×10^{-3}
	ing.	1	All compounds	2×10^{4}	5	(74)	9.2×10^{-4}
GE-67 (18.7m)	inh. D	1	All other compounds	4×10^{4}	1	(32)	3.7×10^{-4}
	W	1	Oxides, sulphides and halides	4×10^{4}	7×10^{-1}	(12)	4.1×10^{-4}
	ing.	1	All compounds	8×10^{3}	4×10^{-1}	(31)	1.9×10^{-3}
GE-68 (288d)	inh. D	1	All other compounds	2×10^{3}	4	(75)	8.7×10^{-3}
	W	1	Oxides, sulphides and halides	4×10^{1}	1	(6)	4.1×10^{-1}
	ing.	1	All compounds	6×10^{3}	2×10^{1}	(96)	2.7×10^{-3}
GE-69 (39.05h)	inh. D	1	All other compounds	8×10^{3}	1×10^{1}	(70)	2.0×10^{-3}
	W	1	Oxides, sulphides and halides	3×10^{3}	6	(36)	5.3×10^{-3}
	ing.	1	All compounds	1×10^{4}	2×10^{1}	(94)	1.3×10^{-3}
GE-71 (11.8d)	inh. D	1	All other compounds	2×10^{5}	4×10^{2}	(75)	9.4×10^{-5}
	W	1	Oxides, sulphides and halides	2×10^{4}	1×10^{2}	(18)	9.8×10^{-4}
	ing.	1	All compounds	5×10^{5}	1×10^{3}	(96)	3.0×10^{-5}
GE-75 (82.78m)	inh. D	1	All other compounds	3×10^{4}	4	(49)	4.4×10^{-4}
	W	1	Oxides, sulphides and halides	3×10^{4}	3	(22)	5.1×10^{-4}
	ing.	1	All compounds	1×10^{4}	3	(65)	1.2×10^{-3}
GE-77 (11.30h)	inh. D	1	All other compounds	4×10^{3}	3	(64)	4.0×10^{-3}
	W	1	Oxides, sulphides and halides	2×10^{3}	2	(37)	7.3×10^{-3}
	ing.	1	All compounds	5×10^{3}	5	(90)	3.3×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
GE-78 (87m)	inh. D	1	All other compounds	9×10^3	1	(50)	1.6×10^{-3}
	W	1	Oxides, sulphides and halides	7×10^3	7×10^{-1}	(22)	2.0×10^{-3}
	ing.	1	All compounds	7×10^3	2	(66)	2.2×10^{-3}
AS-69 (15.2m)	inh. W	5×10^{-1}	All compounds	4×10^4	6×10^{-1}	(10)	3.5×10^{-4}
	ing.	5×10^{-1}	All compounds	1×10^4	4×10^{-1}	(2)	1.6×10^{-3}
AS-70 (52.6m)	inh. W	5×10^{-1}	All compounds	2×10^4	1	(15)	8.3×10^{-4}
	ing.	5×10^{-1}	All compounds	5×10^3	7×10^{-1}	(10)	2.9×10^{-3}
AS-71 (64.8h)	inh. W	5×10^{-1}	All compounds	3×10^3	1×10^1	(30)	5.7×10^{-3}
	ing.	5×10^{-1}	All compounds	2×10^3	6	(54)	9.8×10^{-3}
AS-72 (26.0h)	inh. W	5×10^{-1}	All compounds	8×10^2	1	(27)	1.9×10^{-2}
	ing.	5×10^{-1}	All compounds	3×10^2	9×10^{-1}	(45)	4.5×10^{-2}
AS-73 (80.30d)	inh. W	5×10^{-1}	All compounds	6×10^2	2×10^1	(20)	2.6×10^{-2}
	ing.	5×10^{-1}	All compounds	3×10^3	3×10^1	(76)	6.0×10^{-3}
AS-74 (17.76d)	inh. W	5×10^{-1}	All compounds	3×10^2	4	(26)	4.9×10^{-2}
	ing.	5×10^{-1}	All compounds	5×10^2	4	(71)	2.8×10^{-2}
AS-76 (26.32h)	inh. W	5×10^{-1}	All compounds	8×10^2	1	(27)	1.9×10^{-2}
	ing.	5×10^{-1}	All compounds	3×10^2	9×10^{-1}	(45)	4.4×10^{-2}
AS-77 (38.8h)	inh. W	5×10^{-1}	All compounds	3×10^3	7	(29)	5.4×10^{-3}
	ing.	5×10^{-1}	All compounds	1×10^3	4	(49)	1.2×10^{-2}
AS-78 (90.7m)	inh. W	5×10^{-1}	All compounds	8×10^3	8×10^{-1}	(17)	1.9×10^{-3}
	ing.	5×10^{-1}	All compounds	3×10^3	9×10^{-1}	(17)	4.3×10^{-3}
SE-70 (41.0m)	inh. D	8×10^{-1}	All other compounds	2×10^4	1	(37)	8.4×10^{-4}
	W	8×10^{-1}	Oxides, hydroxides, carbides & elemental	2×10^4	6×10^{-1}	(15)	9.7×10^{-4}
	ing.	8×10^{-1}	All other compounds	6×10^3	7×10^{-1}	(22)	2.4×10^{-3}
		5×10^{-2}	Elemental selenium and selenides	6×10^3	7×10^{-1}	(1)	2.4×10^{-3}
SE-73 (7.15h)	inh. D	8×10^{-1}	All other compounds	8×10^3	6	(65)	1.8×10^{-3}
	W	8×10^{-1}	Oxides, hydroxides, carbides & elemental	6×10^3	3	(36)	2.6×10^{-3}
	ing.	8×10^{-1}	All other compounds	6×10^3	7	(69)	2.5×10^{-3}
		5×10^{-2}	Elemental selenium and selenides	2×10^3	2	(4)	8.7×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
SE-73M (39m)	inh. D	8×10⁻¹	All other compounds	7×10⁴	4	(36)	2.2×10⁻⁴
	W	8×10⁻¹	Oxides, hydroxides, carbides & elemental	5×10⁴	2	(15)	2.9×10⁻⁴
	ing.	8×10⁻¹	All other compounds	3×10⁴	3	(21)	5.0×10⁻⁴
		5×10⁻²	Elemental selenium and selenides	2×10⁴	2	(0)	7.1×10⁻⁴
SE-75 (119.8d)	inh. D	8×10⁻¹	All other compounds	8×10²	8×10¹	(99)	2.0×10⁻²
	W	8×10⁻¹	Oxides, hydroxides, carbides & elemental	7×10²	8×10¹	(78)	2.0×10⁻²
	ing.	8×10⁻¹	All other compounds	6×10²	8×10¹	(99)	2.7×10⁻²
		5×10⁻²	Elemental selenium and selenides	2×10³	3×10¹	(65)	6.6×10⁻³
SE-79 (65000y)	inh. D	8×10⁻¹	All other compounds	4×10²	9×10¹	(100)	3.5×10⁻²
	W	8×10⁻¹	Oxides, hydroxides, carbides & elemental	4×10²	9×10¹	(85)	3.6×10⁻²
	ing.	8×10⁻¹	All other compounds	3×10²	9×10¹	(100)	4.6×10⁻²
		5×10⁻²	Elemental selenium and selenides	1×10³	3×10¹	(79)	1.0×10⁻²
SE-81 (18.5m)	inh. D	8×10⁻¹	All other compounds	9×10⁴	2	(28)	1.6×10⁻⁴
	W	8×10⁻¹	Oxides, hydroxides, carbides & elemental	8×10⁴	2	(11)	1.8×10⁻⁴
	ing.	8×10⁻¹	All other compounds	2×10⁴	9×10⁻¹	(9)	8.0×10⁻⁴
		5×10⁻²	Elemental selenium and selenides	2×10⁴	9×10⁻¹	(0)	8.0×10⁻⁴
SE-81M (57.25m)	inh. D	8×10⁻¹	All other compounds	3×10⁴	3	(41)	5.1×10⁻⁴
	W	8×10⁻¹	Oxides, hydroxides, carbides & elemental	3×10⁴	2	(17)	5.9×10⁻⁴
	ing.	8×10⁻¹	All other compounds	1×10⁴	2	(29)	1.3×10⁻³
		5×10⁻²	Elemental selenium and selenides	1×10⁴	2	(1)	1.3×10⁻³
SE-83 (22.5m)	inh. D	8×10⁻¹	All other compounds	5×10⁴	2	(30)	2.9×10⁻⁴
	W	8×10⁻¹	Oxides, hydroxides, carbides & elemental	5×10⁴	1	(12)	3.3×10⁻⁴
	ing.	8×10⁻¹	All other compounds	1×10⁴	8×10⁻¹	(11)	1.2×10⁻³
		5×10⁻²	Elemental selenium and selenides	1×10⁴	8×10⁻¹	(0)	1.2×10⁻³
BR-74 (25.3m)	inh. D	1	See ICRP Task Group report on Lung Dynamics	3×10⁴	1	(36)	4.7×10⁻⁴
	W	1	See ICRP Task Group report on Lung Dynamics	3×10⁴	7×10⁻¹	(14)	5.1×10⁻⁴
	ing.	1	All compounds	6×10³	4×10⁻¹	(38)	2.3×10⁻³

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/ μCi)
BR-74M (41.5m)	inh. D	1	See ICRP Task Group report on Lung Dynamics	2×10^4	1	(42)	9.1×10^{-4}
	W	1	See ICRP Task Group report on Lung Dynamics	1×10^4	6×10^{-1}	(17)	1.0×10^{-3}
	ing.	1	All compounds	4×10^3	5×10^{-1}	(50)	3.7×10^{-3}
BR-75 (98m)	inh. D	1	See ICRP Task Group report on Lung Dynamics	2×10^4	3	(53)	7.3×10^{-4}
	W	1	See ICRP Task Group report on Lung Dynamics	2×10^4	2	(24)	8.5×10^{-4}
	ing.	1	All compounds	8×10^3	2	(70)	1.9×10^{-3}
BR-76 (16.2h)	inh. D	1	See ICRP Task Group report on Lung Dynamics	3×10^3	4	(79)	5.4×10^{-3}
	W	1	See ICRP Task Group report on Lung Dynamics	2×10^3	2	(54)	9.4×10^{-3}
	ing.	1	All compounds	3×10^3	8	(96)	4.7×10^{-3}
BR-77 (56h)	inh. D	1	See ICRP Task Group report on Lung Dynamics	3×10^4	1×10^2	(90)	1.8×10^{-4}
	W	1	See ICRP Task Group report on Lung Dynamics	1×10^4	7×10^1	(64)	1.0×10^{-3}
	ing.	1	All compounds	2×10^4	1×10^2	(99)	3.0×10^{-4}
BR-80 (17.4m)	inh. D	1	See ICRP Task Group report on Lung Dynamics	8×10^4	2	(31)	1.9×10^{-4}
	W	1	See ICRP Task Group report on Lung Dynamics	8×10^4	1	(12)	2.0×10^{-4}
	ing.	1	All compounds	2×10^4	8×10^{-1}	(30)	9.2×10^{-4}
BR-80M (4.42h)	inh. D	1	See ICRP Task Group report on Lung Dynamics	7×10^3	3	(64)	2.2×10^{-3}
	W	1	See ICRP Task Group report on Lung Dynamics	5×10^3	2	(37)	2.9×10^{-3}
	ing.	1	All compounds	7×10^3	5	(86)	2.3×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/ μCi)
BR-82 (35.30h)	inh.	D	1	See ICRP Task Group report on Lung Dynamics	5×10^{3}	2×10^{1}	(86)	2.9×10^{-3}
		W	1	See ICRP Task Group report on Lung Dynamics	2×10^{3}	7	(61)	6.2×10^{-3}
	ing.		1	All compounds	3×10^{3}	2×10^{1}	(98)	1.7×10^{-3}
BR-83 (2.39h)	inh.	D	1	See ICRP Task Group report on Lung Dynamics	3×10^{4}	6	(58)	5.5×10^{-4}
		W	1	See ICRP Task Group report on Lung Dynamics	2×10^{4}	4	(29)	6.7×10^{-4}
	ing.		1	All compounds	1×10^{4}	5	(77)	1.1×10^{-3}
BR-84 (31.80m)	inh.	D	1	See ICRP Task Group report on Lung Dynamics	3×10^{4}	1	(39)	5.8×10^{-4}
		W	1	See ICRP Task Group report on Lung Dynamics	2×10^{4}	8×10^{-1}	(15)	6.3×10^{-4}
	ing.		1	All compounds	6×10^{3}	5×10^{-1}	(43)	2.5×10^{-3}
RB-79 (22.9m)	inh.	D	1	All compounds	5×10^{4}	2	(35)	2.9×10^{-4}
	ing.		1	All compounds	1×10^{4}	7×10^{-1}	(35)	1.4×10^{-3}
RB-81 (4.58h)	inh.	D	1	All compounds	2×10^{4}	1×10^{1}	(65)	6.8×10^{-4}
	ing.		1	All compounds	1×10^{4}	1×10^{1}	(87)	1.0×10^{-3}
RB-81M (32m)	inh.	D	1	All compounds	1×10^{5}	6	(39)	1.1×10^{-4}
	ing.		1	All compounds	7×10^{4}	6	(43)	2.1×10^{-4}
RB-82M (6.2h)	inh.	D	1	All compounds	2×10^{4}	1×10^{1}	(68)	9.4×10^{-4}
	ing.		1	All compounds	9×10^{3}	1×10^{1}	(90)	1.6×10^{-3}
RB-83 (86.2d)	inh.	D	1	All compounds	8×10^{2}	6×10^{1}	(99)	6.1×10^{-3}
	ing.		1	All compounds	5×10^{2}	6×10^{1}	(100)	9.7×10^{-3}
RB-84 (32.77d)	inh.	D	1	All compounds	6×10^{2}	3×10^{1}	(99)	8.0×10^{-3}
	ing.		1	All compounds	4×10^{2}	3×10^{1}	(100)	1.3×10^{-2}
RB-86 (18.66d)	inh.	D	1	All compounds	6×10^{2}	2×10^{1}	(98)	8.6×10^{-3}
	ing.		1	All compounds	4×10^{2}	2×10^{1}	(100)	1.4×10^{-2}
RB-87 (4.7×10^{10}y)	inh.	D	1	All compounds	1×10^{3}	1×10^{2}	(99)	4.7×10^{-3}
	ing.		1	All compounds	7×10^{2}	1×10^{2}	(100)	7.5×10^{-3}
RB-88 (17.8m)	inh.	D	1	All compounds	3×10^{4}	7×10^{-1}	(31)	5.4×10^{-4}
	ing.		1	All compounds	6×10^{3}	3×10^{-1}	(30)	2.7×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
RB-89	inh. D	1	All compounds	6×10^{4}	1	(29)	2.5×10^{-4}
(15.2m)	ing.	1	All compounds	1×10^{4}	5×10^{-1}	(27)	1.3×10^{-3}
SR-80	inh. D	3×10^{-1}	Soluble compounds	6×10^{3}	9×10^{-1}	(39)	2.6×10^{-3}
(100m)	Y	1×10^{-2}	Titanates	5×10^{3}	5×10^{-1}	(1)	3.3×10^{-3}
	ing.	3×10^{-1}	Soluble compounds	2×10^{3}	6×10^{-1}	(9)	6.5×10^{-3}
		1×10^{-2}	Titanates	2×10^{3}	6×10^{-1}	(0)	6.5×10^{-3}
SR-81	inh. D	3×10^{-1}	Soluble compounds	3×10^{4}	1	(29)	4.5×10^{-4}
(25.5m)	Y	1×10^{-2}	Titanates	3×10^{4}	7×10^{-1}	(1)	5.4×10^{-4}
	ing.	3×10^{-1}	Soluble compounds	8×10^{3}	6×10^{-1}	(2)	1.9×10^{-3}
		1×10^{-2}	Titanates	8×10^{3}	6×10^{-1}	(0)	1.9×10^{-3}
SR-83	inh. D	3×10^{-1}	Soluble compounds	7×10^{3}	2×10^{1}	(69)	2.1×10^{-3}
(32.4h)	Y	1×10^{-2}	Titanates	3×10^{3}	5	(1)	5.9×10^{-3}
	ing.	3×10^{-1}	Soluble compounds	1×10^{3}	4	(33)	1.2×10^{-2}
		1×10^{-2}	Titanates	9×10^{2}	3	(1)	1.7×10^{-2}
SR-85	inh. D	3×10^{-1}	Soluble compounds	1×10^{3}	5×10^{1}	(97)	3.4×10^{-3}
(64.84d)	Y	1×10^{-2}	Titanates	6×10^{2}	2×10^{1}	(2)	2.6×10^{-2}
	ing.	3×10^{-1}	Soluble compounds	2×10^{3}	5×10^{1}	(84)	2.3×10^{-3}
		1×10^{-2}	Titanates	2×10^{3}	1×10^{1}	(11)	6.7×10^{-3}
SR-85M	inh. D	3×10^{-1}	Soluble compounds	6×10^{5}	7×10^{1}	(36)	2.4×10^{-5}
(69.5m)	Y	1×10^{-2}	Titanates	3×10^{5}	2×10^{1}	(1)	4.4×10^{-5}
	ing.	3×10^{-1}	Soluble compounds	2×10^{5}	3×10^{1}	(7)	9.3×10^{-5}
		1×10^{-2}	Titanates	2×10^{5}	3×10^{1}	(0)	9.2×10^{-5}
SR-87M	inh. D	3×10^{-1}	Soluble compounds	9×10^{4}	2×10^{1}	(43)	1.7×10^{-4}
(2.805h)	Y	1×10^{-2}	Titanates	7×10^{4}	1×10^{1}	(1)	2.1×10^{-4}
	ing.	3×10^{-1}	Soluble compounds	3×10^{4}	1×10^{1}	(14)	5.3×10^{-4}
		1×10^{-2}	Titanates	2×10^{4}	1×10^{1}	(0)	6.3×10^{-4}
SR-89	inh. D	3×10^{-1}	Soluble compounds	2×10^{2}	7	(96)	2.1×10^{-2}
(50.5d)	Y	1×10^{-2}	Titanates	5×10^{1}	2	(2)	3.1×10^{-1}
	ing.	3×10^{-1}	Soluble compounds	2×10^{2}	4	(82)	7.7×10^{-2}
		1×10^{-2}	Titanates	1×10^{2}	7×10^{-1}	(10)	1.1×10^{-1}
SR-90	inh. D	3×10^{-1}	Soluble compounds	4	4	(100)	1.2
(29.12y)	Y	1×10^{-2}	Titanates	1	8×10^{-1}	(15)	1.1×10^{1}
	ing.	3×10^{-1}	Soluble compounds	7	4	(99)	7.2×10^{-1}
		1×10^{-2}	Titanates	2×10^{2}	3	(78)	9.7×10^{-2}
SR-91	inh. D	3×10^{-1}	Soluble compounds	4×10^{3}	4	(54)	3.4×10^{-3}
(9.5h)	Y	1×10^{-2}	Titanates	2×10^{3}	1	(1)	7.9×10^{-3}
	ing.	3×10^{-1}	Soluble compounds	1×10^{3}	1	(23)	1.4×10^{-2}
		1×10^{-2}	Titanates	8×10^{2}	1	(1)	1.9×10^{-2}
SR-92	inh. D	3×10^{-1}	Soluble compounds	6×10^{3}	1	(42)	2.6×10^{-3}
(2.71h)	Y	1×10^{-2}	Titanates	4×10^{3}	7×10^{-1}	(1)	3.9×10^{-3}
	ing.	3×10^{-1}	Soluble compounds	1×10^{3}	6×10^{-1}	(13)	1.1×10^{-2}
		1×10^{-2}	Titanates	1×10^{3}	5×10^{-1}	(0)	1.4×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
Y-86	inh.	W	1×10^{-4}	All other compounds	4×10^{3}	4	(12)	4.1×10^{-3}
(14.74h)		Y	1×10^{-4}	Oxides and hydroxides	3×10^{3}	3	(1)	4.8×10^{-3}
	ing.		1×10^{-4}	All compounds	8×10^{2}	2	(0)	1.8×10^{-2}
Y-86M	inh.	W	1×10^{-4}	All other compounds	6×10^{4}	3	(14)	2.5×10^{-4}
(48m)		Y	1×10^{-4}	Oxides and hydroxides	5×10^{4}	3	(1)	2.8×10^{-4}
	ing.		1×10^{-4}	All compounds	1×10^{4}	2	(0)	1.0×10^{-3}
Y-87	inh.	W	1×10^{-4}	All other compounds	3×10^{3}	1×10^{1}	(17)	5.8×10^{-3}
(80.3h)		Y	1×10^{-4}	Oxides and hydroxides	2×10^{3}	9	(1)	6.6×10^{-3}
	ing.		1×10^{-4}	All compounds	9×10^{2}	4	(0)	1.6×10^{-2}
Y-88	inh.	W	1×10^{-4}	All other compounds	3×10^{2}	1×10^{1}	(57)	5.8×10^{-2}
(106.64d)		Y	1×10^{-4}	Oxides and hydroxides	1×10^{2}	7	(4)	1.3×10^{-1}
	ing.		1×10^{-4}	All compounds	5×10^{2}	3	(1)	9.5×10^{-3}
Y-90	inh.	W	1×10^{-4}	All other compounds	4×10^{2}	1	(16)	4.0×10^{-2}
(64.0h)		Y	1×10^{-4}	Oxides and hydroxides	3×10^{2}	1	(1)	4.7×10^{-2}
	ing.		1×10^{-4}	All compounds	1×10^{2}	5×10^{-1}	(0)	1.2×10^{-1}
Y-90M	inh.	W	1×10^{-4}	All other compounds	7×10^{3}	2	(14)	2.1×10^{-3}
(3.19h)		Y	1×10^{-4}	Oxides and hydroxides	6×10^{3}	1	(1)	2.5×10^{-3}
	ing.		1×10^{-4}	All compounds	2×10^{3}	1	(0)	6.3×10^{-3}
Y-91	inh.	W	1×10^{-4}	All other compounds	8×10^{1}	3	(46)	1.9×10^{-1}
(58.51d)		Y	1×10^{-4}	Oxides and hydroxides	4×10^{1}	1	(3)	3.7×10^{-1}
	ing.		1×10^{-4}	All compounds	1×10^{2}	6×10^{-1}	(0)	1.1×10^{-1}
Y-91M	inh.	W	1×10^{-4}	All other compounds	1×10^{5}	5	(14)	1.6×10^{-4}
(49.71m)		Y	1×10^{-4}	Oxides and hydroxides	6×10^{4}	3	(1)	2.6×10^{-4}
	ing.		1×10^{-4}	All compounds	8×10^{4}	1×10^{1}	(0)	1.8×10^{-4}
Y-92	inh.	W	1×10^{-4}	All other compounds	3×10^{3}	9×10^{-1}	(14)	4.3×10^{-3}
(3.54h)		Y	1×10^{-4}	Oxides and hydroxides	3×10^{3}	8×10^{-1}	(1)	4.6×10^{-3}
	ing.		1×10^{-4}	All compounds	1×10^{3}	7×10^{-1}	(0)	1.2×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
Y-93	inh.	W	1×10^{-4}	All other compounds	2×10^{3}	1	(13)	8.9×10^{-3}
(10.1h)		Y	1×10^{-4}	Oxides and hydroxides	2×10^{3}	1	(1)	9.3×10^{-3}
	ing.		1×10^{-4}	All compounds	5×10^{2}	7×10^{-1}	(0)	3.3×10^{-2}
Y-94	inh.	W	1×10^{-4}	All other compounds	3×10^{4}	5×10^{-1}	(11)	5.1×10^{-4}
(19.1m)		Y	1×10^{-4}	Oxides and hydroxides	3×10^{4}	5×10^{-1}	(1)	5.5×10^{-4}
	ing.		1×10^{-4}	All compounds	6×10^{3}	3×10^{-1}	(0)	2.4×10^{-3}
Y-95	inh.	W	1×10^{-4}	All other compounds	5×10^{4}	6×10^{-1}	(9)	2.8×10^{-4}
(10.7m)		Y	1×10^{-4}	Oxides and hydroxides	5×10^{4}	5×10^{-1}	(0)	3.0×10^{-4}
	ing.		1×10^{-4}	All compounds	1×10^{4}	3×10^{-1}	(0)	1.4×10^{-3}
ZR-86	inh.	D	2×10^{-3}	All other compounds	4×10^{3}	6	(60)	4.0×10^{-3}
(16.5h)		W	2×10^{-3}	Oxides, hydroxides, halides and nitrates	2×10^{3}	3	(15)	7.4×10^{-3}
		Y	2×10^{-3}	carbides	2×10^{3}	2	(1)	8.7×10^{-3}
	ing.		2×10^{-3}	All compounds	6×10^{2}	1	(0)	2.3×10^{-2}
ZR-88	inh.	D	2×10^{-3}	All other compounds	1×10^{2}	9	(98)	5.0×10^{-2}
(83.4d)		W	2×10^{-3}	Oxides, hydroxides, halides and nitrates	4×10^{2}	1×10^{1}	(44)	1.4×10^{-2}
		Y	2×10^{-3}	carbides	1×10^{2}	6	(3)	1.3×10^{-1}
	ing.		2×10^{-3}	All compounds	2×10^{3}	1×10^{1}	(7)	7.5×10^{-3}
ZR-89	inh.	D	2×10^{-3}	All other compounds	3×10^{3}	2×10^{1}	(82)	1.9×10^{-3}
(78.43h)		W	2×10^{-3}	Oxides, hydroxides, halides and nitrates	2×10^{3}	8	(18)	7.7×10^{-3}
		Y	2×10^{-3}	carbides	2×10^{3}	7	(1)	8.8×10^{-3}
	ing.		2×10^{-3}	All compounds	7×10^{2}	3	(1)	2.1×10^{-2}
ZR-93	inh.	D	2×10^{-3}	All other compounds	6	4×10^{1}	(100)	8.1
(1.53×10^{6}y)		W	2×10^{-3}	Oxides, hydroxides, halides and nitrates	2×10^{1}	4×10^{1}	(98)	2.0
		Y	2×10^{-3}	carbides	5×10^{1}	6×10^{1}	(50)	3.2×10^{-1}
	ing.		2×10^{-3}	All compounds	1×10^{3}	4×10^{1}	(84)	3.4×10^{-2}
ZR-95	inh.	D	2×10^{-3}	All other compounds	1×10^{2}	7	(98)	4.8×10^{-2}
(63.98d)		W	2×10^{-3}	Oxides, hydroxides, halides and nitrates	2×10^{2}	7	(40)	6.9×10^{-2}
		Y	2×10^{-3}	carbides	1×10^{2}	4	(2)	1.5×10^{-1}
	ing.		2×10^{-3}	All compounds	5×10^{2}	3	(6)	2.9×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
ZR-97	inh.	D	2×10^{-3}	All other compounds	1×10^{3}	2	(60)	1.0×10^{-2}
(16.90h)		W	2×10^{-3}	Oxides, hydroxides, halides and nitrates	9×10^{2}	1	(15)	1.6×10^{-2}
		Y	2×10^{-3}	carbides	8×10^{2}	1	(1)	1.9×10^{-2}
	ing.		2×10^{-3}	All compounds	2×10^{2}	5×10^{-1}	(0)	6.6×10^{-2}
NB-88	inh.	W	1×10^{-2}	All other compounds	8×10^{4}	6×10^{-1}	(7)	1.8×10^{-4}
(14.3m)		Y	1×10^{-2}	Oxides and hydroxides	8×10^{4}	5×10^{-1}	(0)	2.0×10^{-4}
	ing.		1×10^{-2}	All compounds	1×10^{4}	3×10^{-1}	(0)	1.1×10^{-3}
NB-89	inh.	W	1×10^{-2}	All other compounds	7×10^{3}	9×10^{-1}	(16)	2.2×10^{-3}
(122m)		Y	1×10^{-2}	Oxides and hydroxides	6×10^{3}	8×10^{-1}	(1)	2.4×10^{-3}
	ing.		1×10^{-2}	All compounds	3×10^{3}	1	(0)	4.9×10^{-3}
NB-89	inh.	W	1×10^{-2}	All other compounds	1×10^{4}	1	(15)	1.0×10^{-3}
(66m)		Y	1×10^{-2}	Oxides and hydroxides	1×10^{4}	9×10^{-1}	(1)	1.1×10^{-3}
	ing.		1×10^{-2}	All compounds	6×10^{3}	1	(0)	2.7×10^{-3}
NB-90	inh.	W	1×10^{-2}	All other compounds	2×10^{3}	3	(15)	6.1×10^{-3}
(14.60h)		Y	1×10^{-2}	Oxides and hydroxides	2×10^{3}	2	(1)	7.0×10^{-3}
	ing.		1×10^{-2}	All compounds	6×10^{2}	1	(1)	2.6×10^{-2}
NB-93M	inh.	W	1×10^{-2}	All other compounds	8×10^{2}	7×10^{1}	(58)	1.8×10^{-2}
(13.6y)		Y	1×10^{-2}	Oxides and hydroxides	6×10^{1}	3×10^{1}	(4)	2.4×10^{-1}
	ing.		1×10^{-2}	All compounds	3×10^{3}	2×10^{1}	(45)	5.4×10^{-3}
NB-94	inh.	W	1×10^{-2}	All other compounds	1×10^{2}	8	(59)	1.5×10^{-1}
(2.03×10^{4}y)		Y	1×10^{-2}	Oxides and hydroxides	5	3	(4)	2.8
	ing.		1×10^{-2}	All compounds	3×10^{2}	3	(46)	4.6×10^{-2}
NB-95	inh.	W	1×10^{-2}	All other compounds	7×10^{2}	2×10^{1}	(30)	2.0×10^{-2}
(35.15d)		Y	1×10^{-2}	Oxides and hydroxides	5×10^{2}	1×10^{1}	(3)	3.1×10^{-2}
	ing.		1×10^{-2}	All compounds	1×10^{3}	5	(13)	1.5×10^{-2}
NB-95M	inh.	W	1×10^{-2}	All other compounds	2×10^{3}	7	(19)	9.7×10^{-3}
(86.6h)		Y	1×10^{-2}	Oxides and hydroxides	1×10^{3}	6	(2)	1.1×10^{-2}
	ing.		1×10^{-2}	All compounds	6×10^{2}	2	(3)	2.4×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
NB-96 (23.35h)	inh.	W	1×10^{-2}	All other compounds	2×10^{3}	4	(15)	7.0×10^{-3}
		Y	1×10^{-2}	Oxides and hydroxides	2×10^{3}	3	(1)	8.3×10^{-3}
	ing.		1×10^{-2}	All compounds	6×10^{2}	1	(1)	2.6×10^{-2}
NB-97 (72.1m)	inh.	W	1×10^{-2}	All other compounds	3×10^{4}	2	(15)	5.3×10^{-4}
		Y	1×10^{-2}	Oxides and hydroxides	3×10^{4}	2	(1)	5.8×10^{-4}
	ing.		1×10^{-2}	All compounds	1×10^{4}	2	(0)	1.4×10^{-3}
NB-98 (51.5m)	inh.	W	1×10^{-2}	All other compounds	2×10^{4}	1	(15)	7.9×10^{-4}
		Y	1×10^{-2}	Oxides and hydroxides	2×10^{4}	9×10^{-1}	(1)	8.5×10^{-4}
	ing.		1×10^{-2}	All compounds	6×10^{3}	8×10^{-1}	(0)	2.6×10^{-3}
MO-90 (5.67h)	inh.	D	8×10^{-1}	All other compounds	8×10^{3}	4	(62)	2.0×10^{-3}
		Y	5×10^{-2}	Oxides, hydroxides and disulfides	4×10^{3}	2	(2)	4.0×10^{-3}
	ing.		8×10^{-1}	All other compounds	4×10^{3}	4	(66)	3.8×10^{-3}
			5×10^{-2}	Disulfides	1×10^{3}	9×10^{-1}	(3)	1.4×10^{-2}
MO-93 (3.5×10^{3}y)	inh.	D	8×10^{-1}	All other compounds	3×10^{3}	3×10^{2}	(99)	5.0×10^{-3}
		Y	5×10^{-2}	Oxides, hydroxides and disulfides	6×10^{1}	4×10^{1}	(2)	2.3×10^{-1}
	ing.		8×10^{-1}	All other compounds	2×10^{3}	3×10^{2}	(99)	6.7×10^{-3}
			5×10^{-2}	Disulfides	9×10^{3}	1×10^{2}	(66)	1.6×10^{-3}
MO-93M (6.85h)	inh.	D	8×10^{-1}	All other compounds	2×10^{4}	1×10^{1}	(64)	8.4×10^{-4}
		Y	5×10^{-2}	Oxides, hydroxides and disulfides	1×10^{4}	6	(2)	1.2×10^{-3}
	ing.		8×10^{-1}	All other compounds	1×10^{4}	1×10^{1}	(68)	5.3×10^{-4}
			5×10^{-2}	Disulfides	3×10^{3}	3	(4)	4.9×10^{-3}
MO-99 (66.0h)	inh.	D	8×10^{-1}	All other compounds	2×10^{3}	1×10^{1}	(90)	6.9×10^{-3}
		Y	5×10^{-2}	Oxides, hydroxides and disulfides	7×10^{2}	3	(6)	2.0×10^{-2}
	ing.		8×10^{-1}	All other compounds	1×10^{3}	1×10^{1}	(90)	1.2×10^{-2}
			5×10^{-2}	Disulfides	3×10^{2}	1	(12)	5.1×10^{-2}
MO-101 (14.62m)	inh.	D	8×10^{-1}	All other compounds	6×10^{4}	1	(26)	2.4×10^{-4}
		Y	5×10^{-2}	Oxides, hydroxides and disulfides	5×10^{4}	7×10^{-1}	(1)	2.8×10^{-4}
	ing.		8×10^{-1}	All other compounds	1×10^{4}	5×10^{-1}	(6)	1.2×10^{-3}
			5×10^{-2}	Disulfides	1×10^{4}	5×10^{-1}	(0)	1.2×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
TC-93 (2.75h)	inh. D	8×10^{-1}	All other compounds	8×10^{4}	2×10^{1}	(52)	1.8×10^{-4}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	8×10^{4}	2×10^{1}	(24)	1.8×10^{-4}
	ing.	8×10^{-1}	All compounds	2×10^{4}	1×10^{1}	(52)	6.1×10^{-4}
TC-93M (43.5m)	inh. D	8×10^{-1}	All other compounds	2×10^{5}	1×10^{1}	(37)	1.0×10^{-4}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	1×10^{5}	6	(16)	1.1×10^{-4}
	ing.	8×10^{-1}	All compounds	4×10^{4}	4	(23)	4.1×10^{-4}
TC-94 (293m)	inh. D	8×10^{-1}	All other compounds	2×10^{4}	9	(58)	7.6×10^{-4}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	2×10^{4}	7	(30)	7.4×10^{-4}
	ing.	8×10^{-1}	All compounds	7×10^{3}	5	(61)	2.1×10^{-3}
TC-94M (52m)	inh. D	8×10^{-1}	All other compounds	3×10^{4}	2	(39)	5.9×10^{-4}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	2×10^{4}	1	(17)	6.6×10^{-4}
	ing.	8×10^{-1}	All compounds	6×10^{3}	9×10^{-1}	(27)	2.4×10^{-3}
TC-96 (4.28d)	inh. D	8×10^{-1}	All other compounds	3×10^{3}	1×10^{1}	(83)	5.5×10^{-3}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	2×10^{3}	1×10^{1}	(40)	7.4×10^{-3}
	ing.	8×10^{-1}	All compounds	2×10^{3}	9	(83)	8.5×10^{-3}
TC-96M (51.5m)	inh. D	8×10^{-1}	All other compounds	2×10^{5}	2×10^{1}	(39)	6.2×10^{-5}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	2×10^{5}	9	(16)	8.5×10^{-5}
	ing.	8×10^{-1}	All compounds	1×10^{5}	1×10^{1}	(27)	1.6×10^{-4}
TC-97 (2.6×10^{6}y)	inh. D	8×10^{-1}	All other compounds	2×10^{4}	1×10^{2}	(90)	9.5×10^{-4}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	2×10^{3}	8×10^{1}	(16)	7.3×10^{-3}
	ing.	8×10^{-1}	All compounds	1×10^{4}	1×10^{2}	(90)	1.3×10^{-3}
TC-97M (87d)	inh. D	8×10^{-1}	All other compounds	2×10^{3}	1×10^{1}	(89)	7.4×10^{-3}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	4×10^{2}	1×10^{1}	(20)	3.5×10^{-2}
	ing.	8×10^{-1}	All compounds	1×10^{3}	1×10^{1}	(89)	1.0×10^{-2}
TC-98 (4.2×10^{6}y)	inh. D	8×10^{-1}	All other compounds	7×10^{2}	6	(90)	2.0×10^{-2}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	1×10^{2}	4	(16)	1.4×10^{-1}
	ing.	8×10^{-1}	All compounds	5×10^{2}	6	(90)	2.8×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/μCi)
TC-99	inh.	D	8×10^{-1}	All other compounds	2×10^{3}	1×10^{1}	(90)	9.1×10^{-3}
$(2.13\times10^{5}y)$		W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	2×10^{2}	1×10^{1}	(16)	6.2×10^{-2}
	ing.		8×10^{-1}	All compounds	1×10^{3}	1×10^{1}	(90)	1.3×10^{-2}
TC-99M	inh.	D	8×10^{-1}	All other compounds	1×10^{5}	8×10^{1}	(60)	1.1×10^{-4}
(6.02h)		W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	1×10^{5}	6×10^{1}	(32)	1.1×10^{-4}
	ing.		8×10^{-1}	All compounds	6×10^{4}	5×10^{1}	(64)	2.7×10^{-4}
TC-101	inh.	D	8×10^{-1}	All other compounds	1×10^{5}	3	(25)	1.0×10^{-4}
(14.2m)		W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	1×10^{5}	2	(10)	1.1×10^{-4}
	ing.		8×10^{-1}	All compounds	3×10^{4}	1	(6)	5.5×10^{-4}
TC-104	inh.	D	8×10^{-1}	All other compounds	3×10^{4}	8×10^{-1}	(28)	4.5×10^{-4}
(18.2m)		W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	3×10^{4}	6×10^{-1}	(11)	4.8×10^{-4}
	ing.		8×10^{-1}	All compounds	6×10^{3}	3×10^{-1}	(9)	2.3×10^{-3}
RU-94	inh.	D	5×10^{-2}	All other compounds	3×10^{4}	2	(33)	5.6×10^{-4}
(51.8m)		W	5×10^{-2}	Halides	2×10^{4}	1	(14)	6.6×10^{-4}
		Y	5×10^{-2}	Oxides and hydroxides	2×10^{4}	1	(1)	7.2×10^{-4}
	ing.		5×10^{-2}	Most compounds	9×10^{3}	1	(1)	1.7×10^{-3}
RU-97	inh.	D	5×10^{-2}	All other compounds	2×10^{4}	9×10^{1}	(79)	2.7×10^{-4}
(2.9d)		W	5×10^{-2}	Halides	1×10^{4}	5×10^{1}	(19)	1.3×10^{-3}
		Y	5×10^{-2}	Oxides and hydroxides	1×10^{4}	4×10^{1}	(5)	1.4×10^{-3}
	ing.		5×10^{-2}	Most compounds	4×10^{3}	2×10^{1}	(11)	3.6×10^{-3}
RU-103	inh.	D	5×10^{-2}	All other compounds	2×10^{3}	6×10^{1}	(96)	2.7×10^{-3}
(39.28d)		W	5×10^{-2}	Halides	4×10^{2}	9	(30)	3.6×10^{-2}
		Y	5×10^{-2}	Oxides and hydroxides	3×10^{2}	7	(7)	5.8×10^{-2}
	ing.		5×10^{-2}	Most compounds	6×10^{2}	5	(41)	2.4×10^{-2}
RU-105	inh.	D	5×10^{-2}	All other compounds	1×10^{4}	5	(44)	1.4×10^{-3}
(4.44h)		W	5×10^{-2}	Halides	7×10^{3}	2	(15)	2.0×10^{-3}
		Y	5×10^{-2}	Oxides and hydroxides	7×10^{3}	2	(2)	2.1×10^{-3}
	ing.		5×10^{-2}	Most compounds	3×10^{3}	2	(3)	5.9×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
RU-106 (368.2d)	inh.	D	5×10^{-2}	All other compounds	1×10^{2}	1×10^{1}	(99)	5.1×10^{-2}
		W	5×10^{-2}	Halides	2×10^{1}	1	(54)	7.8×10^{-1}
		Y	5×10^{-2}	Oxides and hydroxides	4	6×10^{-1}	(7)	3.8
	ing.		5×10^{-2}	Most compounds	6×10^{1}	1	(74)	2.6×10^{-1}
RH-99 (16d)	inh.	D	5×10^{-2}	All other compounds	3×10^{3}	5×10^{1}	(93)	1.7×10^{-3}
		W	5×10^{-2}	Halides	1×10^{3}	2×10^{1}	(26)	1.2×10^{-2}
		Y	5×10^{-2}	Oxides and hydroxides	1×10^{3}	1×10^{1}	(7)	1.5×10^{-2}
	ing.		5×10^{-2}	All compounds	1×10^{3}	7	(28)	1.3×10^{-2}
RH-99M (4.7h)	inh.	D	5×10^{-2}	All other compounds	7×10^{4}	3×10^{1}	(44)	2.2×10^{-4}
		W	5×10^{-2}	Halides	5×10^{4}	2×10^{1}	(15)	2.8×10^{-4}
		Y	5×10^{-2}	Oxides and hydroxides	5×10^{4}	2×10^{1}	(2)	2.9×10^{-4}
	ing.		5×10^{-2}	All compounds	1×10^{4}	9	(3)	1.2×10^{-3}
RH-100 (20.8h)	inh.	D	5×10^{-2}	All other compounds	5×10^{3}	9	(62)	9.9×10^{-4}
		W	5×10^{-2}	Halides	4×10^{3}	7	(15)	1.1×10^{-3}
		Y	5×10^{-2}	Oxides and hydroxides	4×10^{3}	6	(3)	1.3×10^{-3}
	ing.		5×10^{-2}	All compounds	1×10^{3}	3	(5)	4.1×10^{-3}
RH-101 (3.2y)	inh.	D	5×10^{-2}	All other compounds	4×10^{2}	1×10^{2}	(99)	1.1×10^{-2}
		W	5×10^{-2}	Halides	5×10^{2}	5×10^{1}	(67)	3.3×10^{-2}
		Y	5×10^{-2}	Oxides and hydroxides	6×10^{1}	2×10^{1}	(8)	2.7×10^{-1}
	ing.		5×10^{-2}	All compounds	2×10^{3}	4×10^{1}	(84)	9.9×10^{-3}
RH-101M (4.34d)	inh.	D	5×10^{-2}	All other compounds	1×10^{4}	8×10^{1}	(83)	4.2×10^{-4}
		W	5×10^{-2}	Halides	7×10^{3}	4×10^{1}	(21)	2.2×10^{-3}
		Y	5×10^{-2}	Oxides and hydroxides	6×10^{3}	3×10^{1}	(6)	2.4×10^{-3}
	ing.		5×10^{-2}	All compounds	3×10^{3}	1×10^{1}	(14)	5.4×10^{-3}
RH-102 (2.9y)	inh.	D	5×10^{-2}	All other compounds	9×10^{1}	2×10^{1}	(99)	5.4×10^{-2}
		W	5×10^{-2}	Halides	2×10^{2}	2×10^{1}	(66)	8.3×10^{-2}
		Y	5×10^{-2}	Oxides and hydroxides	3×10^{1}	7	(8)	5.8×10^{-1}
	ing.		5×10^{-2}	All compounds	4×10^{2}	1×10^{1}	(83)	1.3×10^{-2}
RH-102M (207d)	inh.	D	5×10^{-2}	All other compounds	5×10^{2}	5×10^{1}	(99)	9.4×10^{-3}
		W	5×10^{-2}	Halides	2×10^{2}	8	(46)	9.8×10^{-2}
		Y	5×10^{-2}	Oxides and hydroxides	4×10^{1}	4	(6)	3.5×10^{-1}
	ing.		5×10^{-2}	All compounds	4×10^{2}	6	(67)	3.6×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/μCi)
RH-103M (56.12m)	inh. D	5×10^{-2}	All other compounds	5×10^{5}	5×10^{1}	(34)	2.9×10^{-5}
	W	5×10^{-2}	Halides	5×10^{5}	3×10^{1}	(15)	3.3×10^{-5}
	Y	5×10^{-2}	Oxides and hydroxides	4×10^{5}	2×10^{1}	(1)	3.5×10^{-5}
	ing.	5×10^{-2}	All compounds	2×10^{5}	2×10^{1}	(1)	9.5×10^{-5}
RH-105 (35.36h)	inh. D	5×10^{-2}	All other compounds	7×10^{3}	2×10^{1}	(69)	2.2×10^{-3}
	W	5×10^{-2}	Halides	4×10^{3}	9	(17)	4.3×10^{-3}
	Y	5×10^{-2}	Oxides and hydroxides	3×10^{3}	7	(4)	5.0×10^{-3}
	ing.	5×10^{-2}	All compounds	1×10^{3}	3	(7)	1.4×10^{-2}
RH-106M (132m)	inh. D	5×10^{-2}	All other compounds	2×10^{4}	4	(39)	7.3×10^{-4}
	W	5×10^{-2}	Halides	2×10^{4}	3	(15)	8.6×10^{-4}
	Y	5×10^{-2}	Oxides and hydroxides	2×10^{4}	2	(1)	9.2×10^{-4}
	ing.	5×10^{-2}	All compounds	6×10^{3}	2	(2)	2.7×10^{-3}
RH-107 (21.7m)	inh. D	5×10^{-2}	All other compounds	1×10^{5}	3	(28)	1.4×10^{-4}
	W	5×10^{-2}	Halides	1×10^{5}	2	(12)	1.6×10^{-4}
	Y	5×10^{-2}	Oxides and hydroxides	9×10^{4}	2	(1)	1.7×10^{-4}
	ing.	5×10^{-2}	All compounds	2×10^{4}	1	(0)	6.9×10^{-4}
PD-100 (3.63d)	inh. D	5×10^{-3}	All other compounds	9×10^{2}	4	(77)	1.6×10^{-2}
	W	5×10^{-3}	Nitrates	1×10^{3}	6	(14)	1.2×10^{-2}
	Y	5×10^{-3}	Oxides and hydroxides	1×10^{3}	5	(1)	1.3×10^{-2}
	ing.	5×10^{-3}	All compounds	6×10^{2}	2	(1)	2.7×10^{-2}
PD-101 (8.27h)	inh. D	5×10^{-3}	All other compounds	3×10^{4}	3×10^{1}	(46)	4.3×10^{-4}
	W	5×10^{-3}	Nitrates	3×10^{4}	2×10^{1}	(12)	5.8×10^{-4}
	Y	5×10^{-3}	Oxides and hydroxides	2×10^{4}	1×10^{1}	(1)	6.2×10^{-4}
	ing.	5×10^{-3}	All compounds	8×10^{3}	1×10^{1}	(0)	1.8×10^{-3}
PD-103 (16.96d)	inh. D	5×10^{-3}	All other compounds	2×10^{3}	3×10^{1}	(89)	7.1×10^{-3}
	W	5×10^{-3}	Nitrates	2×10^{3}	2×10^{1}	(16)	7.8×10^{-3}
	Y	5×10^{-3}	Oxides and hydroxides	2×10^{3}	2×10^{1}	(1)	9.9×10^{-3}
	ing.	5×10^{-3}	All compounds	2×10^{3}	8	(2)	8.6×10^{-3}
PD-107 (6.5×10^{6}y)	inh. D	5×10^{-3}	All other compounds	6×10^{3}	1×10^{2}	(94)	2.4×10^{-3}
	W	5×10^{-3}	Nitrates	3×10^{3}	1×10^{2}	(13)	5.7×10^{-3}
	Y	5×10^{-3}	Oxides and hydroxides	1×10^{2}	9×10^{1}	(0)	1.1×10^{-1}
	ing.	5×10^{-3}	All compounds	9×10^{3}	4×10^{1}	(4)	1.7×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
PD-109 (13.427h)	inh.	D	5×10^{-3}	All other compounds	6×10^{3}	6	(51)	2.7×10^{-3}
		W	5×10^{-3}	Nitrates	4×10^{3}	4	(12)	4.3×10^{-3}
		Y	5×10^{-3}	Oxides and hydroxides	3×10^{3}	3	(1)	4.5×10^{-3}
	ing.		5×10^{-3}	All compounds	9×10^{2}	1	(0)	1.8×10^{-2}
AG-102 (12.9m)	inh.	D	5×10^{-2}	All other compounds	8×10^{4}	1	(23)	1.9×10^{-4}
		W	5×10^{-2}	Nitrates and sulphides	8×10^{4}	9×10^{-1}	(9)	2.0×10^{-4}
		Y	5×10^{-2}	Oxides and hydroxides	7×10^{4}	9×10^{-1}	(1)	2.1×10^{-4}
	ing.		5×10^{-2}	All compounds	1×10^{4}	5×10^{-1}	(0)	1.1×10^{-3}
AG-103 (65.7m)	inh.	D	5×10^{-2}	All other compounds	6×10^{4}	6	(35)	2.6×10^{-4}
		W	5×10^{-2}	Nitrates and sulphides	5×10^{4}	3	(15)	3.2×10^{-4}
		Y	5×10^{-2}	Oxides and hydroxides	4×10^{4}	3	(1)	3.4×10^{-4}
	ing.		5×10^{-2}	All compounds	2×10^{4}	3	(1)	8.8×10^{-4}
AG-104 (69.2m)	inh.	D	5×10^{-2}	All other compounds	7×10^{4}	8	(36)	2.1×10^{-4}
		W	5×10^{-2}	Nitrates and sulphides	6×10^{4}	5	(15)	2.3×10^{-4}
		Y	5×10^{-2}	Oxides and hydroxides	6×10^{4}	4	(1)	2.5×10^{-4}
	ing.		5×10^{-2}	All compounds	2×10^{4}	3	(1)	9.2×10^{-4}
AG-104M (33.5m)	inh.	D	5×10^{-2}	All other compounds	5×10^{4}	3	(31)	3.0×10^{-4}
		W	5×10^{-2}	Nitrates and sulphides	5×10^{4}	2	(13)	3.3×10^{-4}
		Y	5×10^{-2}	Oxides and hydroxides	4×10^{4}	1	(1)	3.5×10^{-4}
	ing.		5×10^{-2}	All compounds	1×10^{4}	1	(0)	1.3×10^{-3}
AG-105 (41.0d)	inh.	D	5×10^{-2}	All other compounds	4×10^{2}	2×10^{1}	(97)	3.7×10^{-2}
		W	5×10^{-2}	Nitrates and sulphides	1×10^{3}	3×10^{1}	(36)	1.5×10^{-2}
		Y	5×10^{-2}	Oxides and hydroxides	7×10^{2}	2×10^{1}	(8)	2.3×10^{-2}
	ing.		5×10^{-2}	All compounds	2×10^{3}	1×10^{1}	(48)	8.8×10^{-3}
AG-106 (23.96m)	inh.	D	5×10^{-2}	All other compounds	8×10^{4}	3	(29)	1.9×10^{-4}
		W	5×10^{-2}	Nitrates and sulphides	7×10^{4}	2	(12)	2.0×10^{-4}
		Y	5×10^{-2}	Oxides and hydroxides	7×10^{4}	2	(1)	2.2×10^{-4}
	ing.		5×10^{-2}	All compounds	2×10^{4}	1	(0)	9.0×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
AG-106M (8.41d)	inh.	D	5×10^{-2}	All other compounds	3×10^{2}	5	(91)	4.5×10^{-2}
		W	5×10^{-2}	Nitrates and sulphides	1×10^{3}	9	(28)	1.5×10^{-2}
		Y	5×10^{-2}	Oxides and hydroxides	1×10^{3}	8	(9)	1.6×10^{-2}
	ing.		5×10^{-2}	All compounds	5×10^{2}	3	(24)	9.6×10^{-3}
AG-108M (127y)	inh.	D	5×10^{-2}	All other compounds	6×10^{1}	5	(99)	2.4×10^{-1}
		W	5×10^{-2}	Nitrates and sulphides	1×10^{2}	9	(43)	1.0×10^{-1}
		Y	5×10^{-2}	Oxides and hydroxides	9	5	(2)	1.7
	ing.		5×10^{-2}	All compounds	5×10^{2}	7	(66)	2.8×10^{-2}
AG-110M (249.9d)	inh.	D	5×10^{-2}	All other compounds	5×10^{1}	4	(98)	3.0×10^{-1}
		W	5×10^{-2}	Nitrates and sulphides	1×10^{2}	6	(41)	1.2×10^{-1}
		Y	5×10^{-2}	Oxides and hydroxides	3×10^{1}	4	(5)	4.4×10^{-1}
	ing.		5×10^{-2}	All compounds	4×10^{2}	5	(62)	4.0×10^{-2}
AG-111 (7.45d)	inh.	D	5×10^{-2}	All other compounds	5×10^{2}	6	(90)	3.2×10^{-2}
		W	5×10^{-2}	Nitrates and sulphides	5×10^{2}	4	(28)	2.9×10^{-2}
		Y	5×10^{-2}	Oxides and hydroxides	5×10^{2}	3	(9)	3.2×10^{-2}
	ing.		5×10^{-2}	All compounds	3×10^{2}	1	(23)	5.5×10^{-2}
AG-112 (3.12h)	inh.	D	5×10^{-2}	All other compounds	5×10^{3}	2	(42)	3.0×10^{-3}
		W	5×10^{-2}	Nitrates and sulphides	4×10^{3}	9×10^{-1}	(16)	3.7×10^{-3}
		Y	5×10^{-2}	Oxides and hydroxides	4×10^{3}	8×10^{-1}	(1)	4.0×10^{-3}
	ing.		5×10^{-2}	All compounds	2×10^{3}	8×10^{-1}	(2)	9.9×10^{-3}
AG-115 (20.0m)	inh.	D	5×10^{-2}	All other compounds	4×10^{4}	1	(27)	3.4×10^{-4}
		W	5×10^{-2}	Nitrates and sulphides	4×10^{4}	7×10^{-1}	(11)	4.3×10^{-4}
		Y	5×10^{-2}	Oxides and hydroxides	3×10^{4}	6×10^{-1}	(1)	4.5×10^{-4}
	ing.		5×10^{-2}	All compounds	1×10^{4}	5×10^{-1}	(0)	1.5×10^{-3}
CD-104 (57.7m)	inh.	D	5×10^{-2}	All other compounds	7×10^{4}	7	(35)	2.0×10^{-4}
		W	5×10^{-2}	Sulphides, halides and nitrates	6×10^{4}	4	(15)	2.3×10^{-4}
		Y	5×10^{-2}	Oxides and hydroxides	6×10^{4}	3	(1)	2.5×10^{-4}
	ing.		5×10^{-2}	All inorganic compounds	2×10^{4}	3	(1)	9.1×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
CD-107 (6.49h)	inh.	D	5×10^{-2}	All other compounds	4×10^{4}	3×10^{1}	(49)	3.5×10^{-4}
		W	5×10^{-2}	Sulphides, halides and nitrates	3×10^{4}	1×10^{1}	(16)	5.0×10^{-4}
		Y	5×10^{-2}	Oxides and hydroxides	3×10^{4}	1×10^{1}	(2)	5.3×10^{-4}
	ing.		5×10^{-2}	All inorganic compounds	9×10^{3}	9	(3)	1.6×10^{-3}
CD-109 (464d)	inh.	D	5×10^{-2}	All other compounds	1×10^{1}	9	(100)	1.5
		W	5×10^{-2}	Sulphides, halides and nitrates	4×10^{1}	1×10^{1}	(88)	4.2×10^{-1}
		Y	5×10^{-2}	Oxides and hydroxides	5×10^{1}	1×10^{1}	(30)	2.9×10^{-1}
	ing.		5×10^{-2}	All inorganic compounds	1×10^{2}	9	(95)	1.5×10^{-1}
CD-113 (9.3×10^{15}y)	inh.	D	5×10^{-2}	All other compounds	7×10^{-1}	9	(100)	2.2×10^{1}
		W	5×10^{-2}	Sulphides, halides and nitrates	2	9	(99)	6.6
		Y	5×10^{-2}	Oxides and hydroxides	4	1×10^{1}	(77)	3.5
	ing.		5×10^{-2}	All inorganic compounds	7	9	(100)	2.3
CD-113M (13.6y)	inh.	D	5×10^{-2}	All other compounds	7×10^{-1}	4	(100)	2.0×10^{1}
		W	5×10^{-2}	Sulphides, halides and nitrates	2	5	(98)	6.0
		Y	5×10^{-2}	Oxides and hydroxides	5	7	(66)	2.9
	ing.		5×10^{-2}	All inorganic compounds	7	5	(99)	2.1
CD-115 (53.46h)	inh.	D	5×10^{-2}	All other compounds	5×10^{2}	2	(80)	3.2×10^{-2}
		W	5×10^{-2}	Sulphides, halides and nitrates	8×10^{2}	3	(22)	1.9×10^{-2}
		Y	5×10^{-2}	Oxides and hydroxides	7×10^{2}	2	(6)	2.2×10^{-2}
	ing.		5×10^{-2}	All inorganic compounds	3×10^{2}	1	(11)	5.5×10^{-2}
CD-115M (44.6d)	inh.	D	5×10^{-2}	All other compounds	2×10^{1}	1	(99)	9.2×10^{-1}
		W	5×10^{-2}	Sulphides, halides and nitrates	7×10^{1}	3	(54)	2.2×10^{-1}
		Y	5×10^{-2}	Oxides and hydroxides	5×10^{1}	2	(16)	2.9×10^{-1}
	ing.		5×10^{-2}	All inorganic compounds	1×10^{2}	2	(66)	1.1×10^{-1}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/μCi)
CD-117 (2.49h)	inh. D	5×10^{-2}	All other compounds	9×10^{3}	2	(41)	1.7×10^{-3}
	W	5×10^{-2}	Sulphides, halides and nitrates	7×10^{3}	1	(16)	2.2×10^{-3}
	Y	5×10^{-2}	Oxides and hydroxides	6×10^{3}	1	(1)	2.3×10^{-3}
	ing.	5×10^{-2}	All inorganic compounds	2×10^{3}	9×10^{-1}	(2)	7.0×10^{-3}
CD-117M (3.36h)	inh. D	5×10^{-2}	All other compounds	1×10^{4}	4	(43)	1.4×10^{-3}
	W	5×10^{-2}	Sulphides, halides and nitrates	9×10^{3}	2	(16)	1.7×10^{-3}
	Y	5×10^{-2}	Oxides and hydroxides	8×10^{3}	2	(2)	1.9×10^{-3}
	ing.	5×10^{-2}	All inorganic compounds	2×10^{3}	1	(2)	6.3×10^{-3}
IN-109 (4.2h)	inh. D	2×10^{-2}	All other compounds	3×10^{4}	1×10^{1}	(44)	1.7×10^{-4}
	W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	5×10^{4}	1×10^{1}	(15)	3.2×10^{-4}
	ing.	2×10^{-2}	All compounds	1×10^{4}	8	(1)	1.2×10^{-3}
IN-110 (4.9h)	inh. D	2×10^{-2}	All other compounds	2×10^{4}	9	(46)	2.7×10^{-4}
	W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	2×10^{4}	8	(15)	6.7×10^{-4}
	ing.	2×10^{-2}	All compounds	4×10^{3}	3	(1)	1.4×10^{-3}
IN-110 (69.1m)	inh. D	2×10^{-2}	All other compounds	2×10^{4}	3	(36)	6.3×10^{-4}
	W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	2×10^{4}	2	(15)	7.2×10^{-4}
	ing.	2×10^{-2}	All compounds	7×10^{3}	1	(0)	2.1×10^{-3}
IN-111 (2.83d)	inh. D	2×10^{-2}	All other compounds	4×10^{3}	2×10^{1}	(82)	1.2×10^{-3}
	W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	6×10^{3}	2×10^{1}	(21)	2.6×10^{-3}
	ing.	2×10^{-2}	All compounds	2×10^{3}	8	(6)	7.4×10^{-3}
IN-112 (14.4m)	inh. D	2×10^{-2}	All other compounds	3×10^{5}	5	(24)	5.5×10^{-5}
	W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	3×10^{5}	4	(10)	5.9×10^{-5}
	ing.	2×10^{-2}	All compounds	5×10^{4}	2	(0)	3.0×10^{-4}
IN-113M (1.658h)	inh. D	2×10^{-2}	All other compounds	8×10^{4}	1×10^{1}	(38)	1.8×10^{-4}
	W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	7×10^{4}	8	(16)	2.2×10^{-4}
	ing.	2×10^{-2}	All compounds	3×10^{4}	8	(1)	4.9×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
IN-114M	inh.	D	2×10^{-2}	All other compounds	2×10^{1}	2	(99)	3.1×10^{-1}
(49.51d)		W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	6×10^{1}	2	(52)	2.7×10^{-1}
	ing.		2×10^{-2}	All compounds	9×10^{1}	8×10^{-1}	(46)	1.6×10^{-1}
IN-115	inh.	D	2×10^{-2}	All other compounds	4×10^{-1}	9	(100)	1.4×10^{1}
(5.1×10^{15}y)		W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	1	9	(99)	3.7
	ing.		2×10^{-2}	All compounds	9	9	(100)	5.7×10^{-1}
IN-115M	inh.	D	2×10^{-2}	All other compounds	3×10^{4}	1×10^{1}	(45)	5.1×10^{-4}
(4.486h)		W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	2×10^{4}	7	(15)	6.7×10^{-4}
	ing.		2×10^{-2}	All compounds	7×10^{3}	5	(1)	2.1×10^{-3}
IN-116M	inh.	D	2×10^{-2}	All other compounds	5×10^{4}	4	(34)	3.1×10^{-4}
(54.15m)		W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	4×10^{4}	2	(15)	3.4×10^{-4}
	ing.		2×10^{-2}	All compounds	1×10^{4}	2	(0)	1.3×10^{-3}
IN-117	inh.	D	2×10^{-2}	All other compounds	8×10^{4}	6	(33)	1.8×10^{-4}
(43.8m)		W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	7×10^{4}	3	(14)	2.0×10^{-4}
	ing.		2×10^{-2}	All compounds	2×10^{4}	2	(0)	7.3×10^{-4}
IN-117M	inh.	D	2×10^{-2}	All other compounds	2×10^{4}	4	(39)	8.1×10^{-4}
(116.5m)		W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	2×10^{4}	2	(16)	9.7×10^{-4}
	ing.		2×10^{-2}	All compounds	7×10^{3}	2	(1)	2.3×10^{-3}
IN-119M	inh.	D	2×10^{-2}	All other compounds	5×10^{4}	1	(26)	2.8×10^{-4}
(18.0m)		W	2×10^{-2}	Oxides, hydroxides, halides and nitrates	5×10^{4}	9×10^{-1}	(11)	3.0×10^{-4}
	ing.		2×10^{-2}	All compounds	1×10^{4}	5×10^{-1}	(0)	1.4×10^{-3}
SN-110	inh.	D	2×10^{-2}	All other compounds	9×10^{3}	3	(39)	1.7×10^{-3}
(4.0h)		W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	6×10^{3}	2	(13)	2.4×10^{-3}
	ing.		2×10^{-2}	All compounds	2×10^{3}	1	(1)	9.5×10^{-3}
SN-111	inh.	D	2×10^{-2}	All other compounds	1×10^{5}	6	(30)	1.3×10^{-4}
(35.3m)		W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	1×10^{5}	3	(13)	1.5×10^{-4}
	ing.		2×10^{-2}	All compounds	3×10^{4}	3	(0)	5.3×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/μCi)
SN-113 (115.1d)	inh. D	2×10^{-2}	All other compounds	5×10^{2}	3×10^{1}	(98)	9.2×10^{-3}
	W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	2×10^{2}	8	(35)	6.8×10^{-2}
	ing.	2×10^{-2}	All compounds	5×10^{2}	4	(33)	2.9×10^{-2}
SN-117M (13.61d)	inh. D	2×10^{-2}	All other compounds	1×10^{3}	1×10^{1}	(89)	4.0×10^{-2}
	W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	7×10^{2}	7	(17)	2.3×10^{-2}
	ing.	2×10^{-2}	All compounds	5×10^{2}	2	(9)	2.9×10^{-2}
SN-119M (293.0d)	inh. D	2×10^{-2}	All other compounds	8×10^{2}	8×10^{1}	(99)	6.5×10^{-3}
	W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	4×10^{2}	2×10^{1}	(46)	4.3×10^{-2}
	ing.	2×10^{-2}	All compounds	1×10^{3}	9	(47)	1.5×10^{-2}
SN-121 (27.06h)	inh. D	2×10^{-2}	All other compounds	1×10^{4}	2×10^{1}	(56)	1.3×10^{-3}
	W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	6×10^{3}	1×10^{1}	(10)	2.5×10^{-3}
	ing.	2×10^{-2}	All compounds	2×10^{3}	5	(2)	8.7×10^{-3}
SN-121M (55y)	inh. D	2×10^{-2}	All other compounds	2×10^{2}	6×10^{1}	(99)	2.0×10^{-2}
	W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	2×10^{2}	2×10^{1}	(64)	7.5×10^{-2}
	ing.	2×10^{-2}	All compounds	9×10^{2}	1×10^{1}	(67)	1.7×10^{-2}
SN-123 (129.2d)	inh. D	2×10^{-2}	All other compounds	2×10^{2}	1×10^{1}	(98)	2.1×10^{-2}
	W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	7×10^{1}	3	(36)	2.3×10^{-1}
	ing.	2×10^{-2}	All compounds	2×10^{2}	1	(35)	9.6×10^{-2}
SN-123M (40.08m)	inh. D	2×10^{-2}	All other compounds	6×10^{4}	3	(31)	2.6×10^{-4}
	W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	5×10^{4}	2	(13)	2.9×10^{-4}
	ing.	2×10^{-2}	All compounds	1×10^{4}	2	(0)	1.0×10^{-3}
SN-125 (9.64d)	inh. D	2×10^{-2}	All other compounds	4×10^{2}	3	(86)	1.3×10^{-2}
	W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	2×10^{2}	2	(16)	8.3×10^{-2}
	ing.	2×10^{-2}	All compounds	1×10^{2}	5×10^{-1}	(7)	1.4×10^{-1}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
SN-126 (1.0×10^5y)	inh. D	2×10^{-2}	All other compounds	2×10^1	6	(99)	2.1×10^{-1}
	W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	3×10^1	3	(64)	5.6×10^{-1}
	ing.	2×10^{-2}	All compounds	9×10^1	1	(67)	1.6×10^{-1}
SN-127 (2.10h)	inh. D	2×10^{-2}	All other compounds	1×10^4	3	(36)	1.0×10^{-3}
	W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	9×10^3	1	(14)	1.7×10^{-3}
	ing.	2×10^{-2}	All compounds	4×10^3	2	(1)	3.4×10^{-3}
SN-128 (59.1m)	inh. D	2×10^{-2}	All other compounds	1×10^4	1	(33)	1.0×10^{-3}
	W	2×10^{-2}	Sulphides, oxides, hydroxides, halides and nitrates	1×10^4	8×10^{-1}	(14)	1.2×10^{-3}
	ing.	2×10^{-2}	All compounds	5×10^3	8×10^{-1}	(0)	3.1×10^{-3}
SB-115 (31.8m)	inh. D	1×10^{-1}	All other compounds	1×10^5	5	(30)	1.3×10^{-4}
	W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	1×10^5	3	(13)	1.4×10^{-4}
	ing.	1×10^{-1}	Tartar emetic	2×10^4	2	(1)	6.0×10^{-4}
		1×10^{-2}	All other compounds	2×10^4	2	(0)	6.0×10^{-4}
SB-116M (60.3m)	inh. D	1×10^{-1}	All other compounds	6×10^4	6	(34)	2.5×10^{-4}
	W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	5×10^4	3	(15)	2.8×10^{-4}
	ing.	1×10^{-1}	Tartar emetic	1×10^4	2	(2)	1.1×10^{-3}
		1×10^{-2}	All other compounds	1×10^4	2	(0)	1.1×10^{-3}
SB-117 (2.80h)	inh. D	1×10^{-1}	All other compounds	2×10^5	5×10^1	(40)	8.8×10^{-5}
	W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	1×10^5	3×10^1	(15)	1.1×10^{-4}
	ing.	1×10^{-1}	Tartar emetic	4×10^4	2×10^1	(4)	3.4×10^{-4}
		1×10^{-2}	All other compounds	4×10^4	2×10^1	(0)	3.5×10^{-4}
SB-118M (5.00h)	inh. D	1×10^{-1}	All other compounds	2×10^4	1×10^1	(44)	2.1×10^{-4}
	W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	2×10^4	8	(14)	7.0×10^{-4}
	ing.	1×10^{-1}	Tartar emetic	4×10^3	3	(6)	3.4×10^{-3}
		1×10^{-2}	All other compounds	4×10^3	3	(1)	3.6×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
SB-119 (38.1h)	inh.	D	1×10^{-1}	All other compounds	3×10^{4}	9×10^{1}	(67)	4.4×10^{-4}
		W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	2×10^{4}	4×10^{1}	(12)	9.4×10^{-4}
	ing.		1×10^{-1}	Tartar emetic	5×10^{3}	2×10^{1}	(12)	2.8×10^{-3}
			1×10^{-2}	All other compounds	5×10^{3}	2×10^{1}	(1)	3.0×10^{-3}
SB-120 (15.89m)	inh.	D	1×10^{-1}	All other compounds	2×10^{5}	4	(25)	7.8×10^{-5}
		W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	2×10^{5}	3	(10)	8.4×10^{-5}
	ing.		1×10^{-1}	Tartar emetic	4×10^{4}	2	(0)	4.1×10^{-4}
			1×10^{-2}	All other compounds	4×10^{4}	2	(0)	4.1×10^{-4}
SB-120 (5.76d)	inh.	D	1×10^{-1}	All other compounds	2×10^{3}	1×10^{1}	(80)	2.1×10^{-3}
		W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	1×10^{3}	8	(13)	1.1×10^{-2}
	ing.		1×10^{-1}	Tartar emetic	6×10^{2}	3	(20)	2.3×10^{-2}
			1×10^{-2}	All other compounds	6×10^{2}	2	(2)	2.5×10^{-2}
SB-122 (2.70d)	inh.	D	1×10^{-1}	All other compounds	1×10^{3}	5	(73)	1.1×10^{-2}
		W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	6×10^{2}	2	(13)	2.5×10^{-2}
	ing.		1×10^{-1}	Tartar emetic	2×10^{2}	9×10^{-1}	(15)	6.7×10^{-2}
			1×10^{-2}	All other compounds	2×10^{2}	7×10^{-1}	(2)	7.3×10^{-2}
SB-124 (60.20d)	inh.	D	1×10^{-1}	All other compounds	9×10^{2}	1×10^{1}	(89)	5.7×10^{-3}
		W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	1×10^{2}	2	(9)	1.5×10^{-1}
	ing.		1×10^{-1}	Tartar emetic	2×10^{2}	1	(33)	7.9×10^{-2}
			1×10^{-2}	All other compounds	2×10^{2}	8×10^{-1}	(4)	8.6×10^{-2}
SB-124M (20.2m)	inh.	D	1×10^{-1}	All other compounds	4×10^{5}	1×10^{1}	(27)	4.0×10^{-5}
		W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	2×10^{5}	4	(11)	7.0×10^{-5}
	ing.		1×10^{-1}	Tartar emetic	8×10^{4}	4	(0)	2.0×10^{-4}
			1×10^{-2}	All other compounds	8×10^{4}	4	(0)	2.0×10^{-4}
SB-125 (2.77y)	inh.	D	1×10^{-1}	All other compounds	2×10^{3}	3×10^{1}	(92)	2.4×10^{-3}
		W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	2×10^{2}	7	(10)	8.0×10^{-2}
	ing.		1×10^{-1}	Tartar emetic	7×10^{2}	5	(41)	2.1×10^{-2}
			1×10^{-2}	All other compounds	6×10^{2}	3	(6)	2.3×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
SB-126 (12.4d)	inh. D	1×10^{-1}	All other compounds	1×10^{3}	9	(84)	1.2×10^{-2}
	W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	3×10^{2}	3	(12)	5.1×10^{-2}
	ing.	1×10^{-1}	Tartar emetic	2×10^{2}	1	(24)	6.6×10^{-2}
		1×10^{-2}	All other compounds	2×10^{2}	1	(3)	7.2×10^{-2}
SB-126M (19.0m)	inh. D	1×10^{-1}	All other compounds	8×10^{4}	2	(27)	1.9×10^{-4}
	W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	7×10^{4}	1	(11)	2.1×10^{-4}
	ing.	1×10^{-1}	Tartar emetic	2×10^{4}	8×10^{-1}	(0)	9.8×10^{-4}
		1×10^{-2}	All other compounds	2×10^{4}	8×10^{-1}	(0)	9.8×10^{-4}
SB-127 (3.85d)	inh. D	1×10^{-1}	All other compounds	1×10^{3}	6	(77)	1.1×10^{-2}
	W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	5×10^{2}	2	(13)	2.8×10^{-2}
	ing.	1×10^{-1}	Tartar emetic	2×10^{2}	1	(17)	6.6×10^{-2}
		1×10^{-2}	All other compounds	2×10^{2}	8×10^{-1}	(2)	7.3×10^{-2}
SB-128 (10.4m)	inh. D	1×10^{-1}	All other compounds	2×10^{5}	2	(21)	9.4×10^{-5}
	W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	2×10^{5}	2	(8)	9.8×10^{-5}
	ing.	1×10^{-1}	Tartar emetic	2×10^{4}	7×10^{-1}	(0)	6.0×10^{-4}
		1×10^{-2}	All other compounds	2×10^{4}	7×10^{-1}	(0)	6.0×10^{-4}
SB-128 (9.01h)	inh. D	1×10^{-1}	All other compounds	3×10^{3}	3	(50)	4.7×10^{-3}
	W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	2×10^{3}	1	(13)	7.1×10^{-3}
	ing.	1×10^{-1}	Tartar emetic	7×10^{2}	8×10^{-1}	(7)	2.3×10^{-2}
		1×10^{-2}	All other compounds	6×10^{2}	8×10^{-1}	(1)	2.5×10^{-2}
SB-129 (4.32h)	inh. D	1×10^{-1}	All other compounds	6×10^{3}	3	(43)	2.4×10^{-3}
	W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	5×10^{3}	1	(14)	3.3×10^{-3}
	ing.	1×10^{-1}	Tartar emetic	1×10^{3}	1	(5)	1.1×10^{-2}
		1×10^{-2}	All other compounds	1×10^{3}	9×10^{-1}	(0)	1.1×10^{-2}
SB-130 (40m)	inh. D	1×10^{-1}	All other compounds	3×10^{4}	2	(32)	4.8×10^{-4}
	W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	3×10^{4}	1	(14)	5.3×10^{-4}
	ing.	1×10^{-1}	Tartar emetic	7×10^{3}	8×10^{-1}	(1)	2.1×10^{-3}
		1×10^{-2}	All other compounds	7×10^{3}	8×10^{-1}	(0)	2.1×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/μCi)
SB-131 (23m)	inh.	D	1×10^{-1}	All other compounds	1×10^{4}	5×10^{-1}	(28)	2.1×10^{-3}
		W	1×10^{-2}	Halides, hydroxides, sulphates, nitrates, sulphides and oxides	1×10^{4}	3×10^{-1}	(12)	2.2×10^{-3}
	ing.		1×10^{-1}	Tartar emetic	9×10^{3}	5×10^{-1}	(0)	1.7×10^{-3}
			1×10^{-2}	All other compounds	9×10^{3}	5×10^{-1}	(0)	1.7×10^{-3}
TE-116 (2.49h)	inh.	D	2×10^{-1}	All other compounds	1×10^{4}	4	(41)	1.0×10^{-3}
		W	2×10^{-1}	Oxides, hydroxides and nitrates	1×10^{4}	2	(16)	1.2×10^{-3}
	ing.		2×10^{-1}	All compounds	4×10^{3}	2	(8)	3.6×10^{-3}
TE-121 (17d)	inh.	D	2×10^{-1}	All other compounds	3×10^{3}	4×10^{1}	(92)	1.8×10^{-3}
		W	2×10^{-1}	Oxides, hydroxides and nitrates	2×10^{3}	3×10^{1}	(32)	7.0×10^{-3}
	ing.		2×10^{-1}	All compounds	2×10^{3}	2×10^{1}	(60)	2.2×10^{-3}
TE-121M (154d)	inh.	D	2×10^{-1}	All other compounds	1×10^{2}	1×10^{1}	(99)	3.5×10^{-2}
		W	2×10^{-1}	Oxides, hydroxides and nitrates	3×10^{2}	2×10^{1}	(56)	5.8×10^{-2}
	ing.		2×10^{-1}	All compounds	4×10^{2}	1×10^{1}	(90)	1.4×10^{-2}
TE-123 (1×10^{13}y)	inh.	D	2×10^{-1}	All other compounds	2×10^{2}	4×10^{2}	(100)	2.6×10^{-1}
		W	2×10^{-1}	Oxides, hydroxides and nitrates	4×10^{2}	5×10^{2}	(97)	1.2×10^{-1}
	ing.		2×10^{-1}	All compounds	5×10^{2}	4×10^{2}	(100)	1.0×10^{-1}
TE-123M (119.7d)	inh.	D	2×10^{-1}	All other compounds	2×10^{2}	2×10^{1}	(98)	2.3×10^{-1}
		W	2×10^{-1}	Oxides, hydroxides and nitrates	3×10^{2}	2×10^{1}	(52)	4.7×10^{-2}
	ing.		2×10^{-1}	All compounds	6×10^{2}	2×10^{1}	(88)	8.9×10^{-2}
TE-125M (58d)	inh.	D	2×10^{-1}	All other compounds	4×10^{2}	2×10^{1}	(97)	1.2×10^{-1}
		W	2×10^{-1}	Oxides, hydroxides and nitrates	4×10^{2}	1×10^{1}	(42)	3.8×10^{-2}
	ing.		2×10^{-1}	All compounds	9×10^{2}	2×10^{1}	(79)	1.7×10^{-2}
TE-127 (9.35h)	inh.	D	2×10^{-1}	All other compounds	1×10^{4}	1×10^{1}	(52)	1.0×10^{-3}
		W	2×10^{-1}	Oxides, hydroxides and nitrates	9×10^{3}	7	(17)	1.6×10^{-3}
	ing.		2×10^{-1}	All compounds	3×10^{3}	4	(15)	4.7×10^{-3}
TE-127M (109d)	inh.	D	2×10^{-1}	All other compounds	1×10^{2}	6	(98)	5.1×10^{-2}
		W	2×10^{-1}	Oxides, hydroxides and nitrates	1×10^{2}	6	(51)	1.2×10^{-1}
	ing.		2×10^{-1}	All compounds	2×10^{2}	7	(87)	2.0×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
TE-129	inh.	D	2×10^{-1}	All other compounds	3×10^{4}	3	(36)	4.9×10^{-4}
(69.6m)		W	2×10^{-1}	Oxides, hydroxides and nitrates	3×10^{4}	2	(15)	5.7×10^{-4}
	ing.		2×10^{-1}	All compounds	1×10^{4}	2	(4)	1.5×10^{-3}
TE-129M	inh.	D	2×10^{-1}	All other compounds	2×10^{2}	4	(95)	3.2×10^{-2}
(33.6d)		W	2×10^{-1}	Oxides, hydroxides and nitrates	1×10^{2}	2	(36)	1.5×10^{-1}
	ing.		2×10^{-1}	All compounds	2×10^{2}	2	(71)	9.1×10^{-2}
TE-131	inh.	D	2×10^{-1}	All other compounds	3×10^{3}	5×10^{-1}	(38)	9.7×10^{-3}
(25.0m)		W	2×10^{-1}	Oxides, hydroxides and nitrates	3×10^{3}	3×10^{-1}	(16)	9.8×10^{-3}
	ing.		2×10^{-1}	All compounds	2×10^{3}	5×10^{-1}	(6)	1.6×10^{-2}
TE-131M	inh.	D	2×10^{-1}	All other compounds	2×10^{2}	5×10^{-1}	(65)	1.2×10^{-1}
(30h)		W	2×10^{-1}	Oxides, hydroxides and nitrates	2×10^{2}	5×10^{-1}	(20)	1.3×10^{-1}
	ing.		2×10^{-1}	All compounds	2×10^{2}	5×10^{-1}	(21)	1.6×10^{-1}
TE-132	inh.	D	2×10^{-1}	All other compounds	1×10^{2}	6×10^{-1}	(78)	2.2×10^{-1}
(78.2h)		W	2×10^{-1}	Oxides, hydroxides and nitrates	1×10^{2}	6×10^{-1}	(24)	2.3×10^{-1}
	ing.		2×10^{-1}	All compounds	1×10^{2}	6×10^{-1}	(32)	2.2×10^{-1}
TE-133	inh.	D	2×10^{-1}	All other compounds	1×10^{4}	2×10^{-1}	(23)	2.2×10^{-3}
(12.45m)		W	2×10^{-1}	Oxides, hydroxides and nitrates	1×10^{4}	2×10^{-1}	(9)	2.2×10^{-3}
	ing.		2×10^{-1}	All compounds	9×10^{3}	3×10^{-1}	(0)	3.5×10^{-3}
TE-133M	inh.	D	2×10^{-1}	All other compounds	3×10^{3}	3×10^{-1}	(34)	9.7×10^{-3}
(55.4m)		W	2×10^{-1}	Oxides, hydroxides and nitrates	3×10^{3}	2×10^{-1}	(15)	9.7×10^{-3}
	ing.		2×10^{-1}	All compounds	2×10^{3}	3×10^{-1}	(3)	1.5×10^{-2}
TE-134	inh.	D	2×10^{-1}	All other compounds	1×10^{4}	9×10^{-1}	(33)	2.0×10^{-3}
(41.8m)		W	2×10^{-1}	Oxides, hydroxides and nitrates	1×10^{4}	6×10^{-1}	(14)	2.1×10^{-3}
	ing.		2×10^{-1}	All compounds	9×10^{3}	1	(2)	3.3×10^{-3}
I-120	inh.	D	1	All compounds	5×10^{3}	6×10^{-1}	(47)	5.7×10^{-3}
(81.0m)	ing.		1	Most compounds	2×10^{3}	5×10^{-1}	(63)	1.3×10^{-2}
I-120M	inh.	D	1	All compounds	1×10^{4}	1	(43)	2.2×10^{-3}
(53m)	ing.		1	Most compounds	4×10^{3}	5×10^{-1}	(54)	4.1×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
I-121	inh. D	1	All compounds	1×10^4	2	(51)	2.8×10^{-3}
(2.12h)	ing.	1	Most compounds	6×10^3	2	(72)	5.1×10^{-3}
I-123	inh. D	1	All compounds	4×10^3	3	(65)	8.3×10^{-3}
(13.2h)	ing.	1	Most compounds	2×10^3	2	(91)	1.6×10^{-2}
I-124	inh. D	1	All compounds	5×10^1	2×10^{-1}	(87)	6.3×10^{-1}
(4.18d)	ing.	1	Most compounds	3×10^1	2×10^{-1}	(98)	1.0
I-125	inh. D	1	All compounds	4×10^1	1	(98)	8.0×10^{-1}
(60.14d)	ing.	1	Most compounds	2×10^1	1	(100)	1.3
I-126	inh. D	1	All compounds	2×10^1	2×10^{-1}	(95)	1.5
(13.02d)	ing.	1	Most compounds	1×10^1	2×10^{-1}	(99)	2.4
I-128	inh. D	1	All compounds	6×10^4	2	(35)	2.7×10^{-4}
(24.99m)	ing.	1	Most compounds	1×10^4	8×10^{-1}	(36)	1.2×10^{-3}
I-129	inh. D	1	All compounds	5	6×10^{-1}	(99)	5.8
(1.57×10^7y)	ing.	1	Most compounds	3	5×10^{-1}	(100)	9.2
I-130	inh. D	1	All compounds	4×10^2	3×10^{-1}	(64)	7.4×10^{-2}
(12.36h)	ing.	1	Most compounds	2×10^2	2×10^{-1}	(91)	1.5×10^{-1}
I-131	inh. D	1	All compounds	3×10^1	2×10^{-1}	(92)	1.1
(8.04d)	ing.	1	Most compounds	2×10^1	2×10^{-1}	(99)	1.8
I-132	inh. D	1	All compounds	5×10^3	9×10^{-1}	(52)	6.4×10^{-3}
(2.30h)	ing.	1	Most compounds	2×10^3	7×10^{-1}	(73)	1.4×10^{-2}
I-132M	inh. D	1	All compounds	5×10^3	6×10^{-1}	(48)	6.1×10^{-3}
(83.6m)	ing.	1	Most compounds	2×10^3	5×10^{-1}	(64)	1.4×10^{-2}
I-133	inh. D	1	All compounds	2×10^2	2×10^{-1}	(69)	1.8×10^{-1}
(20.8h)	ing.	1	Most compounds	9×10^1	2×10^{-1}	(93)	3.4×10^{-1}
I-134	inh. D	1	All compounds	3×10^4	2	(43)	1.1×10^{-3}
(52.6m)	ing.	1	Most compounds	7×10^3	1	(54)	2.0×10^{-3}
I-135	inh. D	1	All compounds	1×10^3	5×10^{-1}	(59)	3.1×10^{-2}
(6.61h)	ing.	1	Most compounds	5×10^2	3×10^{-1}	(86)	6.6×10^{-2}
CS-125	inh. D	1	All compounds	6×10^4	4	(44)	2.4×10^{-4}
(45m)	ing.	1	All compounds	2×10^4	2	(52)	9.2×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
CS-127	inh. D	1	All compounds	7×10^{4}	4×10^{1}	(68)	2.2×10^{-4}
(6.25h)	ing.	1	All compounds	4×10^{4}	4×10^{1}	(90)	3.4×10^{-4}
CS-129	inh. D	1	All compounds	4×10^{4}	1×10^{2}	(86)	1.4×10^{-4}
(32.06h)	ing.	1	All compounds	2×10^{4}	1×10^{2}	(98)	2.3×10^{-4}
CS-130	inh. D	1	All compounds	8×10^{4}	4	(38)	1.8×10^{-4}
(29.9m)	ing.	1	All compounds	2×10^{4}	2	(42)	8.0×10^{-4}
CS-131	inh. D	1	All compounds	2×10^{4}	4×10^{2}	(97)	2.3×10^{-4}
(9.69d)	ing.	1	All compounds	1×10^{4}	4×10^{2}	(100)	3.7×10^{-4}
CS-132	inh. D	1	All compounds	4×10^{3}	6×10^{1}	(96)	1.2×10^{-3}
(6.475d)	ing.	1	All compounds	3×10^{3}	6×10^{1}	(99)	1.9×10^{-3}
CS-134	inh. D	1	All compounds	1×10^{2}	2×10^{1}	(100)	4.8×10^{-2}
(2.062y)	ing.	1	All compounds	7×10^{1}	2×10^{1}	(100)	7.6×10^{-2}
CS-134M	inh. D	1	All compounds	6×10^{4}	2×10^{1}	(60)	2.4×10^{-4}
(2.90h)	ing.	1	All compounds	4×10^{4}	2×10^{1}	(81)	4.3×10^{-4}
CS-135	inh. D	1	All compounds	1×10^{3}	3×10^{2}	(100)	4.4×10^{-3}
(2.3×10^{6}y)	ing.	1	All compounds	7×10^{2}	3×10^{2}	(100)	7.1×10^{-3}
CS-135M	inh. D	1	All compounds	2×10^{5}	1×10^{1}	(46)	8.4×10^{-5}
(53m)	ing.	1	All compounds	4×10^{4}	5	(56)	4.3×10^{-4}
CS-136	inh. D	1	All compounds	7×10^{2}	2×10^{1}	(98)	7.0×10^{-3}
(13.1d)	ing.	1	All compounds	4×10^{2}	2×10^{1}	(100)	1.1×10^{-2}
CS-137	inh. D	1	All compounds	2×10^{2}	4×10^{1}	(100)	3.2×10^{-2}
(30.0y)	ing.	1	All compounds	1×10^{2}	4×10^{1}	(100)	5.1×10^{-2}
CS-138	inh. D	1	All compounds	3×10^{4}	1	(39)	5.9×10^{-4}
(32.2m)	ing.	1	All compounds	6×10^{3}	5×10^{-1}	(44)	2.6×10^{-3}
BA-126	inh. D	1×10^{-1}	All compounds	8×10^{3}	1	(30)	1.8×10^{-3}
(96.5m)	ing.	1×10^{-1}	All compounds	3×10^{3}	8×10^{-1}	(2)	4.7×10^{-3}
BA-128	inh. D	1×10^{-1}	All compounds	1×10^{3}	2	(54)	1.5×10^{-2}
(2.43d)	ing.	1×10^{-1}	All compounds	2×10^{2}	5×10^{-1}	(7)	9.9×10^{-2}
BA-131	inh. D	1×10^{-1}	All compounds	8×10^{3}	3×10^{1}	(73)	1.9×10^{-3}
(11.8d)	ing.	1×10^{-1}	All compounds	1×10^{3}	6	(14)	1.2×10^{-2}
BA-131M	inh. D	1×10^{-1}	All compounds	6×10^{5}	1×10^{1}	(22)	2.6×10^{-5}
(14.6m)	ing.	1×10^{-1}	All compounds	1×10^{5}	4	(0)	1.3×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
BA-133 (10.74y)	inh. D	1×10^{-1}	All compounds	2×10^{2}	3×10^{1}	(99)	2.4×10^{-2}
	ing.	1×10^{-1}	All compounds	9×10^{2}	3×10^{1}	(86)	5.4×10^{-3}
BA-133M (38.9h)	inh. D	1×10^{-1}	All compounds	5×10^{3}	8	(50)	3.1×10^{-3}
	ing.	1×10^{-1}	All compounds	7×10^{2}	2	(6)	2.0×10^{-2}
BA-135M (28.7h)	inh. D	1×10^{-1}	All compounds	6×10^{3}	9	(47)	2.4×10^{-3}
	ing.	1×10^{-1}	All compounds	1×10^{3}	3	(6)	1.6×10^{-2}
BA-139 (82.7m)	inh. D	1×10^{-1}	All compounds	2×10^{4}	2	(30)	9.4×10^{-4}
	ing.	1×10^{-1}	All compounds	6×10^{3}	1	(2)	2.6×10^{-3}
BA-140 (12.74d)	inh. D	1×10^{-1}	All compounds	9×10^{2}	4	(74)	1.6×10^{-2}
	ing.	1×10^{-1}	All compounds	2×10^{2}	7×10^{-1}	(15)	9.8×10^{-2}
BA-141 (18.27m)	inh. D	1×10^{-1}	All compounds	3×10^{4}	8×10^{-1}	(23)	4.3×10^{-4}
	ing.	1×10^{-1}	All compounds	1×10^{4}	5×10^{-1}	(0)	1.5×10^{-3}
BA-142 (10.6m)	inh. D	1×10^{-1}	All compounds	7×10^{4}	1	(20)	2.0×10^{-4}
	ing.	1×10^{-1}	All compounds	2×10^{4}	6×10^{-1}	(0)	7.5×10^{-4}
LA-131 (59m)	inh. D	1×10^{-3}	All other compounds	7×10^{4}	7	(34)	2.0×10^{-4}
	W	1×10^{-3}	Oxides and hydroxides	6×10^{4}	4	(15)	2.5×10^{-4}
	ing.	1×10^{-3}	All compounds	2×10^{4}	3	(0)	7.0×10^{-4}
LA-132 (4.8h)	inh. D	1×10^{-3}	All other compounds	8×10^{3}	4	(45)	1.8×10^{-3}
	W	1×10^{-3}	Oxides and hydroxides	6×10^{3}	2	(15)	2.4×10^{-3}
	ing.	1×10^{-3}	All compounds	2×10^{3}	1	(0)	8.6×10^{-3}
LA-135 (19.5h)	inh. D	1×10^{-3}	All other compounds	1×10^{5}	2×10^{2}	(63)	1.3×10^{-4}
	W	1×10^{-3}	Oxides and hydroxides	8×10^{4}	1×10^{2}	(15)	1.8×10^{-4}
	ing.	1×10^{-3}	All compounds	2×10^{4}	5×10^{1}	(0)	7.2×10^{-4}
LA-137 (6×10^{4}y)	inh. D	1×10^{-3}	All other compounds	2×10^{1}	1×10^{2}	(100)	7.6×10^{-1}
	W	1×10^{-3}	Oxides and hydroxides	8×10^{1}	1×10^{2}	(98)	1.9×10^{-1}
	ing.	1×10^{-3}	All compounds	7×10^{3}	1×10^{2}	(74)	2.1×10^{-3}
LA-138 (1.35×10^{11}y)	inh. D	1×10^{-3}	All other compounds	2	1×10^{1}	(100)	8.7
	W	1×10^{-3}	Oxides and hydroxides	7	1×10^{1}	(98)	2.2
	ing.	1×10^{-3}	All compounds	8×10^{2}	1×10^{1}	(74)	1.9×10^{-2}
LA-140 (40.272h)	inh. D	1×10^{-3}	All other compounds	1×10^{3}	4	(75)	1.3×10^{-2}
	W	1×10^{-3}	Oxides and hydroxides	7×10^{2}	2	(17)	2.0×10^{-2}
	ing.	1×10^{-3}	All compounds	2×10^{2}	7×10^{-1}	(0)	6.5×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
LA-141	inh.	D	1×10^{-3}	All other compounds	6×10^{3}	2	(44)	2.4×10^{-3}
(3.93h)		W	1×10^{-3}	Oxides and hydroxides	5×10^{3}	1	(15)	3.3×10^{-3}
	ing.		1×10^{-3}	All compounds	2×10^{3}	1	(0)	9.1×10^{-3}
LA-142	inh.	D	1×10^{-3}	All other compounds	1×10^{4}	2	(37)	1.1×10^{-3}
(92.5m)		W	1×10^{-3}	Oxides and hydroxides	1×10^{4}	1	(15)	1.3×10^{-3}
	ing.		1×10^{-3}	All compounds	5×10^{3}	1	(0)	3.2×10^{-3}
LA-143	inh.	D	1×10^{-3}	All other compounds	5×10^{4}	9×10^{-1}	(24)	3.1×10^{-4}
(14.23m)		W	1×10^{-3}	Oxides and hydroxides	4×10^{4}	5×10^{-1}	(10)	3.9×10^{-4}
	ing.		1×10^{-3}	All compounds	1×10^{4}	4×10^{-1}	(0)	1.5×10^{-3}
CE-134	inh.	W	3×10^{-4}	All other compounds	4×10^{2}	2	(20)	3.6×10^{-2}
(72.0h)		Y	3×10^{-4}	Oxides, hydroxides, and fluorides	4×10^{2}	1	(1)	4.2×10^{-2}
	ing.		3×10^{-4}	All compounds	1×10^{2}	5×10^{-1}	(0)	1.0×10^{-1}
CE-135	inh.	W	3×10^{-4}	All other compounds	3×10^{3}	4	(15)	4.7×10^{-3}
(17.6h)		Y	3×10^{-4}	Oxides, hydroxides, and fluorides	3×10^{3}	3	(1)	5.5×10^{-3}
	ing.		3×10^{-4}	All compounds	8×10^{2}	2	(0)	1.9×10^{-2}
CE-137	inh.	W	3×10^{-4}	All other compounds	1×10^{5}	7×10^{1}	(15)	1.5×10^{-4}
(9.0h)		Y	3×10^{-4}	Oxides, hydroxides, and fluorides	9×10^{4}	6×10^{1}	(1)	1.6×10^{-4}
	ing.		3×10^{-4}	All compounds	3×10^{4}	4×10^{1}	(0)	5.4×10^{-4}
CE-137M	inh.	W	3×10^{-4}	All other compounds	2×10^{3}	6	(17)	6.4×10^{-3}
(34.4h)		Y	3×10^{-4}	Oxides, hydroxides, and fluorides	2×10^{3}	4	(1)	7.5×10^{-3}
	ing.		3×10^{-4}	All compounds	7×10^{2}	2	(0)	2.1×10^{-2}
CE-139	inh.	W	3×10^{-4}	All other compounds	6×10^{2}	5×10^{1}	(68)	2.5×10^{-2}
(137.66d)		Y	3×10^{-4}	Oxides, hydroxides, and fluorides	2×10^{2}	2×10^{1}	(5)	6.2×10^{-2}
	ing.		3×10^{-4}	All compounds	2×10^{3}	8	(3)	8.8×10^{-3}
CE-141	inh.	W	3×10^{-4}	All other compounds	4×10^{2}	9	(43)	4.1×10^{-2}
(32.501d)		Y	3×10^{-4}	Oxides, hydroxides, and fluorides	2×10^{2}	5	(3)	6.2×10^{-2}
	ing.		3×10^{-4}	All compounds	5×10^{2}	2	(1)	3.2×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN		H_{50} (rem/ μCi)
					(μCi)	(% sys)	
CE-143 (33.0h)	inh. W	3×10^{-4}	All other compounds	1×10^{3}	3	(16)	1.4×10^{-2}
	Y	3×10^{-4}	Oxides, hydroxides, and fluorides	1×10^{3}	2	(1)	1.6×10^{-2}
	ing.	3×10^{-4}	All compounds	3×10^{2}	1	(0)	4.3×10^{-2}
CE-144 (284.3d)	inh. W	3×10^{-4}	All other compounds	2×10^{1}	2	(79)	9.4×10^{-1}
	Y	3×10^{-4}	Oxides, hydroxides, and fluorides	5	7×10^{-1}	(9)	2.9
	ing.	3×10^{-4}	All compounds	6×10^{1}	3×10^{-1}	(6)	2.5×10^{-1}
PR-136 (13.1m)	inh. W	3×10^{-4}	All other compounds	9×10^{4}	1	(1)	1.8×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	8×10^{4}	1	(0)	1.8×10^{-4}
	ing.	3×10^{-4}	All compounds	2×10^{4}	6×10^{-1}	(0)	9.4×10^{-4}
PR-137 (76.6m)	inh. W	3×10^{-4}	All other compounds	5×10^{4}	4	(4)	2.8×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	5×10^{4}	4	(0)	3.0×10^{-4}
	ing.	3×10^{-4}	All compounds	2×10^{4}	4	(0)	7.0×10^{-4}
PR-138M (2.1h)	inh. W	3×10^{-4}	All other compounds	2×10^{4}	3	(5)	6.3×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	2×10^{4}	3	(0)	6.8×10^{-4}
	ing.	3×10^{-4}	All compounds	7×10^{3}	3	(0)	2.0×10^{-3}
PR-139 (4.51h)	inh. W	3×10^{-4}	All other compounds	6×10^{4}	2×10^{1}	(7)	2.3×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	5×10^{4}	2×10^{1}	(0)	3.0×10^{-4}
	ing.	3×10^{-4}	All compounds	2×10^{4}	1×10^{1}	(0)	7.1×10^{-4}
PR-142 (19.13h)	inh. W	3×10^{-4}	All other compounds	1×10^{3}	2	(11)	1.2×10^{-2}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	1×10^{3}	1	(1)	1.4×10^{-2}
	ing.	3×10^{-4}	All compounds	3×10^{2}	7×10^{-1}	(0)	4.7×10^{-2}
PR-142M (14.6m)	inh. W	3×10^{-4}	All other compounds	1×10^{5}	1	(1)	1.5×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	8×10^{4}	1	(0)	1.8×10^{-4}
	ing.	3×10^{-4}	All compounds	2×10^{4}	1	(0)	6.1×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
PR-143 (13.56d)	inh. W	3×10^{-4}	All other compounds	4×10^{2}	5	(29)	4.1×10^{-2}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	3×10^{2}	3	(2)	4.9×10^{-2}
	ing.	3×10^{-4}	All compounds	3×10^{2}	1	(0)	5.4×10^{-2}
PR-144 (17.28m)	inh. W	3×10^{-4}	All other compounds	5×10^{4}	7×10^{-1}	(2)	3.3×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	4×10^{4}	7×10^{-1}	(0)	3.5×10^{-4}
	ing.	3×10^{-4}	All compounds	1×10^{4}	5×10^{-1}	(0)	1.5×10^{-3}
PR-145 (5.98h)	inh. W	3×10^{-4}	All other compounds	5×10^{3}	2	(8)	3.2×10^{-3}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	4×10^{3}	2	(0)	3.4×10^{-3}
	ing.	3×10^{-4}	All compounds	1×10^{3}	1	(0)	1.0×10^{-2}
PR-147 (13.6m)	inh. W	3×10^{-4}	All other compounds	7×10^{4}	9×10^{-1}	(1)	2.1×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	7×10^{4}	8×10^{-1}	(0)	2.3×10^{-4}
	ing.	3×10^{-4}	All compounds	2×10^{4}	6×10^{-1}	(0)	9.3×10^{-4}
ND-136 (50.65m)	inh. W	3×10^{-4}	All other compounds	2×10^{4}	1	(3)	7.1×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	2×10^{4}	9×10^{-1}	(0)	7.8×10^{-4}
	ing.	3×10^{-4}	All compounds	8×10^{3}	1	(0)	2.0×10^{-3}
ND-138 (5.04h)	inh. W	3×10^{-4}	All other compounds	3×10^{3}	1	(8)	4.9×10^{-3}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	3×10^{3}	1	(0)	5.3×10^{-3}
	ing.	3×10^{-4}	All compounds	9×10^{2}	7×10^{-1}	(0)	1.6×10^{-2}
ND-139 (29.7m)	inh. W	3×10^{-4}	All other compounds	1×10^{5}	3	(2)	1.3×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	1×10^{5}	3	(0)	1.4×10^{-4}
	ing.	3×10^{-4}	All compounds	3×10^{4}	3	(0)	4.5×10^{-4}
ND-139M (5.5h)	inh. W	3×10^{-4}	All other compounds	1×10^{4}	5	(8)	1.2×10^{-3}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	1×10^{4}	4	(0)	1.4×10^{-3}
	ing.	3×10^{-4}	All compounds	3×10^{3}	3	(0)	5.1×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
ND-141 (2.49h)	inh. W	3×10^{-4}	All other compounds	3×10^{5}	4×10^{1}	(6)	5.1×10^{-5}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	3×10^{5}	4×10^{1}	(0)	5.5×10^{-5}
	ing.	3×10^{-4}	All compounds	9×10^{4}	4×10^{1}	(0)	1.6×10^{-4}
ND-147 (10.98d)	inh. W	3×10^{-4}	All other compounds	5×10^{2}	5	(28)	3.1×10^{-2}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	4×10^{2}	3	(2)	3.9×10^{-2}
	ing.	3×10^{-4}	All compounds	3×10^{2}	1	(0)	4.7×10^{-2}
ND-149 (1.73h)	inh. W	3×10^{-4}	All other compounds	1×10^{4}	1	(5)	1.1×10^{-3}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	1×10^{4}	1	(0)	1.2×10^{-3}
	ing.	3×10^{-4}	All compounds	7×10^{3}	2	(0)	2.2×10^{-3}
ND-151 (12.44m)	inh. W	3×10^{-4}	All other compounds	8×10^{4}	9×10^{-1}	(1)	1.8×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	8×10^{4}	9×10^{-1}	(0)	1.9×10^{-4}
	ing.	3×10^{-4}	All compounds	2×10^{4}	7×10^{-1}	(0)	7.3×10^{-4}
PM-141 (20.90m)	inh. W	3×10^{-4}	All other compounds	7×10^{4}	1	(2)	2.2×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	6×10^{4}	1	(0)	2.4×10^{-4}
	ing.	3×10^{-4}	All compounds	1×10^{4}	8×10^{-1}	(0)	1.0×10^{-3}
PM-143 (265d)	inh. W	3×10^{-4}	All other compounds	4×10^{2}	5×10^{1}	(77)	3.5×10^{-2}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	3×10^{2}	3×10^{1}	(7)	6.0×10^{-2}
	ing.	3×10^{-4}	All compounds	3×10^{3}	2×10^{1}	(5)	5.0×10^{-3}
PM-144 (363d)	inh. W	3×10^{-4}	All other compounds	8×10^{1}	1×10^{1}	(81)	2.0×10^{-1}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	6×10^{1}	9	(9)	2.6×10^{-1}
	ing.	3×10^{-4}	All compounds	8×10^{2}	4	(7)	6.6×10^{-3}
PM-145 (17.7y)	inh. W	3×10^{-4}	All other compounds	1×10^{2}	1×10^{2}	(97)	1.4×10^{-1}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	9×10^{1}	7×10^{1}	(43)	1.7×10^{-1}
	ing.	3×10^{-4}	All compounds	4×10^{3}	3×10^{1}	(33)	3.5×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
PM-146 (2020d)	inh. W	3×10^{-4}	All other compounds	2×10^{1}	1×10^{1}	(94)	6.3×10^{-1}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	2×10^{1}	8	(30)	8.6×10^{-1}
	ing.	3×10^{-4}	All compounds	6×10^{2}	4	(22)	2.6×10^{-2}
PM-147 (2.6234y)	inh. W	3×10^{-4}	All other compounds	1×10^{2}	5×10^{1}	(90)	3.8×10^{-1}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	5×10^{1}	2×10^{1}	(20)	2.9×10^{-1}
	ing.	3×10^{-4}	All compounds	1×10^{3}	7	(14)	1.2×10^{-2}
PM-148 (5.37d)	inh. W	3×10^{-4}	All other compounds	3×10^{2}	2	(22)	4.7×10^{-2}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	3×10^{2}	2	(1)	5.1×10^{-2}
	ing.	3×10^{-4}	All compounds	1×10^{2}	5×10^{-1}	(0)	1.1×10^{-1}
PM-148M (41.3d)	inh. W	3×10^{-4}	All other compounds	2×10^{2}	5	(44)	8.3×10^{-2}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	1×10^{2}	3	(3)	1.3×10^{-1}
	ing.	3×10^{-4}	All compounds	3×10^{2}	1	(1)	5.1×10^{-2}
PM-149 (53.08h)	inh. W	3×10^{-4}	All other compounds	1×10^{3}	3	(16)	1.4×10^{-2}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	9×10^{2}	3	(1)	1.6×10^{-2}
	ing.	3×10^{-4}	All compounds	4×10^{2}	1	(0)	4.2×10^{-2}
PM-150 (2.68h)	inh. W	3×10^{-4}	All other compounds	8×10^{3}	1	(6)	2.0×10^{-3}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	7×10^{3}	1	(0)	2.1×10^{-3}
	ing.	3×10^{-4}	All compounds	3×10^{3}	1	(0)	5.4×10^{-3}
PM-151 (28.40h)	inh. W	3×10^{-4}	All other compounds	2×10^{3}	4	(13)	7.4×10^{-3}
	Y	3×10^{-4}	Oxides, hydroxides, carbides and fluorides	2×10^{3}	3	(1)	8.8×10^{-3}
	ing.	3×10^{-4}	All compounds	6×10^{2}	2	(0)	2.6×10^{-2}
SM-141 (10.2m)	inh. W	3×10^{-4}	All compounds	6×10^{4}	6×10^{-1}	(1)	2.3×10^{-4}
	ing.	3×10^{-4}	All compounds	1×10^{4}	4×10^{-1}	(0)	1.1×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
SM-141M	inh. W	3×10^{-4}	All compounds	4×10^{4}	7×10^{-1}	(2)	4.2×10^{-4}
(22.6m)	ing.	3×10^{-4}	All compounds	9×10^{3}	6×10^{-1}	(0)	1.6×10^{-3}
SM-142	inh. W	3×10^{-4}	All compounds	1×10^{4}	7×10^{-1}	(4)	1.6×10^{-3}
(72.49m)	ing.	3×10^{-4}	All compounds	4×10^{3}	7×10^{-1}	(0)	4.0×10^{-3}
SM-145	inh. W	3×10^{-4}	All compounds	3×10^{2}	5×10^{1}	(80)	4.4×10^{-2}
(340d)	ing.	3×10^{-4}	All compounds	2×10^{3}	1×10^{1}	(6)	7.7×10^{-3}
SM-146	inh. W	3×10^{-4}	All compounds	4×10^{-2}	5×10^{-2}	(98)	1.4×10^{3}
(1.03×10^{8}y)	ing.	3×10^{-4}	All compounds	1×10^{1}	1×10^{-1}	(43)	3.5
SM-147	inh. W	3×10^{-4}	All compounds	4×10^{-2}	6×10^{-2}	(98)	1.3×10^{3}
(1.06×10^{11}y	ing.	3×10^{-4}	All compounds	2×10^{1}	1×10^{-1}	(43)	3.2
SM-151	inh. W	3×10^{-4}	All compounds	1×10^{2}	1×10^{2}	(97)	5.1×10^{-1}
(90y)	ing.	3×10^{-4}	All compounds	4×10^{3}	3×10^{1}	(41)	3.7×10^{-3}
SM-153	inh. W	3×10^{-4}	All compounds	2×10^{3}	5	(15)	9.8×10^{-3}
(46.7h)	ing.	3×10^{-4}	All compounds	5×10^{2}	2	(0)	3.0×10^{-2}
SM-155	inh. W	3×10^{-4}	All compounds	8×10^{4}	1	(2)	2.0×10^{-4}
(22.1m)	ing.	3×10^{-4}	All compounds	2×10^{4}	1	(0)	8.5×10^{-4}
SM-156	inh. W	3×10^{-4}	All compounds	5×10^{3}	3	(9)	3.2×10^{-3}
(9.4h)	ing.	3×10^{-4}	All compounds	2×10^{3}	3	(0)	7.3×10^{-3}
EU-145	inh. W	1×10^{-3}	All compounds	2×10^{3}	1×10^{1}	(21)	7.3×10^{-3}
(5.94d)	ing.	1×10^{-3}	All compounds	1×10^{3}	4	(0)	1.5×10^{-2}
EU-146	inh. W	1×10^{-3}	All compounds	2×10^{3}	9	(19)	3.2×10^{-3}
(4.61d)	ing.	1×10^{-3}	All compounds	6×10^{2}	2	(0)	2.5×10^{-2}
EU-147	inh. W	1×10^{-3}	All compounds	1×10^{3}	2×10^{1}	(34)	1.4×10^{-2}
(24d)	ing.	1×10^{-3}	All compounds	1×10^{3}	6	(2)	1.3×10^{-2}
EU-148	inh. W	1×10^{-3}	All compounds	3×10^{2}	1×10^{1}	(46)	4.4×10^{-2}
(54.5d)	ing.	1×10^{-3}	All compounds	6×10^{2}	3	(3)	8.7×10^{-3}
EU-149	inh. W	1×10^{-3}	All compounds	2×10^{3}	1×10^{2}	(56)	7.5×10^{-3}
(93.1d)	ing.	1×10^{-3}	All compounds	5×10^{3}	2×10^{1}	(6)	3.2×10^{-3}
EU-150	inh. W	1×10^{-3}	All compounds	5×10^{3}	5	(10)	2.9×10^{-3}
(12.62h)	ing.	1×10^{-3}	All compounds	1×10^{3}	2	(0)	1.2×10^{-2}
EU-150	inh. W	1×10^{-3}	All compounds	1×10^{1}	1×10^{1}	(97)	1.6
(34.2y)	ing.	1×10^{-3}	All compounds	6×10^{2}	9	(64)	2.3×10^{-2}
EU-152	inh. W	1×10^{-3}	All compounds	1×10^{1}	9	(96)	1.3
(13.33y)	ing.	1×10^{-3}	All compounds	4×10^{2}	5	(57)	3.7×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
EU-152M	inh. W	1×10^{-3}	All compounds	4×10^{3}	3	(9)	3.7×10^{-3}
(9.32h)	ing.	1×10^{-3}	All compounds	1×10^{3}	2	(0)	1.3×10^{-2}
EU-154	inh. W	1×10^{-3}	All compounds	9	6	(95)	1.6
(8.8y)	ing.	1×10^{-3}	All compounds	2×10^{2}	2	(53)	6.7×10^{-2}
EU-155	inh. W	1×10^{-3}	All compounds	8×10^{1}	4×10^{1}	(93)	1.8×10^{-1}
(4.96y)	ing.	1×10^{-3}	All compounds	1×10^{3}	1×10^{1}	(44)	1.3×10^{-2}
EU-156	inh. W	1×10^{-3}	All compounds	2×10^{2}	3	(29)	6.8×10^{-2}
(15.19d)	ing.	1×10^{-3}	All compounds	2×10^{2}	8×10^{-1}	(1)	8.4×10^{-2}
EU-157	inh. W	1×10^{-3}	All compounds	3×10^{3}	4	(10)	4.4×10^{-3}
(15.15h)	ing.	1×10^{-3}	All compounds	8×10^{2}	2	(0)	1.9×10^{-2}
EU-158	inh. W	1×10^{-3}	All compounds	2×10^{4}	9×10^{-1}	(3)	7.0×10^{-4}
(45.9m)	ing.	1×10^{-3}	All compounds	6×10^{3}	8×10^{-1}	(0)	2.4×10^{-3}
GD-145	inh. D	3×10^{-4}	All other compounds	7×10^{4}	2	(5)	2.2×10^{-4}
(22.9m)	W	3×10^{-4}	Oxides, hydroxides and fluorides	6×10^{4}	1	(2)	2.5×10^{-4}
	ing.	3×10^{-4}	All compounds	1×10^{4}	8×10^{-1}	(0)	1.1×10^{-3}
GD-146	inh. D	3×10^{-4}	All other compounds	8×10^{1}	6	(98)	1.8×10^{-1}
(48.3d)	W	3×10^{-4}	Oxides, hydroxides and fluorides	2×10^{2}	5	(42)	9.2×10^{-2}
	ing.	3×10^{-4}	All compounds	4×10^{2}	2	(1)	3.4×10^{-2}
GD-147	inh. D	3×10^{-4}	All other compounds	5×10^{3}	1×10^{1}	(66)	3.3×10^{-3}
(38.1h)	W	3×10^{-4}	Oxides, hydroxides and fluorides	4×10^{3}	9	(12)	4.2×10^{-3}
	ing.	3×10^{-4}	All compounds	1×10^{3}	3	(0)	1.3×10^{-2}
GD-148	inh. D	3×10^{-4}	All other compounds	8×10^{-3}	3×10^{-2}	(100)	6.5×10^{3}
(93y)	W	3×10^{-4}	Oxides, hydroxides and fluorides	3×10^{-2}	3×10^{-2}	(97)	1.6×10^{3}
	ing.	3×10^{-4}	All compounds	1×10^{1}	9×10^{-2}	(37)	4.1
GD-149	inh. D	3×10^{-4}	All other compounds	2×10^{3}	2×10^{1}	(91)	3.2×10^{-3}
(9.4d)	W	3×10^{-4}	Oxides, hydroxides and fluorides	2×10^{3}	2×10^{1}	(23)	9.0×10^{-3}
	ing.	3×10^{-4}	All compounds	1×10^{3}	5	(0)	1.4×10^{-2}
GD-151	inh. D	3×10^{-4}	All other compounds	3×10^{2}	6×10^{1}	(99)	1.5×10^{-2}
(120d)	W	3×10^{-4}	Oxides, hydroxides and fluorides	8×10^{2}	5×10^{1}	(59)	1.8×10^{-2}
	ing.	3×10^{-4}	All compounds	2×10^{3}	1×10^{1}	(2)	7.4×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
GD-152	inh. D	3×10^{-4}	All other compounds	1×10^{-2}	5×10^{-2}	(100)	4.8×10^{3}
(1.08×10^{14}y)	W	3×10^{-4}	Oxides, hydroxides and fluorides	4×10^{-2}	5×10^{-2}	(97)	1.2×10^{3}
	ing.	3×10^{-4}	All compounds	2×10^{1}	1×10^{-1}	(39)	3.0
GD-153	inh. D	3×10^{-4}	All other compounds	1×10^{2}	4×10^{1}	(100)	4.0×10^{-2}
(242d)	W	3×10^{-4}	Oxides, hydroxides and fluorides	5×10^{2}	5×10^{1}	(72)	1.0×10^{-2}
	ing.	3×10^{-4}	All compounds	1×10^{3}	7	(4)	1.0×10^{-2}
GD-159	inh. D	3×10^{-4}	All other compounds	6×10^{3}	8	(50)	2.6×10^{-3}
(18.56h)	W	3×10^{-4}	Oxides, hydroxides and fluorides	4×10^{3}	5	(10)	4.3×10^{-3}
	ing.	3×10^{-4}	All compounds	9×10^{2}	2	(0)	1.7×10^{-2}
TB-147	inh. W	3×10^{-4}	All compounds	1×10^{4}	1	(4)	1.1×10^{-3}
(1.65h)	ing.	3×10^{-4}	All compounds	6×10^{3}	2	(0)	2.3×10^{-3}
TB-149	inh. W	3×10^{-4}	All compounds	3×10^{2}	7×10^{-2}	(6)	5.7×10^{-2}
(4.15h)	ing.	3×10^{-4}	All compounds	3×10^{3}	2	(0)	5.2×10^{-3}
TB-150	inh. W	3×10^{-4}	All compounds	9×10^{3}	2	(6)	1.7×10^{-3}
(3.27h)	ing.	3×10^{-4}	All compounds	3×10^{3}	1	(0)	5.4×10^{-3}
TB-151	inh. W	3×10^{-4}	All compounds	8×10^{3}	1×10^{1}	(10)	1.8×10^{-3}
(17.6h)	ing.	3×10^{-4}	All compounds	2×10^{3}	4	(0)	7.0×10^{-3}
TB-153	inh. W	3×10^{-4}	All compounds	6×10^{3}	2×10^{1}	(14)	2.6×10^{-3}
(2.34d)	ing.	3×10^{-4}	All compounds	2×10^{3}	7	(0)	7.6×10^{-3}
TB-154	inh. W	3×10^{-4}	All compounds	5×10^{3}	7	(10)	3.2×10^{-3}
(21.4h)	ing.	3×10^{-4}	All compounds	1×10^{3}	3	(0)	1.2×10^{-2}
TB-155	inh. W	3×10^{-4}	All compounds	5×10^{3}	3×10^{1}	(19)	2.8×10^{-3}
(5.32d)	ing.	3×10^{-4}	All compounds	2×10^{3}	9	(0)	6.7×10^{-3}
TB-156	inh. W	3×10^{-4}	All compounds	1×10^{3}	7	(19)	1.2×10^{-2}
(5.34d)	ing.	3×10^{-4}	All compounds	5×10^{2}	2	(0)	2.9×10^{-2}
TB-156M	inh. W	3×10^{-4}	All compounds	6×10^{3}	1×10^{1}	(11)	2.6×10^{-3}
(24.4h)	ing.	3×10^{-4}	All compounds	3×10^{3}	7	(0)	5.5×10^{-3}
TB-156M	inh. W	3×10^{-4}	All compounds	2×10^{4}	6	(7)	8.1×10^{-4}
(5.0h)	ing.	3×10^{-4}	All compounds	8×10^{3}	6	(0)	1.9×10^{-3}
TB-157	inh. W	3×10^{-4}	All compounds	3×10^{2}	4×10^{2}	(97)	1.6×10^{-1}
(150y)	ing.	3×10^{-4}	All compounds	1×10^{4}	1×10^{2}	(37)	1.1×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
TB-158	inh. W	3×10^{-4}	All compounds	1×10^{1}	1×10^{1}	(97)	4.4×10^{-1}
(150y)	ing.	3×10^{-4}	All compounds	5×10^{2}	4	(37)	3.0×10^{-2}
TB-160	inh. W	3×10^{-4}	All compounds	1×10^{2}	6	(49)	1.1×10^{-1}
(72.3d)	ing.	3×10^{-4}	All compounds	3×10^{2}	1	(1)	5.8×10^{-2}
TB-161	inh. W	3×10^{-4}	All compounds	1×10^{3}	7	(21)	1.6×10^{-2}
(6.91d)	ing.	3×10^{-4}	All compounds	5×10^{2}	2	(0)	3.2×10^{-2}
DY-155	inh. W	3×10^{-4}	All compounds	2×10^{4}	2×10^{1}	(8)	6.6×10^{-4}
(10.0h)	ing.	3×10^{-4}	All compounds	7×10^{3}	1×10^{1}	(0)	2.2×10^{-3}
DY-157	inh. W	3×10^{-4}	All compounds	7×10^{4}	4×10^{1}	(7)	2.2×10^{-4}
(8.1h)	ing.	3×10^{-4}	All compounds	1×10^{4}	2×10^{1}	(0)	3.6×10^{-4}
DY-159	inh. W	3×10^{-4}	All compounds	2×10^{3}	1×10^{2}	(61)	3.0×10^{-3}
(144.4d)	ing.	3×10^{-4}	All compounds	5×10^{3}	2×10^{1}	(2)	3.3×10^{-3}
DY-165	inh. W	3×10^{-4}	All compounds	2×10^{4}	2	(5)	9.0×10^{-4}
(2.334h)	ing.	3×10^{-4}	All compounds	7×10^{3}	3	(0)	2.1×10^{-3}
DY-166	inh. W	3×10^{-4}	All compounds	4×10^{2}	2	(15)	3.6×10^{-2}
(81.6h)	ing.	3×10^{-4}	All compounds	2×10^{2}	7×10^{-1}	(0)	8.3×10^{-2}
HO-155	inh. W	3×10^{-4}	All compounds	6×10^{4}	3	(3)	2.4×10^{-4}
(48m)	ing.	3×10^{-4}	All compounds	2×10^{4}	3	(0)	6.7×10^{-4}
HO-157	inh. W	3×10^{-4}	All compounds	5×10^{5}	6	(1)	2.8×10^{-5}
(12.6m)	ing.	3×10^{-4}	All compounds	1×10^{5}	4	(0)	1.4×10^{-4}
HO-159	inh. W	3×10^{-4}	All compounds	4×10^{5}	1×10^{1}	(2)	4.0×10^{-5}
(33m)	ing.	3×10^{-4}	All compounds	8×10^{4}	8	(0)	1.8×10^{-4}
HO-161	inh. W	3×10^{-4}	All compounds	2×10^{5}	3×10^{1}	(6)	9.1×10^{-5}
(2.5h)	ing.	3×10^{-4}	All compounds	6×10^{4}	2×10^{1}	(0)	2.5×10^{-4}
HO-162	inh. W	3×10^{-4}	All compounds	9×10^{5}	1×10^{1}	(1)	1.7×10^{-5}
(15m)	ing.	3×10^{-4}	All compounds	2×10^{5}	7	(0)	9.1×10^{-5}
HO-162M	inh. W	3×10^{-4}	All compounds	1×10^{5}	6	(4)	1.6×10^{-4}
(68m)	ing.	3×10^{-4}	All compounds	3×10^{4}	6	(0)	4.6×10^{-4}
HO-164	inh. W	3×10^{-4}	All compounds	2×10^{5}	6	(2)	6.8×10^{-5}
(29m)	ing.	3×10^{-4}	All compounds	6×10^{4}	4	(0)	2.7×10^{-4}
HO-164M	inh. W	3×10^{-4}	All compounds	1×10^{5}	4	(3)	1.4×10^{-4}
(37.5m)	ing.	3×10^{-4}	All compounds	4×10^{4}	4	(0)	3.9×10^{-4}
HO-166	inh. W	3×10^{-4}	All compounds	1×10^{3}	2	(12)	1.5×10^{-2}
(26.80h)	ing.	3×10^{-4}	All compounds	3×10^{2}	7×10^{-1}	(0)	5.4×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
HO-166M	inh. W	3×10^{-4}	All compounds	4	5	(97)	4.3
(1.20×10^{3}y)	ing.	3×10^{-4}	All compounds	4×10^{2}	3	(42)	4.1×10^{-2}
HO-167	inh. W	3×10^{-4}	All compounds	2×10^{4}	5	(6)	6.2×10^{-4}
(3.1h)	ing.	3×10^{-4}	All compounds	8×10^{3}	4	(0)	1.8×10^{-3}
ER-161	inh. W	3×10^{-4}	All compounds	4×10^{4}	9	(14)	3.8×10^{-4}
(3.24h)	ing.	3×10^{-4}	All compounds	1×10^{4}	5	(0)	1.6×10^{-3}
ER-165	inh. W	3×10^{-4}	All compounds	2×10^{5}	1×10^{2}	(13)	1.0×10^{-4}
(10.36h)	ing.	3×10^{-4}	All compounds	4×10^{4}	6×10^{1}	(0)	3.7×10^{-4}
ER-169	inh. W	3×10^{-4}	All compounds	1×10^{3}	1×10^{1}	(23)	1.0×10^{-2}
(9.3d)	ing.	3×10^{-4}	All compounds	9×10^{2}	4	(0)	1.7×10^{-2}
ER-171	inh. W	3×10^{-4}	All compounds	6×10^{3}	3	(13)	2.6×10^{-3}
(7.52h)	ing.	3×10^{-4}	All compounds	2×10^{3}	2	(0)	8.8×10^{-3}
ER-172	inh. W	3×10^{-4}	All compounds	8×10^{2}	3	(15)	1.8×10^{-2}
(49.3h)	ing.	3×10^{-4}	All compounds	4×10^{2}	1	(0)	4.2×10^{-2}
TM-162	inh. W	3×10^{-4}	All compounds	1×10^{5}	2	(12)	1.5×10^{-4}
(21.7m)	ing.	3×10^{-4}	All compounds	2×10^{4}	1	(0)	7.5×10^{-4}
TM-166	inh. W	3×10^{-4}	All compounds	1×10^{4}	8	(13)	1.1×10^{-3}
(7.70h)	ing.	3×10^{-4}	All compounds	3×10^{3}	3	(0)	5.1×10^{-3}
TM-167	inh. W	3×10^{-4}	All compounds	1×10^{3}	1×10^{1}	(24)	1.3×10^{-2}
(9.24d)	ing.	3×10^{-4}	All compounds	7×10^{2}	3	(0)	2.3×10^{-2}
TM-170	inh. W	3×10^{-4}	All compounds	1×10^{2}	7	(61)	1.4×10^{-1}
(128.6d)	ing.	3×10^{-4}	All compounds	2×10^{2}	1	(2)	6.2×10^{-2}
TM-171	inh. W	3×10^{-4}	All compounds	3×10^{2}	7×10^{1}	(87)	1.7×10^{-1}
(1.92y)	ing.	3×10^{-4}	All compounds	3×10^{3}	2×10^{1}	(10)	4.8×10^{-3}
TM-172	inh. W	3×10^{-4}	All compounds	6×10^{2}	2	(16)	2.4×10^{-2}
(63.6h)	ing.	3×10^{-4}	All compounds	2×10^{2}	8×10^{-1}	(0)	6.9×10^{-2}
TM-173	inh. W	3×10^{-4}	All compounds	7×10^{3}	4	(13)	2.1×10^{-3}
(8.24h)	ing.	3×10^{-4}	All compounds	2×10^{3}	2	(0)	7.4×10^{-3}
TM-175	inh. W	3×10^{-4}	All compounds	9×10^{4}	1	(10)	1.6×10^{-4}
(15.2m)	ing.	3×10^{-4}	All compounds	2×10^{4}	8×10^{-1}	(0)	7.4×10^{-4}
YB-162	inh. W	3×10^{-4}	All other compounds	1×10^{5}	2	(2)	1.4×10^{-4}
(18.9m)	Y	3×10^{-4}	Oxides, hydroxides and fluorides	1×10^{5}	2	(0)	1.5×10^{-4}
	ing.	3×10^{-4}	All compounds	3×10^{4}	1	(0)	5.2×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
YB-166	inh.	W	3×10^{-4}	All other compounds	1×10^{3}	5	(11)	1.0×10^{-2}
(56.7h)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	1×10^{3}	4	(1)	1.2×10^{-2}
	ing.		3×10^{-4}	All compounds	5×10^{2}	2	(0)	2.8×10^{-2}
YB-167	inh.	W	3×10^{-4}	All other compounds	3×10^{5}	5	(1)	4.9×10^{-5}
(17.5m)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	3×10^{5}	5	(0)	5.3×10^{-5}
	ing.		3×10^{-4}	All compounds	9×10^{4}	5	(0)	1.6×10^{-4}
YB-169	inh.	W	3×10^{-4}	All other compounds	4×10^{2}	9	(29)	3.5×10^{-2}
(32.01d)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	3×10^{2}	6	(2)	5.1×10^{-2}
	ing.		3×10^{-4}	All compounds	6×10^{2}	3	(0)	2.6×10^{-2}
YB-175	inh.	W	3×10^{-4}	All other compounds	2×10^{3}	1×10^{1}	(13)	7.0×10^{-3}
(4.19d)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	2×10^{3}	9	(1)	8.1×10^{-3}
	ing.		3×10^{-4}	All compounds	8×10^{2}	3	(0)	1.9×10^{-2}
YB-177	inh.	W	3×10^{-4}	All other compounds	2×10^{4}	2	(4)	8.5×10^{-4}
(1.9h)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	2×10^{4}	2	(0)	9.2×10^{-4}
	ing.		3×10^{-4}	All compounds	9×10^{3}	3	(0)	1.6×10^{-3}
YB-178	inh.	W	3×10^{-4}	All other compounds	1×10^{4}	1	(3)	1.0×10^{-3}
(74m)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	1×10^{4}	1	(0)	1.1×10^{-3}
	ing.		3×10^{-4}	All compounds	7×10^{3}	1	(0)	2.3×10^{-3}
LU-169	inh.	W	3×10^{-4}	All other compounds	4×10^{3}	9	(10)	3.7×10^{-3}
(34.06h)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	3×10^{3}	7	(1)	4.6×10^{-3}
	ing.		3×10^{-4}	All compounds	1×10^{3}	4	(0)	1.0×10^{-2}
LU-170	inh.	W	3×10^{-4}	All other compounds	2×10^{3}	6	(11)	7.3×10^{-3}
(2.00d)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	2×10^{3}	5	(1)	8.5×10^{-3}
	ing.		3×10^{-4}	All compounds	7×10^{2}	2	(0)	2.2×10^{-2}
LU-171	inh.	W	3×10^{-4}	All other compounds	1×10^{3}	1×10^{1}	(19)	1.1×10^{-2}
(8.22d)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	1×10^{3}	9	(1)	1.2×10^{-2}
	ing.		3×10^{-4}	All compounds	7×10^{2}	3	(0)	2.0×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/μCi)
LU-172	inh.	W	3×10^{-4}	All other compounds	9×10^{2}	6	(17)	1.6×10^{-2}
(6.70d)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	9×10^{2}	5	(1)	1.7×10^{-2}
	ing.		3×10^{-4}	All compounds	4×10^{2}	2	(0)	3.3×10^{-2}
LU-173	inh.	W	3×10^{-4}	All other compounds	2×10^{2}	4×10^{1}	(79)	2.2×10^{-2}
(1.37y)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	1×10^{2}	2×10^{1}	(9)	1.6×10^{-1}
	ing.		3×10^{-4}	All compounds	2×10^{3}	9	(6)	8.6×10^{-3}
LU-174	inh.	W	3×10^{-4}	All other compounds	1×10^{2}	3×10^{1}	(88)	4.6×10^{-2}
(3.31y)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	6×10^{1}	2×10^{1}	(17)	2.6×10^{-1}
	ing.		3×10^{-4}	All compounds	2×10^{3}	9	(12)	9.4×10^{-3}
LU-174M	inh.	W	3×10^{-4}	All other compounds	2×10^{2}	2×10^{1}	(57)	2.0×10^{-1}
(142d)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	8×10^{1}	6	(3)	1.9×10^{-1}
	ing.		3×10^{-4}	All compounds	7×10^{2}	3	(2)	2.3×10^{-2}
LU-176	inh.	W	3×10^{-4}	All other compounds	5	5	(97)	1.1×10^{1}
(3.60×10^{10}y)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	4	4	(40)	3.7
	ing.		3×10^{-4}	All compounds	2×10^{2}	2	(34)	6.1×10^{-2}
LU-176M	inh.	W	3×10^{-4}	All other compounds	1×10^{4}	2	(5)	1.5×10^{-3}
(3.68h)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	1×10^{4}	2	(0)	1.6×10^{-3}
	ing.		3×10^{-4}	All compounds	4×10^{3}	2	(0)	4.2×10^{-3}
LU-177	inh.	W	3×10^{-4}	All other compounds	1×10^{3}	9	(17)	1.1×10^{-2}
(6.71d)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	1×10^{3}	8	(1)	1.2×10^{-2}
	ing.		3×10^{-4}	All compounds	6×10^{2}	3	(0)	2.4×10^{-2}
LU-177M	inh.	W	3×10^{-4}	All other compounds	9×10^{1}	6	(60)	1.7×10^{-1}
(160.9d)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	3×10^{1}	2	(4)	5.2×10^{-1}
	ing.		3×10^{-4}	All compounds	2×10^{2}	1	(2)	6.2×10^{-2}
LU-178	inh.	W	3×10^{-4}	All other compounds	4×10^{4}	1	(2)	3.4×10^{-4}
(28.4m)		Y	3×10^{-4}	Oxides, hydroxides and fluorides	4×10^{4}	1	(0)	3.7×10^{-4}
	ing.		3×10^{-4}	All compounds	1×10^{4}	9×10^{-1}	(0)	1.4×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/ μCi)
LU-178M (22.7m)	inh. W	3×10^{-4}	All other compounds	7×10^{4}	1	(2)	2.3×10^{-4}
	Y	3×10^{-4}	Oxides, hydroxides and fluorides	6×10^{4}	1	(0)	2.4×10^{-4}
	ing.	3×10^{-4}	All compounds	1×10^{4}	9×10^{-1}	(0)	1.1×10^{-3}
LU-179 (4.59h)	inh. W	3×10^{-4}	All other compounds	9×10^{3}	3	(6)	1.7×10^{-3}
	Y	3×10^{-4}	Oxides, hydroxides and fluorides	8×10^{3}	3	(0)	1.9×10^{-3}
	ing.	3×10^{-4}	All compounds	3×10^{3}	2	(0)	5.4×10^{-3}
HF-170 (16.01h)	inh. D	2×10^{-3}	All other compounds	6×10^{3}	9	(59)	8.4×10^{-4}
	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	4×10^{3}	5	(14)	3.9×10^{-3}
	ing.	2×10^{-3}	All compounds	1×10^{3}	2	(0)	1.2×10^{-2}
HF-172 (1.87y)	inh. D	2×10^{-3}	All other compounds	7	4	(100)	7.1×10^{-1}
	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	3×10^{1}	5	(82)	1.8×10^{-1}
	ing.	2×10^{-3}	All compounds	5×10^{2}	4	(34)	3.1×10^{-2}
HF-173 (24.0h)	inh. D	2×10^{-3}	All other compounds	1×10^{4}	2×10^{1}	(65)	4.6×10^{-4}
	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	1×10^{4}	2×10^{1}	(15)	1.5×10^{-3}
	ing.	2×10^{-3}	All compounds	3×10^{3}	7	(0)	5.4×10^{-3}
HF-175 (70d)	inh. D	2×10^{-3}	All other compounds	3×10^{2}	2×10^{1}	(98)	1.6×10^{-2}
	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	6×10^{2}	2×10^{1}	(41)	2.4×10^{-2}
	ing.	2×10^{-3}	All compounds	1×10^{3}	6	(6)	1.2×10^{-2}
HF-177M (51.4m)	inh. D	2×10^{-3}	All other compounds	3×10^{4}	3	(34)	4.3×10^{-4}
	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	3×10^{4}	2	(15)	4.8×10^{-4}
	ing.	2×10^{-3}	All compounds	9×10^{3}	1	(0)	1.7×10^{-3}
HF-178M (31y)	inh. D	2×10^{-3}	All other compounds	8×10^{-1}	3	(100)	6.0
	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	3	4	(97)	1.5
	ing.	2×10^{-3}	All compounds	2×10^{2}	4	(78)	2.7×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
HF-179M	inh. D	2×10^{-3}	All other compounds	3×10^{2}	8	(96)	2.0×10^{-2}
(25.1d)	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	3×10^{2}	6	(29)	4.8×10^{-2}
	ing.	2×10^{-3}	All compounds	4×10^{2}	2	(3)	4.3×10^{-2}
HF-180M	inh. D	2×10^{-3}	All other compounds	2×10^{4}	1×10^{1}	(47)	6.5×10^{-4}
(5.5h)	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	2×10^{4}	7	(15)	8.6×10^{-4}
	ing.	2×10^{-3}	All compounds	4×10^{3}	4	(0)	3.4×10^{-3}
HF-181	inh. D	2×10^{-3}	All other compounds	2×10^{2}	8	(97)	3.0×10^{-2}
(42.4d)	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	2×10^{2}	6	(34)	6.4×10^{-2}
	ing.	2×10^{-3}	All compounds	4×10^{2}	2	(4)	4.3×10^{-2}
HF-182	inh. D	2×10^{-3}	All other compounds	7×10^{-1}	4	(100)	7.4
(9×10^{6}y)	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	3	4	(98)	1.9
	ing.	2×10^{-3}	All compounds	2×10^{2}	5	(84)	3.1×10^{-2}
HF-182M	inh. D	2×10^{-3}	All other compounds	6×10^{4}	6	(35)	2.3×10^{-4}
(61.5m)	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	5×10^{4}	3	(15)	2.8×10^{-4}
	ing.	2×10^{-3}	All compounds	2×10^{4}	3	(0)	8.4×10^{-4}
HF-183	inh. D	2×10^{-3}	All other compounds	3×10^{4}	3	(35)	4.4×10^{-4}
(64m)	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	2×10^{4}	2	(15)	6.5×10^{-4}
	ing.	2×10^{-3}	All compounds	1×10^{4}	2	(0)	1.4×10^{-3}
HF-184	inh. D	2×10^{-3}	All other compounds	6×10^{3}	3	(44)	2.3×10^{-3}
(4.12h)	W	2×10^{-3}	Oxides, hydroxides, halides, carbides and nitrates	4×10^{3}	1	(15)	3.5×10^{-3}
	ing.	2×10^{-3}	All compounds	1×10^{3}	8×10^{-1}	(0)	1.2×10^{-2}
TA-172	inh. W	1×10^{-3}	All other compounds	4×10^{4}	2	(14)	3.3×10^{-4}
(36.8m)	Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	4×10^{4}	1	(1)	4.0×10^{-4}
	ing.	1×10^{-3}	All compounds	1×10^{4}	1	(0)	1.3×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
TA-173 (3.65h)	inh. W	1×10^{-3}	All other compounds	1×10^{4}	3	(15)	1.4×10^{-3}
	Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	1×10^{4}	2	(1)	1.5×10^{-3}
	ing.	1×10^{-3}	All compounds	4×10^{3}	2	(0)	4.2×10^{-3}
TA-174 (1.2h)	inh. W	1×10^{-3}	All other compounds	3×10^{4}	3	(15)	4.3×10^{-4}
	Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	3×10^{4}	2	(1)	4.6×10^{-4}
	ing.	1×10^{-3}	All compounds	1×10^{4}	3	(0)	1.2×10^{-3}
TA-175 (10.5h)	inh. W	1×10^{-3}	All other compounds	1×10^{4}	1×10^{1}	(14)	1.0×10^{-3}
	Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	1×10^{4}	1×10^{1}	(1)	1.2×10^{-3}
	ing.	1×10^{-3}	All compounds	4×10^{3}	6	(0)	3.7×10^{-3}
TA-176 (8.08h)	inh. W	1×10^{-3}	All other compounds	1×10^{4}	7	(14)	1.3×10^{-3}
	Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	1×10^{4}	7	(1)	1.3×10^{-3}
	ing.	1×10^{-3}	All compounds	3×10^{3}	3	(0)	5.7×10^{-3}
TA-177 (56.6h)	inh. W	1×10^{-3}	All other compounds	1×10^{4}	4×10^{1}	(17)	1.2×10^{-3}
	Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	1×10^{4}	4×10^{1}	(1)	1.3×10^{-3}
	ing.	1×10^{-3}	All compounds	4×10^{3}	2×10^{1}	(0)	3.4×10^{-3}
TA-178 (2.2h)	inh. W	1×10^{-3}	All other compounds	4×10^{4}	5	(16)	4.0×10^{-4}
	Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	3×10^{4}	5	(1)	4.4×10^{-4}
	ing.	1×10^{-3}	All compounds	1×10^{4}	4	(0)	1.2×10^{-3}
TA-179 (664.9d)	inh. W	1×10^{-3}	All other compounds	2×10^{3}	1×10^{2}	(45)	7.0×10^{-3}
	Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	3×10^{2}	7×10^{1}	(2)	4.7×10^{-2}
	ing.	1×10^{-3}	All compounds	7×10^{3}	4×10^{1}	(5)	2.0×10^{-3}
TA-180 (1.0×10^{13}y)	inh. W	1×10^{-3}	All other compounds	2×10^{2}	1×10^{1}	(47)	9.7×10^{-2}
	Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	8	5	(2)	1.8
	ing.	1×10^{-3}	All compounds	5×10^{2}	3	(5)	2.9×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
TA-180M (8.1h)	inh.	W	1×10^{-3}	All other compounds	4×10^{4}	2×10^{1}	(14)	3.8×10^{-4}
		Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	4×10^{4}	2×10^{1}	(1)	4.0×10^{-4}
	ing.		1×10^{-3}	All compounds	1×10^{4}	1×10^{1}	(0)	1.3×10^{-3}
TA-182 (115.0d)	inh.	W	1×10^{-3}	All other compounds	1×10^{2}	5	(37)	1.2×10^{-1}
		Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	5×10^{1}	3	(2)	3.1×10^{-1}
	ing.		1×10^{-3}	All compounds	3×10^{2}	1	(3)	5.2×10^{-2}
TA-182M (15.84m)	inh.	W	1×10^{-3}	All other compounds	2×10^{5}	3	(10)	7.8×10^{-5}
		Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	1×10^{5}	2	(1)	1.0×10^{-4}
	ing.		1×10^{-3}	All compounds	5×10^{4}	2	(0)	3.3×10^{-4}
TA-183 (5.1d)	inh.	W	1×10^{-3}	All other compounds	7×10^{2}	4	(20)	2.2×10^{-2}
		Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	6×10^{2}	3	(1)	2.4×10^{-2}
	ing.		1×10^{-3}	All compounds	3×10^{2}	1	(0)	5.5×10^{-2}
TA-184 (8.7h)	inh.	W	1×10^{-3}	All other compounds	4×10^{3}	2	(14)	4.2×10^{-3}
		Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	3×10^{3}	2	(1)	4.4×10^{-3}
	ing.		1×10^{-3}	All compounds	1×10^{3}	1	(0)	1.5×10^{-2}
TA-185 (49m)	inh.	W	1×10^{-3}	All other compounds	3×10^{4}	1	(14)	5.7×10^{-4}
		Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	2×10^{4}	1	(1)	6.3×10^{-4}
	ing.		1×10^{-3}	All compounds	9×10^{3}	1	(0)	1.7×10^{-3}
TA-186 (10.5m)	inh.	W	1×10^{-3}	All other compounds	8×10^{4}	8×10^{-1}	(8)	1.8×10^{-4}
		Y	1×10^{-3}	Oxides, hydroxides, halides, carbides, nitrates & nitrides	8×10^{4}	8×10^{-1}	(0)	1.9×10^{-4}
	ing.		1×10^{-3}	All compounds	2×10^{4}	4×10^{-1}	(0)	9.7×10^{-4}
W-176 (2.3h)	inh.	D	3×10^{-1}	All compounds	4×10^{4}	6	(6)	3.4×10^{-4}
	ing.		1×10^{-2}	Tungstic acid	7×10^{3}	3	(0)	2.1×10^{-3}
			3×10^{-1}	All other compounds	9×10^{3}	3	(1)	1.6×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (µCi)	BODY BURDEN (µCi)	BODY BURDEN (% sys)	H_{50} (rem/µCi)
W-177 (135m)	inh. D	3×10^{-1}	All compounds	6×10^{4}	8	(6)	2.5×10^{-4}
	ing.	1×10^{-2}	Tungstic acid	1×10^{4}	5	(0)	1.0×10^{-3}
		3×10^{-1}	All other compounds	2×10^{4}	6	(1)	8.5×10^{-4}
W-178 (21.7d)	inh. D	3×10^{-1}	All compounds	2×10^{4}	4×10^{1}	(55)	9.5×10^{-4}
	ing.	1×10^{-2}	Tungstic acid	2×10^{3}	8	(1)	8.7×10^{-3}
		3×10^{-1}	All other compounds	2×10^{3}	1×10^{1}	(19)	6.1×10^{-3}
W-179 (37.5m)	inh. D	3×10^{-1}	All compounds	8×10^{5}	3×10^{1}	(5)	1.8×10^{-5}
	ing.	1×10^{-2}	Tungstic acid	2×10^{5}	2×10^{1}	(0)	7.9×10^{-5}
		3×10^{-1}	All other compounds	2×10^{5}	2×10^{1}	(0)	7.8×10^{-5}
W-181 (121.2d)	inh. D	3×10^{-1}	All compounds	3×10^{4}	2×10^{2}	(83)	1.9×10^{-4}
	ing.	1×10^{-2}	Tungstic acid	6×10^{3}	3×10^{1}	(2)	2.6×10^{-3}
		3×10^{-1}	All other compounds	8×10^{3}	5×10^{1}	(47)	1.9×10^{-3}
W-185 (75.1d)	inh. D	3×10^{-1}	All compounds	6×10^{3}	3×10^{1}	(77)	2.5×10^{-3}
	ing.	1×10^{-2}	Tungstic acid	6×10^{2}	3	(1)	2.3×10^{-2}
		3×10^{-1}	All other compounds	9×10^{2}	5	(39)	1.7×10^{-2}
W-187 (23.9h)	inh. D	3×10^{-1}	All compounds	6×10^{3}	5	(13)	2.5×10^{-3}
	ing.	1×10^{-2}	Tungstic acid	7×10^{2}	2	(0)	2.2×10^{-2}
		3×10^{-1}	All other compounds	9×10^{2}	2	(3)	1.6×10^{-2}
W-188 (69.4d)	inh. D	3×10^{-1}	All compounds	9×10^{2}	4	(76)	1.7×10^{-2}
	ing.	1×10^{-2}	Tungstic acid	1×10^{2}	6×10^{-1}	(1)	1.2×10^{-1}
		3×10^{-1}	All other compounds	2×10^{2}	9×10^{-1}	(37)	8.6×10^{-2}
RE-177 (14.0m)	inh. D	8×10^{-1}	All other compounds	1×10^{5}	3	(25)	1.1×10^{-4}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	1×10^{5}	2	(10)	1.2×10^{-4}
	ing.	8×10^{-1}	All compounds	3×10^{4}	1	(6)	5.3×10^{-4}
RE-178 (13.2m)	inh. D	8×10^{-1}	All other compounds	1×10^{5}	2	(24)	1.3×10^{-4}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	1×10^{5}	1	(10)	1.4×10^{-4}
	ing.	8×10^{-1}	All compounds	2×10^{4}	8×10^{-1}	(5)	7.1×10^{-4}
RE-181 (20h)	inh. D	8×10^{-1}	All other compounds	6×10^{3}	9	(71)	2.6×10^{-3}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	6×10^{3}	9	(41)	2.5×10^{-3}
	ing.	8×10^{-1}	All compounds	3×10^{3}	7	(75)	4.7×10^{-3}
RE-182 (12.7h)	inh. D	8×10^{-1}	All other compounds	1×10^{4}	1×10^{1}	(67)	1.4×10^{-3}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	1×10^{4}	1×10^{1}	(38)	1.4×10^{-3}
	ing.	8×10^{-1}	All compounds	5×10^{3}	9	(71)	2.9×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
RE-182 (64.0h)	inh. D	8×10^{-1}	All other compounds	2×10^{3}	5	(80)	1.0×10^{-2}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	1×10^{3}	5	(42)	1.1×10^{-2}
	ing.	8×10^{-1}	All compounds	1×10^{3}	4	(81)	1.6×10^{-2}
RE-184 (38.0d)	inh. D	8×10^{-1}	All other compounds	2×10^{3}	1×10^{1}	(89)	7.6×10^{-3}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	6×10^{2}	1×10^{1}	(23)	2.7×10^{-2}
	ing.	8×10^{-1}	All compounds	1×10^{3}	1×10^{1}	(88)	1.1×10^{-2}
RE-184M (165d)	inh. D	8×10^{-1}	All other compounds	1×10^{3}	7	(90)	1.5×10^{-2}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	2×10^{2}	5	(18)	9.7×10^{-2}
	ing.	8×10^{-1}	All compounds	7×10^{2}	7	(89)	2.1×10^{-2}
RE-186 (90.64h)	inh. D	8×10^{-1}	All other compounds	1×10^{3}	4	(82)	1.3×10^{-2}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	9×10^{2}	4	(41)	1.6×10^{-2}
	ing.	8×10^{-1}	All compounds	8×10^{2}	4	(83)	2.0×10^{-2}
RE-186M (2.0×10^{5}y)	inh. D	8×10^{-1}	All other compounds	5×10^{2}	4	(90)	3.0×10^{-2}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	5×10^{1}	2	(16)	2.8×10^{-1}
	ing.	8×10^{-1}	All compounds	4×10^{2}	4	(90)	3.9×10^{-2}
RE-187 (5×10^{10}y)	inh. D	8×10^{-1}	All other compounds	3×10^{5}	2×10^{3}	(90)	6.0×10^{-5}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	4×10^{4}	1×10^{3}	(16)	4.0×10^{-4}
	ing.	8×10^{-1}	All compounds	2×10^{5}	2×10^{3}	(90)	8.2×10^{-5}
RE-188 (16.98h)	inh. D	8×10^{-1}	All other compounds	2×10^{3}	2	(70)	9.7×10^{-3}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	2×10^{3}	2	(40)	9.3×10^{-3}
	ing.	8×10^{-1}	All compounds	8×10^{2}	2	(74)	1.8×10^{-2}
RE-188M (18.6m)	inh. D	8×10^{-1}	All other compounds	8×10^{4}	2	(28)	1.9×10^{-4}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	7×10^{4}	1	(11)	2.0×10^{-4}
	ing.	8×10^{-1}	All compounds	3×10^{4}	2	(9)	4.6×10^{-4}
RE-189 (24.3h)	inh. D	8×10^{-1}	All other compounds	3×10^{3}	5	(73)	5.9×10^{-3}
	W	8×10^{-1}	Oxides, hydroxides, halides and nitrates	3×10^{3}	5	(42)	5.7×10^{-3}
	ing.	8×10^{-1}	All compounds	1×10^{3}	4	(76)	1.0×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
OS-180 (22m)	inh.	D	1×10^{-2}	All other compounds	2×10^{5}	6	(28)	8.0×10^{-5}
		W	1×10^{-2}	Halides & nitrates	2×10^{5}	4	(12)	8.6×10^{-5}
		Y	1×10^{-2}	Oxides and hydroxides	2×10^{5}	3	(1)	9.2×10^{-5}
	ing.		1×10^{-2}	All compounds	4×10^{4}	2	(0)	4.3×10^{-4}
OS-181 (105m)	inh.	D	1×10^{-2}	All other compounds	5×10^{4}	8	(37)	3.3×10^{-4}
		W	1×10^{-2}	Halides & nitrates	3×10^{4}	4	(15)	4.7×10^{-4}
		Y	1×10^{-2}	Oxides and hydroxides	3×10^{4}	3	(1)	5.1×10^{-4}
	ing.		1×10^{-2}	All compounds	1×10^{4}	3	(0)	1.4×10^{-3}
OS-182 (22h)	inh.	D	1×10^{-2}	All other compounds	6×10^{3}	1×10^{1}	(61)	2.5×10^{-3}
		W	1×10^{-2}	Halides & nitrates	3×10^{3}	5	(13)	4.7×10^{-3}
		Y	1×10^{-2}	Oxides and hydroxides	3×10^{3}	4	(1)	5.4×10^{-3}
	ing.		1×10^{-2}	All compounds	1×10^{3}	2	(1)	1.5×10^{-2}
OS-185 (94d)	inh.	D	1×10^{-2}	All other compounds	5×10^{2}	4×10^{1}	(98)	3.2×10^{-2}
		W	1×10^{-2}	Halides & nitrates	6×10^{2}	3×10^{1}	(43)	2.4×10^{-2}
		Y	1×10^{-2}	Oxides and hydroxides	3×10^{2}	2×10^{1}	(3)	5.3×10^{-2}
	ing.		1×10^{-2}	All compounds	1×10^{3}	9	(26)	1.0×10^{-2}
OS-189M (6.0h)	inh.	D	1×10^{-2}	All other compounds	1×10^{5}	8×10^{1}	(45)	1.0×10^{-4}
		W	1×10^{-2}	Halides & nitrates	1×10^{5}	5×10^{1}	(14)	1.5×10^{-4}
		Y	1×10^{-2}	Oxides and hydroxides	1×10^{5}	4×10^{1}	(1)	1.5×10^{-4}
	ing.		1×10^{-2}	All compounds	3×10^{4}	3×10^{1}	(1)	4.5×10^{-4}
OS-191 (15.4d)	inh.	D	1×10^{-2}	All other compounds	2×10^{3}	4×10^{1}	(94)	8.3×10^{-3}
		W	1×10^{-2}	Halides & nitrates	7×10^{2}	9	(26)	2.1×10^{-2}
		Y	1×10^{-2}	Oxides and hydroxides	6×10^{2}	7	(3)	2.5×10^{-2}
	ing.		1×10^{-2}	All compounds	6×10^{2}	3	(8)	2.4×10^{-2}
OS-191M (13.03h)	inh.	D	1×10^{-2}	All other compounds	3×10^{4}	3×10^{1}	(53)	5.3×10^{-4}
		W	1×10^{-2}	Halides & nitrates	1×10^{4}	1×10^{1}	(13)	1.3×10^{-3}
		Y	1×10^{-2}	Oxides and hydroxides	1×10^{4}	9	(1)	1.5×10^{-3}
	ing.		1×10^{-2}	All compounds	5×10^{3}	8	(1)	3.3×10^{-3}
OS-193 (30.0h)	inh.	D	1×10^{-2}	All other compounds	3×10^{3}	7	(66)	4.9×10^{-3}
		W	1×10^{-2}	Halides & nitrates	2×10^{3}	3	(14)	9.1×10^{-3}
		Y	1×10^{-2}	Oxides and hydroxides	1×10^{3}	3	(1)	1.1×10^{-2}
	ing.		1×10^{-2}	All compounds	5×10^{2}	1	(1)	3.1×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
OS-194 (6.0y)	inh.	D	1×10^{-2}	All other compounds	3×10^{1}	6	(99)	5.8×10^{-1}
		W	1×10^{-2}	Halides & nitrates	3×10^{1}	3	(63)	5.1×10^{-1}
		Y	1×10^{-2}	Oxides and hydroxides	3	1	(5)	5.4
	ing.		1×10^{-2}	All compounds	1×10^{2}	1	(50)	1.1×10^{-1}
IR-182 (15m)	inh.	D	1×10^{-2}	All other compounds	6×10^{4}	1	(25)	2.4×10^{-4}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	5×10^{4}	8×10^{-1}	(10)	2.8×10^{-4}
		Y	1×10^{-2}	Oxides and hydroxides	5×10^{4}	7×10^{-1}	(1)	2.9×10^{-4}
	ing.		1×10^{-2}	All compounds	1×10^{4}	5×10^{-1}	(0)	1.2×10^{-3}
IR-184 (3.02h)	inh.	D	1×10^{-2}	All other compounds	2×10^{4}	6	(40)	7.9×10^{-4}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	2×10^{4}	3	(15)	9.7×10^{-4}
		Y	1×10^{-2}	Oxides and hydroxides	1×10^{4}	3	(1)	1.0×10^{-3}
	ing.		1×10^{-2}	All compounds	5×10^{3}	2	(0)	3.3×10^{-3}
IR-185 (14.0h)	inh.	D	1×10^{-2}	All other compounds	1×10^{4}	2×10^{1}	(54)	1.0×10^{-3}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	9×10^{3}	1×10^{1}	(13)	1.6×10^{-3}
		Y	1×10^{-2}	Oxides and hydroxides	8×10^{3}	8	(1)	1.9×10^{-3}
	ing.		1×10^{-2}	All compounds	2×10^{3}	4	(1)	6.2×10^{-3}
IR-186 (15.8h)	inh.	D	1×10^{-2}	All other compounds	1×10^{4}	1×10^{1}	(56)	1.6×10^{-3}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	7×10^{3}	8	(13)	2.2×10^{-3}
		Y	1×10^{-2}	Oxides and hydroxides	6×10^{3}	7	(1)	2.6×10^{-3}
	ing.		1×10^{-2}	All compounds	2×10^{3}	3	(1)	9.4×10^{-3}
IR-187 (10.5h)	inh.	D	1×10^{-2}	All other compounds	3×10^{4}	3×10^{1}	(51)	4.3×10^{-4}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	2×10^{4}	2×10^{1}	(13)	6.6×10^{-4}
		Y	1×10^{-2}	Oxides and hydroxides	2×10^{4}	2×10^{1}	(1)	6.8×10^{-4}
	ing.		1×10^{-2}	All compounds	6×10^{3}	9	(1)	2.4×10^{-3}
IR-188 (41.5h)	inh.	D	1×10^{-2}	All other compounds	5×10^{3}	2×10^{1}	(71)	9.2×10^{-4}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	4×10^{3}	1×10^{1}	(15)	4.3×10^{-3}
		Y	1×10^{-2}	Oxides and hydroxides	3×10^{3}	8	(2)	4.9×10^{-3}
	ing.		1×10^{-2}	All compounds	1×10^{3}	4	(2)	1.3×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
IR-189 (13.3d)	inh.	D	1×10^{-2}	All other compounds	5×10^{3}	8×10^{1}	(93)	3.3×10^{-3}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	2×10^{3}	2×10^{1}	(25)	7.8×10^{-3}
		Y	1×10^{-2}	Oxides and hydroxides	2×10^{3}	2×10^{1}	(3)	9.3×10^{-3}
	ing.		1×10^{-2}	All compounds	2×10^{3}	7	(7)	9.9×10^{-3}
IR-190 (12.1d)	inh.	D	1×10^{-2}	All other compounds	1×10^{3}	2×10^{1}	(92)	1.5×10^{-2}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	6×10^{2}	7	(24)	2.4×10^{-2}
		Y	1×10^{-2}	Oxides and hydroxides	5×10^{2}	5	(3)	2.8×10^{-2}
	ing.		1×10^{-2}	All compounds	5×10^{2}	2	(7)	3.3×10^{-2}
IR-190M (1.2h)	inh.	D	1×10^{-2}	All other compounds	2×10^{5}	3×10^{1}	(35)	6.4×10^{-5}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	1×10^{5}	9	(15)	1.3×10^{-4}
		Y	1×10^{-2}	Oxides and hydroxides	1×10^{5}	7	(1)	1.4×10^{-4}
	ing.		1×10^{-2}	All compounds	1×10^{5}	2×10^{1}	(0)	1.4×10^{-4}
IR-192 (74.02d)	inh.	D	1×10^{-2}	All other compounds	2×10^{2}	2×10^{1}	(98)	6.4×10^{-2}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	2×10^{2}	6	(40)	9.4×10^{-2}
		Y	1×10^{-2}	Oxides and hydroxides	8×10^{1}	3	(3)	1.9×10^{-1}
	ing.		1×10^{-2}	All compounds	3×10^{2}	2	(23)	4.8×10^{-2}
IR-192M (241y)	inh.	D	1×10^{-2}	All other compounds	8×10^{1}	2×10^{1}	(99)	1.9×10^{-1}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	2×10^{2}	2×10^{1}	(65)	7.8×10^{-2}
		Y	1×10^{-2}	Oxides and hydroxides	5	3	(5)	2.8
	ing.		1×10^{-2}	All compounds	4×10^{3}	4×10^{1}	(52)	1.3×10^{-3}
IR-194 (19.15h)	inh.	D	1×10^{-2}	All other compounds	2×10^{3}	3	(59)	7.3×10^{-3}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	1×10^{3}	2	(13)	1.2×10^{-2}
		Y	1×10^{-2}	Oxides and hydroxides	1×10^{3}	1	(1)	1.4×10^{-2}
	ing.		1×10^{-2}	All compounds	3×10^{2}	7×10^{-1}	(1)	4.7×10^{-2}
IR-194M (171d)	inh.	D	1×10^{-2}	All other compounds	9×10^{1}	1×10^{1}	(99)	1.7×10^{-1}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	1×10^{2}	6	(49)	1.4×10^{-1}
		Y	1×10^{-2}	Oxides and hydroxides	4×10^{1}	3	(4)	4.2×10^{-1}
	ing.		1×10^{-2}	All compounds	3×10^{2}	2	(34)	5.2×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
IR-195 (2.5h)	inh.	D	1×10^{-2}	All other compounds	2×10^{4}	5	(39)	6.7×10^{-4}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	2×10^{4}	3	(15)	8.3×10^{-4}
		Y	1×10^{-2}	Oxides and hydroxides	2×10^{4}	3	(1)	8.9×10^{-4}
	ing.		1×10^{-2}	All compounds	8×10^{3}	3	(0)	2.0×10^{-3}
IR-195M (3.8h)	inh.	D	1×10^{-2}	All other compounds	2×10^{4}	6	(41)	9.8×10^{-4}
		W	1×10^{-2}	Halides, nitrates and metallic iridium	1×10^{4}	3	(14)	1.3×10^{-3}
		Y	1×10^{-2}	Oxides and hydroxides	1×10^{4}	3	(1)	1.4×10^{-3}
	ing.		1×10^{-2}	All compounds	4×10^{3}	2	(0)	3.9×10^{-3}
PT-186 (2.0h)	inh.	D	1×10^{-2}	All compounds	4×10^{4}	7	(38)	4.1×10^{-4}
	ing.		1×10^{-2}	All compounds	7×10^{3}	2	(0)	2.1×10^{-3}
PT-188 (10.2d)	inh.	D	1×10^{-2}	All compounds	1×10^{3}	9	(85)	1.4×10^{-2}
	ing.		1×10^{-2}	All compounds	6×10^{2}	3	(3)	2.5×10^{-2}
PT-189 (10.87h)	inh.	D	1×10^{-2}	All compounds	4×10^{4}	3×10^{1}	(51)	4.2×10^{-4}
	ing.		1×10^{-2}	All compounds	6×10^{3}	9	(1)	2.6×10^{-3}
PT-191 (2.8d)	inh.	D	1×10^{-2}	All compounds	7×10^{3}	3×10^{1}	(74)	2.0×10^{-3}
	ing.		1×10^{-2}	All compounds	1×10^{3}	5	(2)	1.0×10^{-2}
PT-193 (50y)	inh.	D	1×10^{-2}	All compounds	8×10^{3}	2×10^{2}	(95)	1.8×10^{-3}
	ing.		1×10^{-2}	All compounds	1×10^{4}	6×10^{1}	(11)	1.3×10^{-3}
PT-193M (4.33d)	inh.	D	1×10^{-2}	All compounds	4×10^{3}	2×10^{1}	(79)	4.1×10^{-3}
	ing.		1×10^{-2}	All compounds	8×10^{2}	3	(2)	2.0×10^{-2}
PT-195M (4.02d)	inh.	D	1×10^{-2}	All compounds	3×10^{3}	1×10^{1}	(78)	5.4×10^{-3}
	ing.		1×10^{-2}	All compounds	6×10^{2}	2	(2)	2.7×10^{-2}
PT-197 (18.3h)	inh.	D	1×10^{-2}	All compounds	7×10^{3}	1×10^{1}	(57)	2.2×10^{-3}
	ing.		1×10^{-2}	All compounds	1×10^{3}	2	(1)	1.4×10^{-2}
PT-197M (94.4m)	inh.	D	1×10^{-2}	All compounds	3×10^{4}	4	(36)	5.2×10^{-4}
	ing.		1×10^{-2}	All compounds	1×10^{4}	2	(0)	1.6×10^{-3}
PT-199 (30.8m)	inh.	D	1×10^{-2}	All compounds	6×10^{4}	3	(30)	2.4×10^{-4}
	ing.		1×10^{-2}	All compounds	1×10^{4}	1	(0)	1.0×10^{-3}
PT-200 (12.5h)	inh.	D	1×10^{-2}	All compounds	3×10^{3}	3	(52)	5.9×10^{-3}
	ing.		1×10^{-2}	All compounds	4×10^{2}	7×10^{-1}	(1)	3.8×10^{-2}
AU-193 (17.65h)	inh.	D	1×10^{-1}	All other compounds	3×10^{4}	4×10^{1}	(59)	5.9×10^{-4}
		W	1×10^{-1}	Halides and nitrates	2×10^{4}	2×10^{1}	(16)	9.5×10^{-4}
		Y	1×10^{-1}	Oxides and hydroxides	1×10^{4}	2×10^{1}	(5)	1.1×10^{-3}
	ing.		1×10^{-1}	All compounds	4×10^{3}	9	(10)	3.7×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
AU-194 (39.5h)	inh. D	1×10^{-1}	All other compounds	8×10^{3}	2×10^{1}	(68)	6.1×10^{-4}
	W	1×10^{-1}	Halides and nitrates	6×10^{3}	1×10^{1}	(17)	2.7×10^{-3}
	Y	1×10^{-1}	Oxides and hydroxides	5×10^{3}	1×10^{1}	(6)	3.1×10^{-3}
	ing.	1×10^{-1}	All compounds	2×10^{3}	6	(12)	8.5×10^{-3}
AU-195 (183d)	inh. D	1×10^{-1}	All other compounds	9×10^{3}	6×10^{1}	(82)	1.7×10^{-3}
	W	1×10^{-1}	Halides and nitrates	5×10^{2}	2×10^{1}	(6)	2.9×10^{-2}
	Y	1×10^{-1}	Oxides and hydroxides	2×10^{2}	1×10^{1}	(1)	9.8×10^{-2}
	ing.	1×10^{-1}	All compounds	2×10^{3}	8	(22)	9.7×10^{-3}
AU-198 (2.696d)	inh. D	1×10^{-1}	All other compounds	2×10^{3}	8	(72)	6.4×10^{-3}
	W	1×10^{-1}	Halides and nitrates	1×10^{3}	4	(17)	1.4×10^{-2}
	Y	1×10^{-1}	Oxides and hydroxides	9×10^{2}	3	(7)	1.6×10^{-2}
	ing.	1×10^{-1}	All compounds	4×10^{2}	1	(14)	4.0×10^{-2}
AU-198M (2.30d)	inh. D	1×10^{-1}	All other compounds	2×10^{3}	6	(71)	8.1×10^{-3}
	W	1×10^{-1}	Halides and nitrates	8×10^{2}	3	(17)	1.9×10^{-2}
	Y	1×10^{-1}	Oxides and hydroxides	7×10^{2}	2	(7)	2.2×10^{-2}
	ing.	1×10^{-1}	All compounds	3×10^{2}	1	(14)	4.9×10^{-2}
AU-199 (3.139d)	inh. D	1×10^{-1}	All other compounds	5×10^{3}	2×10^{1}	(73)	2.9×10^{-3}
	W	1×10^{-1}	Halides and nitrates	2×10^{3}	1×10^{1}	(16)	6.3×10^{-3}
	Y	1×10^{-1}	Oxides and hydroxides	2×10^{3}	8	(7)	7.3×10^{-3}
	ing.	1×10^{-1}	All compounds	8×10^{2}	3	(15)	1.8×10^{-2}
AU-200 (48.4m)	inh. D	1×10^{-1}	All other compounds	3×10^{4}	2	(34)	4.9×10^{-4}
	W	1×10^{-1}	Halides and nitrates	3×10^{4}	1	(15)	5.5×10^{-4}
	Y	1×10^{-1}	Oxides and hydroxides	3×10^{4}	1	(1)	5.9×10^{-4}
	ing.	1×10^{-1}	All compounds	9×10^{3}	1	(1)	1.8×10^{-3}
AU-200M (18.7h)	inh. D	1×10^{-1}	All other compounds	3×10^{3}	5	(60)	4.4×10^{-3}
	W	1×10^{-1}	Halides and nitrates	2×10^{3}	3	(16)	6.7×10^{-3}
	Y	1×10^{-1}	Oxides and hydroxides	2×10^{3}	3	(5)	7.9×10^{-3}
	ing.	1×10^{-1}	All compounds	6×10^{2}	1	(10)	2.7×10^{-2}
AU-201 (26.4m)	inh. D	1×10^{-1}	All other compounds	9×10^{4}	4	(30)	1.6×10^{-4}
	W	1×10^{-1}	Halides and nitrates	9×10^{4}	2	(13)	1.7×10^{-4}
	Y	1×10^{-1}	Oxides and hydroxides	8×10^{4}	2	(1)	1.9×10^{-4}
	ing.	1×10^{-1}	All compounds	2×10^{4}	2	(1)	7.1×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
HG-193 (3.5h)								
INORGANIC	inh.	D	2×10^{-2}	Sulphates	4×10^{4}	1×10^{1}	(43)	4.1×10^{-4}
		W	2×10^{-2}	Oxides, hydroxides, halides, nitrates and sulphides	3×10^{4}	6	(16)	6.0×10^{-4}
	ing.		2×10^{-2}	All other compounds	8×10^{3}	5	(1)	1.8×10^{-3}
ORGANIC	inh.	D	1	All organic compound	4×10^{4}	1×10^{1}	(62)	4.2×10^{-4}
	ing.		1	Methyl mercury	3×10^{4}	1×10^{1}	(84)	5.8×10^{-4}
			4×10^{-1}	All other compounds	1×10^{4}	7	(23)	1.3×10^{-3}
VAPOR	inh.	*		Mercury vapor	1×10^{4}	4	(8)	1.4×10^{-3}
HG-193M (11.1h)								
INORGANIC	inh.	D	2×10^{-2}	Sulphates	1×10^{4}	1×10^{1}	(55)	1.5×10^{-3}
		W	2×10^{-2}	Oxides, hydroxides, halides, nitrates and sulphides	7×10^{3}	6	(15)	2.2×10^{-3}
	ing.		2×10^{-2}	All other compounds	2×10^{3}	2	(2)	9.4×10^{-3}
ORGANIC	inh.	D	1	All organic compound	1×10^{4}	1×10^{1}	(75)	1.3×10^{-3}
	ing.		1	Methyl mercury	7×10^{3}	1×10^{1}	(94)	2.1×10^{-3}
			4×10^{-1}	All other compounds	2×10^{3}	4	(37)	6.2×10^{-3}
VAPOR	inh.	*		Mercury vapor	3×10^{3}	4	(21)	5.0×10^{-3}
HG-194 (260y)								
INORGANIC	inh.	D	2×10^{-2}	Sulphates	3×10^{1}	2×10^{1}	(100)	5.1×10^{-1}
		W	2×10^{-2}	Oxides, hydroxides, halides, nitrates and sulphides	1×10^{2}	2×10^{1}	(85)	1.4×10^{-1}
	ing.		2×10^{-2}	All other compounds	7×10^{2}	2×10^{1}	(86)	2.1×10^{-2}
ORGANIC	inh.	D	1	All organic compound	2×10^{1}	2×10^{1}	(100)	7.1×10^{-1}
	ing.		1	Methyl mercury	1×10^{1}	2×10^{1}	(100)	1.1
			4×10^{-1}	All other compounds	3×10^{1}	2×10^{1}	(100)	4.6×10^{-1}
VAPOR	inh.	*		Mercury vapor	2×10^{1}	2×10^{1}	(100)	7.4×10^{-1}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
HG-195 (9.9h)								
INORGANIC	inh.	D	2×10^{-2}	Sulphates	4×10^{4}	4×10^{1}	(54)	4.0×10^{-4}
		W	2×10^{-2}	Oxides, hydroxides, halides, nitrates and sulphides	2×10^{4}	2×10^{1}	(15)	6.7×10^{-4}
	ing.		2×10^{-2}	All other compounds	7×10^{3}	1×10^{1}	(2)	2.1×10^{-3}
ORGANIC	inh.	D	1	All organic compound	4×10^{4}	4×10^{1}	(74)	4.1×10^{-4}
	ing.		1	Methyl mercury	2×10^{4}	4×10^{1}	(93)	6.1×10^{-4}
			4×10^{-1}	All other compounds	1×10^{4}	2×10^{1}	(35)	1.4×10^{-3}
VAPOR	inh.	*		Mercury vapor	1×10^{4}	1×10^{1}	(19)	1.4×10^{-3}
HG-195M (41.6h)								
INORGANIC	inh.	D	2×10^{-2}	Sulphates	4×10^{3}	2×10^{1}	(75)	3.4×10^{-3}
		W	2×10^{-2}	Oxides, hydroxides, halides, nitrates and sulphides	2×10^{3}	6	(18)	6.7×10^{-3}
	ing.		2×10^{-2}	All other compounds	7×10^{2}	2	(4)	2.1×10^{-2}
ORGANIC	inh.	D	1	All organic compound	4×10^{3}	2×10^{1}	(89)	4.2×10^{-3}
	ing.		1	Methyl mercury	2×10^{3}	1×10^{1}	(98)	7.2×10^{-3}
			4×10^{-1}	All other compounds	1×10^{3}	5	(56)	1.3×10^{-2}
VAPOR	inh.	*		Mercury vapor	2×10^{3}	8	(50)	9.2×10^{-3}
HG-197 (64.1h)								
INORGANIC	inh.	D	2×10^{-2}	Sulphates	1×10^{4}	5×10^{1}	(81)	1.5×10^{-3}
		W	2×10^{-2}	Oxides, hydroxides, halides, nitrates and sulphides	5×10^{3}	2×10^{1}	(20)	3.1×10^{-3}
	ing.		2×10^{-2}	All other compounds	2×10^{3}	6	(5)	8.8×10^{-3}
ORGANIC	inh.	D	1	All organic compound	7×10^{3}	5×10^{1}	(92)	2.1×10^{-3}
	ing.		1	Methyl mercury	4×10^{3}	4×10^{1}	(99)	3.6×10^{-3}
			4×10^{-1}	All other compounds	3×10^{3}	2×10^{1}	(64)	5.6×10^{-3}
VAPOR	inh.	*		Mercury vapor	4×10^{3}	3×10^{1}	(60)	4.1×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
HG-197M (23.8h)								
INORGANIC	inh.	D	2×10^{-2}	Sulphates	5×10^{3}	1×10^{1}	(66)	2.8×10^{-3}
		W	2×10^{-2}	Oxides, hydroxides, halides, nitrates and sulphides	3×10^{3}	5	(16)	5.1×10^{-3}
	ing.		2×10^{-2}	All other compounds	9×10^{2}	2	(3)	1.7×10^{-2}
ORGANIC	inh.	D	1	All organic compound	6×10^{3}	1×10^{1}	(84)	2.6×10^{-3}
	ing.		1	Methyl mercury	3×10^{3}	1×10^{1}	(97)	4.7×10^{-3}
			4×10^{-1}	All other compounds	1×10^{3}	4	(47)	1.1×10^{-2}
VAPOR	inh.	*		Mercury vapor	2×10^{3}	5	(36)	8.2×10^{-3}
HG-199M (42.6m)								
INORGANIC	inh.	D	2×10^{-2}	Sulphates	7×10^{4}	5	(33)	2.1×10^{-4}
		W	2×10^{-2}	Oxides, hydroxides, halides, nitrates and sulphides	6×10^{4}	3	(14)	2.4×10^{-4}
	ing.		2×10^{-2}	All other compounds	2×10^{4}	2	(0)	8.0×10^{-4}
ORGANIC	inh.	D	1	All organic compound	7×10^{4}	5	(43)	2.1×10^{-4}
	ing.		1	Methyl mercury	2×10^{4}	2	(51)	8.1×10^{-4}
			4×10^{-1}	All other compounds	2×10^{4}	2	(6)	8.0×10^{-4}
VAPOR	inh.	*		Mercury vapor	3×10^{4}	2	(2)	5.5×10^{-4}
HG-203 (46.60d)								
INORGANIC	inh.	D	2×10^{-2}	Sulphates	6×10^{2}	3×10^{1}	(97)	2.5×10^{-2}
		W	2×10^{-2}	Oxides, hydroxides, halides, nitrates and sulphides	5×10^{2}	1×10^{1}	(34)	3.2×10^{-2}
	ing.		2×10^{-2}	All other compounds	7×10^{2}	5	(28)	2.0×10^{-2}
ORGANIC	inh.	D	1	All organic compound	3×10^{2}	3×10^{1}	(99)	4.4×10^{-2}
	ing.		1	Methyl mercury	2×10^{2}	3×10^{1}	(100)	7.0×10^{-2}
			4×10^{-1}	All other compounds	5×10^{2}	3×10^{1}	(94)	2.8×10^{-2}
VAPOR	inh.	*		Mercury vapor	4×10^{2}	3×10^{1}	(93)	3.6×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/ μCi)
TL-194	inh. D	1	All compounds	4×10^{5}	2×10^{1}	(39)	3.5×10^{-5}
(33m)	ing.	1	All compounds	8×10^{4}	7	(44)	2.0×10^{-4}
TL-194M	inh. D	1	All compounds	7×10^{4}	3	(39)	2.1×10^{-4}
(32.8m)	ing.	1	All compounds	1×10^{4}	1	(44)	1.0×10^{-3}
TL-195	inh. D	1	All compounds	8×10^{4}	9	(49)	1.9×10^{-4}
(1.16h)	ing.	1	All compounds	3×10^{4}	5	(63)	5.8×10^{-4}
TL-197	inh. D	1	All compounds	7×10^{4}	2×10^{1}	(59)	2.0×10^{-4}
(2.84h)	ing.	1	All compounds	4×10^{4}	2×10^{1}	(80)	3.8×10^{-4}
TL-198	inh. D	1	All compounds	3×10^{4}	2×10^{1}	(66)	4.8×10^{-4}
(5.3h)	ing.	1	All compounds	2×10^{4}	1×10^{1}	(88)	9.2×10^{-4}
TL-198M	inh. D	1	All compounds	3×10^{4}	6	(54)	4.5×10^{-4}
(1.87h)	ing.	1	All compounds	1×10^{4}	4	(73)	1.1×10^{-3}
TL-199	inh. D	1	All compounds	5×10^{4}	4×10^{1}	(70)	3.1×10^{-4}
(7.42h)	ing.	1	All compounds	4×10^{4}	5×10^{1}	(91)	3.7×10^{-4}
TL-200	inh. D	1	All compounds	1×10^{4}	3×10^{1}	(84)	3.6×10^{-4}
(26.1h)	ing.	1	All compounds	8×10^{3}	3×10^{1}	(97)	5.9×10^{-4}
TL-201	inh. D	1	All compounds	2×10^{4}	1×10^{2}	(91)	6.3×10^{-4}
(3.044d)	ing.	1	All compounds	1×10^{4}	1×10^{2}	(99)	1.0×10^{-3}
TL-202	inh. D	1	All compounds	5×10^{3}	7×10^{1}	(96)	9.4×10^{-4}
(12.23d)	ing.	1	All compounds	3×10^{3}	7×10^{1}	(99)	1.5×10^{-3}
TL-204	inh. D	1	All compounds	1×10^{3}	4×10^{1}	(98)	1.1×10^{-2}
(3.779y)	ing.	1	All compounds	9×10^{2}	3×10^{1}	(100)	1.7×10^{-2}
PB-195M	inh. D	2×10^{-1}	All compounds	1×10^{5}	2	(25)	1.3×10^{-4}
(15.8m)	ing.	2×10^{-1}	All compounds	2×10^{4}	1	(1)	6.3×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
PB-198 (2.4h)	inh. D	2×10^{-1}	All compounds	7×10^{4}	2×10^{1}	(42)	2.1×10^{-4}
	ing.	2×10^{-1}	All compounds	2×10^{4}	9	(8)	6.4×10^{-4}
PB-199 (90m)	inh. D	2×10^{-1}	All compounds	7×10^{4}	1×10^{1}	(38)	2.1×10^{-4}
	ing.	2×10^{-1}	All compounds	2×10^{4}	4	(6)	8.3×10^{-4}
PB-200 (21.5h)	inh. D	2×10^{-1}	All compounds	7×10^{3}	1×10^{1}	(67)	7.5×10^{-4}
	ing.	2×10^{-1}	All compounds	1×10^{3}	4	(24)	1.0×10^{-2}
PB-201 (9.4h)	inh. D	2×10^{-1}	All compounds	2×10^{4}	2×10^{1}	(56)	2.1×10^{-4}
	ing.	2×10^{-1}	All compounds	5×10^{3}	7	(17)	2.8×10^{-3}
PB-202 (3×10^{5}y)	inh. D	2×10^{-1}	All compounds	2×10^{1}	4×10^{1}	(100)	2.5×10^{-1}
	ing.	2×10^{-1}	All compounds	5×10^{1}	4×10^{1}	(99)	9.7×10^{-2}
PB-202M (3.62h)	inh. D	2×10^{-1}	All compounds	3×10^{4}	1×10^{1}	(45)	4.4×10^{-4}
	ing.	2×10^{-1}	All compounds	7×10^{3}	4	(11)	2.2×10^{-3}
PB-203 (52.05h)	inh. D	2×10^{-1}	All compounds	9×10^{3}	4×10^{1}	(80)	5.7×10^{-4}
	ing.	2×10^{-1}	All compounds	2×10^{3}	1×10^{1}	(35)	6.5×10^{-3}
PB-205 (1.43×10^{7}y)	inh. D	2×10^{-1}	All compounds	3×10^{2}	6×10^{2}	(100)	1.6×10^{-2}
	ing.	2×10^{-1}	All compounds	8×10^{2}	6×10^{2}	(99)	6.4×10^{-3}
PB-209 (3.253h)	inh. D	2×10^{-1}	All compounds	4×10^{4}	1×10^{1}	(44)	4.3×10^{-4}
	ing.	2×10^{-1}	All compounds	1×10^{4}	6	(10)	1.3×10^{-3}
PB-210 (22.3y)	inh. D	2×10^{-1}	All compounds	2×10^{-1}	3×10^{-1}	(100)	2.0×10^{2}
	ing.	2×10^{-1}	All compounds	6×10^{-1}	3×10^{-1}	(99)	8.0×10^{1}
PB-211 (36.1m)	inh. D	2×10^{-1}	All compounds	2×10^{2}	1×10^{-2}	(32)	6.6×10^{-2}
	ing.	2×10^{-1}	All compounds	3×10^{3}	3×10^{-1}	(2)	4.3×10^{-3}
PB-212 (10.64h)	inh. D	2×10^{-1}	All compounds	2×10^{1}	2×10^{-2}	(57)	7.3×10^{-1}
	ing.	2×10^{-1}	All compounds	8×10^{1}	1×10^{-1}	(18)	6.1×10^{-1}
PB-214 (26.8m)	inh. D	2×10^{-1}	All compounds	3×10^{2}	1×10^{-2}	(30)	5.5×10^{-2}
	ing.	2×10^{-1}	All compounds	5×10^{3}	3×10^{-1}	(1)	3.2×10^{-3}
BI-200 (36.4m)	inh. D	5×10^{-2}	Bismuth nitrate	6×10^{4}	3	(26)	2.4×10^{-4}
	W	5×10^{-2}	All other compounds	6×10^{4}	2	(11)	2.6×10^{-4}
	ing.	5×10^{-2}	Common compounds	2×10^{4}	2	(0)	8.4×10^{-4}
BI-201 (108m)	inh. D	5×10^{-2}	Bismuth nitrate	2×10^{4}	3	(30)	7.9×10^{-4}
	W	5×10^{-2}	All other compounds	2×10^{4}	2	(11)	7.1×10^{-4}
	ing.	5×10^{-2}	Common compounds	8×10^{3}	2	(1)	1.9×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
BI-202	inh.	D	5×10^{-2}	Bismuth nitrate	4×10^{4}	5	(30)	4.1×10^{-4}
(1.67h)		W	5×10^{-2}	All other compounds	4×10^{4}	4	(11)	3.6×10^{-4}
	ing.		5×10^{-2}	Common compounds	1×10^{4}	3	(1)	1.2×10^{-3}
BI-203	inh.	D	5×10^{-2}	Bismuth nitrate	4×10^{3}	4	(39)	3.4×10^{-3}
(11.76h)		W	5×10^{-2}	All other compounds	7×10^{3}	6	(9)	2.1×10^{-3}
	ing.		5×10^{-2}	Common compounds	2×10^{3}	3	(2)	8.2×10^{-3}
BI-205	inh.	D	5×10^{-2}	Bismuth nitrate	1×10^{3}	4	(66)	1.3×10^{-2}
(15.31d)		W	5×10^{-2}	All other compounds	9×10^{2}	9	(5)	1.6×10^{-2}
	ing.		5×10^{-2}	Common compounds	8×10^{2}	4	(6)	1.8×10^{-2}
BI-206	inh.	D	5×10^{-2}	Bismuth nitrate	6×10^{2}	2	(61)	2.4×10^{-2}
(6.243d)		W	5×10^{-2}	All other compounds	7×10^{2}	4	(7)	2.1×10^{-2}
	ing.		5×10^{-2}	Common compounds	3×10^{2}	1	(5)	4.4×10^{-2}
BI-207	inh.	D	5×10^{-2}	Bismuth nitrate	6×10^{2}	3	(71)	2.6×10^{-2}
(38y)		W	5×10^{-2}	All other compounds	1×10^{2}	5	(3)	1.2×10^{-1}
	ing.		5×10^{-2}	Common compounds	4×10^{2}	2	(7)	3.4×10^{-2}
BI-210	inh.	D	5×10^{-2}	Bismuth nitrate	7×10^{1}	2×10^{-1}	(60)	2.2×10^{-1}
(5.012d)		W	5×10^{-2}	All other compounds	1×10^{1}	5×10^{-2}	(7)	1.6
	ing.		5×10^{-2}	Common compounds	3×10^{2}	1	(4)	5.7×10^{-2}
BI-210M	inh.	D	5×10^{-2}	Bismuth nitrate	1	6×10^{-3}	(71)	1.1×10^{1}
(3.0×10^{6}y)		W	5×10^{-2}	All other compounds	2×10^{-1}	9×10^{-3}	(3)	6.1×10^{1}
	ing.		5×10^{-2}	Common compounds	1×10^{1}	6×10^{-2}	(7)	1.1
BI-212	inh.	D	5×10^{-2}	Bismuth nitrate	1×10^{2}	1×10^{-2}	(28)	1.3×10^{-1}
(60.55m)		W	5×10^{-2}	All other compounds	1×10^{2}	6×10^{-3}	(11)	1.4×10^{-1}
	ing.		5×10^{-2}	Common compounds	3×10^{3}	4×10^{-1}	(1)	5.9×10^{-3}
BI-213	inh.	D	5×10^{-2}	Bismuth nitrate	1×10^{2}	9×10^{-3}	(27)	1.0×10^{-1}
(45.65m)		W	5×10^{-2}	All other compounds	1×10^{2}	6×10^{-3}	(11)	1.2×10^{-1}
	ing.		5×10^{-2}	Common compounds	3×10^{3}	4×10^{-1}	(0)	4.8×10^{-3}
BI-214	inh.	D	5×10^{-2}	Bismuth nitrate	3×10^{2}	9×10^{-3}	(23)	4.5×10^{-2}
(19.9m)		W	5×10^{-2}	All other compounds	3×10^{2}	6×10^{-3}	(10)	4.9×10^{-2}
	ing.		5×10^{-2}	Common compounds	5×10^{3}	3×10^{-1}	(0)	3.2×10^{-3}
PO-203	inh.	D	1×10^{-1}	All other compounds	6×10^{4}	3	(32)	2.5×10^{-4}
(36.7m)		W	1×10^{-1}	Oxides, hydroxides and nitrates	5×10^{4}	2	(14)	3.2×10^{-4}
	ing.		1×10^{-1}	All compounds	2×10^{4}	2	(1)	6.9×10^{-4}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
PO-205 (1.80h)	inh. D	1×10^{-1}	All other compounds	4×10^{4}	6	(39)	4.1×10^{-4}
	W	1×10^{-1}	Oxides, hydroxides and nitrates	3×10^{4}	3	(16)	5.3×10^{-4}
	ing.	1×10^{-1}	All compounds	2×10^{4}	5	(3)	8.1×10^{-4}
PO-207 (350m)	inh. D	1×10^{-1}	All other compounds	3×10^{4}	2×10^{1}	(49)	4.3×10^{-4}
	W	1×10^{-1}	Oxides, hydroxides and nitrates	3×10^{4}	1×10^{1}	(17)	5.6×10^{-4}
	ing.	1×10^{-1}	All compounds	6×10^{3}	5	(7)	2.5×10^{-3}
PO-210 (138.38d)	inh. D	1×10^{-1}	All other compounds	2×10^{-1}	1×10^{-2}	(98)	8.0×10^{1}
	W	1×10^{-1}	Oxides, hydroxides and nitrates	3×10^{-1}	1×10^{-2}	(46)	4.8×10^{1}
	ing.	1×10^{-1}	All compounds	9×10^{-1}	2×10^{-2}	(77)	1.6×10^{1}
AT-207 (1.80h)	inh. D	1	See ICRP Task Group report on Lung Dynamics	9×10^{2}	2×10^{-1}	(54)	1.6×10^{-2}
	W	1	See ICRP Task Group report on Lung Dynamics	8×10^{2}	9×10^{-2}	(25)	1.9×10^{-2}
	ing.	1	All elements	6×10^{3}	2	(72)	8.1×10^{-4}
AT-211 (7.214h)	inh. D	1	See ICRP Task Group report on Lung Dynamics	3×10^{1}	2×10^{-2}	(70)	5.5×10^{-1}
	W	1	See ICRP Task Group report on Lung Dynamics	2×10^{1}	1×10^{-2}	(44)	7.8×10^{-1}
	ing.	1	All elements	1×10^{2}	1×10^{-1}	(91)	3.9×10^{-2}
FR-222 (14.4m)	inh. D	1	All compounds	2×10^{2}	3×10^{-3}	(28)	9.3×10^{-2}
	ing.	1	All compounds	2×10^{3}	8×10^{-2}	(26)	7.5×10^{-3}
FR-223 (21.8m)	inh. D	1	All compounds	9×10^{2}	3×10^{-2}	(34)	5.3×10^{-3}
	ing.	1	All compounds	6×10^{2}	3×10^{-2}	(34)	8.6×10^{-3}
RA-223 (11.434d)	inh. W	2×10^{-1}	All compounds	2×10^{-1}	2×10^{-3}	(15)	6.1×10^{1}
	ing.	2×10^{-1}	All compounds	5	2×10^{-2}	(31)	1.1×10^{1}
RA-224 (3.66d)	inh. W	2×10^{-1}	All compounds	6×10^{-1}	3×10^{-3}	(15)	2.4×10^{1}
	ing.	2×10^{-1}	All compounds	8	3×10^{-2}	(21)	5.9
RA-225 (14.8d)	inh. W	2×10^{-1}	All compounds	2×10^{-1}	3×10^{-3}	(15)	6.2×10^{1}
	ing.	2×10^{-1}	All compounds	8	4×10^{-2}	(34)	6.6
RA-226 (1600y)	inh. W	2×10^{-1}	All compounds	3×10^{-1}	3×10^{-2}	(68)	6.0×10^{1}
	ing.	2×10^{-1}	All compounds	2	1×10^{-1}	(94)	2.5×10^{1}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
RA-227 (42.2m)	inh. W	2×10^{-1}	All compounds	1×10^{4}	5×10^{-1}	(13)	1.2×10^{-3}
	ing.	2×10^{-1}	All compounds	2×10^{4}	2	(2)	1.0×10^{-3}
RA-228 (5.75y)	inh. W	2×10^{-1}	All compounds	6×10^{-1}	4×10^{-2}	(47)	2.7×10^{1}
	ing.	2×10^{-1}	All compounds	2	7×10^{-2}	(88)	2.4
AC-224 (2.9h)	inh. D	1×10^{-3}	All other compounds	3×10^{1}	6×10^{-3}	(20)	1.8
	W	1×10^{-3}	Halides and nitrates	2×10^{1}	3×10^{-3}	(6)	8.4×10^{-1}
	Y	1×10^{-3}	Oxides and hydroxides	2×10^{1}	3×10^{-3}	(0)	9.0×10^{-1}
	ing.	1×10^{-3}	All compounds	6×10^{2}	3×10^{-1}	(0)	2.6×10^{-2}
AC-225 (10.0d)	inh. D	1×10^{-3}	All other compounds	3×10^{-1}	5×10^{-3}	(93)	1.7×10^{2}
	W	1×10^{-3}	Halides and nitrates	3×10^{-1}	3×10^{-3}	(27)	5.7×10^{1}
	Y	1×10^{-3}	Oxides and hydroxides	2×10^{-1}	2×10^{-3}	(2)	6.6×10^{1}
	ing.	1×10^{-3}	All compounds	1×10^{1}	6×10^{-2}	(1)	1.0
AC-226 (29h)	inh. D	1×10^{-3}	All other compounds	3	7×10^{-3}	(64)	1.6×10^{1}
	W	1×10^{-3}	Halides and nitrates	2	4×10^{-3}	(13)	8.5
	Y	1×10^{-3}	Oxides and hydroxides	2	3×10^{-3}	(1)	9.0
	ing.	1×10^{-3}	All compounds	4×10^{1}	1×10^{-1}	(0)	4.1×10^{-1}
AC-227 (21.773y)	inh. D	1×10^{-3}	All other compounds	4×10^{-4}	4×10^{-3}	(100)	1.2×10^{5}
	W	1×10^{-3}	Halides and nitrates	2×10^{-3}	4×10^{-3}	(98)	3.0×10^{4}
	Y	1×10^{-3}	Oxides and hydroxides	3×10^{-3}	3×10^{-3}	(62)	5.7×10^{3}
	ing.	1×10^{-3}	All compounds	2×10^{-1}	5×10^{-3}	(79)	2.5×10^{2}
AC-228 (6.13h)	inh. D	1×10^{-3}	All other compounds	9	4×10^{-3}	(32)	5.3
	W	1×10^{-3}	Halides and nitrates	4×10^{1}	2×10^{-2}	(8)	1.3
	Y	1×10^{-3}	Oxides and hydroxides	2×10^{1}	7×10^{-3}	(0)	9.4×10^{-1}
	ing.	1×10^{-3}	All compounds	2×10^{3}	2	(0)	9.0×10^{-3}
TH-226 (30.9m)	inh. W	2×10^{-4}	All other compounds	6×10^{1}	2×10^{-3}	(13)	2.7×10^{-1}
	Y	2×10^{-4}	Oxides and hydroxides	5×10^{1}	2×10^{-3}	(1)	2.9×10^{-1}
	ing.	2×10^{-4}	All compounds	2×10^{3}	1×10^{-1}	(0)	1.0×10^{-2}
TH-227 (18.718d)	inh. W	2×10^{-4}	All other compounds	2×10^{-1}	3×10^{-3}	(33)	8.9×10^{1}
	Y	2×10^{-4}	Oxides and hydroxides	1×10^{-1}	2×10^{-3}	(2)	1.3×10^{2}
	ing.	2×10^{-4}	All compounds	4×10^{1}	2×10^{-1}	(0)	3.4×10^{-1}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
TH-228 (1.9131y)	inh. W	2×10^{-4}	All other compounds	1×10^{-2}	3×10^{-3}	(88)	5.1×10^{3}
	Y	2×10^{-4}	Oxides and hydroxides	6×10^{-3}	1×10^{-3}	(16)	2.6×10^{3}
	ing.	2×10^{-4}	All compounds	6	3×10^{-2}	(8)	8.8
TH-229 (7340y)	inh. W	2×10^{-4}	All other compounds	9×10^{-4}	2×10^{-3}	(98)	5.3×10^{4}
	Y	2×10^{-4}	Oxides and hydroxides	2×10^{-3}	3×10^{-3}	(59)	7.4×10^{3}
	ing.	2×10^{-4}	All compounds	6×10^{-1}	5×10^{-3}	(43)	8.8×10^{1}
TH-230 (7.7×10^{4}y)	inh. W	2×10^{-4}	All other compounds	6×10^{-3}	1×10^{-2}	(98)	8.0×10^{3}
	Y	2×10^{-4}	Oxides and hydroxides	1×10^{-2}	2×10^{-2}	(59)	1.1×10^{3}
	ing.	2×10^{-4}	All compounds	4	3×10^{-2}	(43)	1.3×10^{1}
TH-231 (25.52h)	inh. W	2×10^{-4}	All other compounds	4×10^{3}	8	(15)	3.5×10^{-3}
	Y	2×10^{-4}	Oxides and hydroxides	4×10^{3}	6	(1)	4.1×10^{-3}
	ing.	2×10^{-4}	All compounds	1×10^{3}	3	(0)	1.3×10^{-2}
TH-232 (1.405×10^{10}y)	inh. W	2×10^{-4}	All other compounds	1×10^{-3}	3×10^{-3}	(98)	4.1×10^{4}
	Y	2×10^{-4}	Oxides and hydroxides	3×10^{-3}	4×10^{-3}	(59)	1.8×10^{4}
	ing.	2×10^{-4}	All compounds	7×10^{-1}	6×10^{-3}	(43)	6.8×10^{1}
TH-234 (24.10d)	inh. W	2×10^{-4}	All other compounds	9×10^{1}	2	(36)	1.7×10^{-1}
	Y	2×10^{-4}	Oxides and hydroxides	6×10^{1}	1	(2)	2.4×10^{-1}
	ing.	2×10^{-4}	All compounds	9×10^{1}	4×10^{-1}	(0)	1.6×10^{-1}
PA-227 (38.3m)	inh. W	1×10^{-3}	All other compounds	4×10^{1}	1×10^{-3}	(2)	3.7×10^{-1}
	Y	1×10^{-3}	Oxides and hydroxides	4×10^{1}	1×10^{-3}	(0)	4.1×10^{-1}
	ing.	1×10^{-3}	All compounds	1×10^{3}	1×10^{-1}	(0)	1.2×10^{-2}
PA-228 (22h)	inh. W	1×10^{-3}	All other compounds	1×10^{1}	2×10^{-2}	(8)	4.1
	Y	1×10^{-3}	Oxides and hydroxides	4	7×10^{-3}	(0)	3.4
	ing.	1×10^{-3}	All compounds	8×10^{2}	2	(0)	1.8×10^{-2}
PA-230 (17.4d)	inh. W	1×10^{-3}	All other compounds	2	3×10^{-2}	(21)	6.9
	Y	1×10^{-3}	Oxides and hydroxides	1	2×10^{-2}	(1)	1.2×10^{1}
	ing.	1×10^{-3}	All compounds	6×10^{2}	3	(1)	2.4×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS		f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
PA-231	inh.	W	1×10^{-3}	All other compounds	2×10^{-3}	3×10^{-3}	(98)	3.2×10^{4}
(3.276×10^{4}y)		Y	1×10^{-3}	Oxides and hydroxides	4×10^{-3}	5×10^{-3}	(56)	1.3×10^{4}
	ing.		1×10^{-3}	All compounds	2×10^{-1}	4×10^{-3}	(78)	2.7×10^{2}
PA-232	inh.	W	1×10^{-3}	All other compounds	2×10^{1}	5×10^{-2}	(9)	2.3
(1.31d)		Y	1×10^{-3}	Oxides and hydroxides	5×10^{1}	1×10^{-1}	(0)	2.8×10^{-1}
	ing.		1×10^{-3}	All compounds	8×10^{2}	2	(0)	1.9×10^{-2}
PA-233	inh.	W	1×10^{-3}	All other compounds	3×10^{2}	6	(24)	4.4×10^{-2}
(27.0d)		Y	1×10^{-3}	Oxides and hydroxides	2×10^{2}	4	(1)	6.3×10^{-2}
	ing.		1×10^{-3}	All compounds	4×10^{2}	2	(1)	3.8×10^{-2}
PA-234	inh.	W	1×10^{-3}	All other compounds	5×10^{3}	2	(6)	3.1×10^{-3}
(6.70h)		Y	1×10^{-3}	Oxides and hydroxides	5×10^{3}	2	(0)	3.3×10^{-3}
	ing.		1×10^{-3}	All compounds	1×10^{3}	1	(0)	1.2×10^{-2}
U-230	inh.	D	5×10^{-2}	Soluble compounds	3×10^{-1}	3×10^{-3}	(85)	4.4×10^{1}
(20.8d)		W	5×10^{-2}	Less soluble compounds	1×10^{-1}	2×10^{-3}	(12)	1.2×10^{2}
		Y	2×10^{-3}	Highly insoluble oxides	9×10^{-2}	1×10^{-3}	(1)	1.6×10^{2}
	ing.		5×10^{-2}	Water soluble inorganic compounds	3	2×10^{-2}	(15)	4.6
			2×10^{-3}	Insoluble compounds	1×10^{1}	6×10^{-2}	(1)	1.2
U-231	inh.	D	5×10^{-2}	Soluble compounds	5×10^{3}	2×10^{1}	(71)	2.7×10^{-3}
(4.2d)		W	5×10^{-2}	Less soluble compounds	3×10^{3}	2×10^{1}	(12)	4.4×10^{-3}
		Y	2×10^{-3}	Highly insoluble oxides	3×10^{3}	1×10^{1}	(1)	5.6×10^{-3}
	ing.		5×10^{-2}	Water soluble inorganic compounds	1×10^{3}	6	(7)	1.1×10^{-2}
			2×10^{-3}	Insoluble compounds	1×10^{3}	5	(0)	1.1×10^{-2}
U-232	inh.	D	5×10^{-2}	Soluble compounds	2×10^{-1}	4×10^{-2}	(99)	2.4×10^{2}
(72y)		W	5×10^{-2}	Less soluble compounds	2×10^{-1}	1×10^{-2}	(62)	9.2×10^{1}
		Y	2×10^{-3}	Highly insoluble oxides	3×10^{-3}	2×10^{-3}	(3)	5.5×10^{3}
	ing.		5×10^{-2}	Water soluble inorganic compounds	2	5×10^{-2}	(81)	2.5×10^{1}
			2×10^{-3}	Insoluble compounds	5×10^{1}	3×10^{-1}	(14)	9.8×10^{-1}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
U-233	inh. D	5×10^{-2}	Soluble compounds	9×10^{-1}	2×10^{-1}	(99)	1.7×10^{1}
(1.585×10^{5}y)	W	5×10^{-2}	Less soluble compounds	3×10^{-1}	3×10^{-2}	(65)	6.0×10^{1}
	Y	2×10^{-3}	Highly insoluble oxides	1×10^{-2}	8×10^{-3}	(4)	1.1×10^{3}
	ing.	5×10^{-2}	Water soluble inorganic compounds	9	2×10^{-1}	(83)	1.8
		2×10^{-3}	Insoluble compounds	8×10^{1}	5×10^{-1}	(16)	1.8×10^{-1}
U-234	inh. D	5×10^{-2}	Soluble compounds	9×10^{-1}	2×10^{-1}	(99)	1.7×10^{1}
(2.445×10^{5}y)	W	5×10^{-2}	Less soluble compounds	3×10^{-1}	3×10^{-2}	(65)	5.9×10^{1}
	Y	2×10^{-3}	Highly insoluble oxides	1×10^{-2}	9×10^{-3}	(4)	1.1×10^{3}
	ing.	5×10^{-2}	Water soluble inorganic compounds	9	2×10^{-1}	(83)	1.7
		2×10^{-3}	Insoluble compounds	8×10^{1}	5×10^{-1}	(16)	1.8×10^{-1}
U-235	inh. D	5×10^{-2}	Soluble compounds	1	2×10^{-1}	(99)	1.6×10^{1}
(703.8×10^{6}y)	W	5×10^{-2}	Less soluble compounds	3×10^{-1}	3×10^{-2}	(65)	5.5×10^{1}
	Y	2×10^{-3}	Highly insoluble oxides	1×10^{-2}	9×10^{-3}	(4)	1.0×10^{3}
	ing.	5×10^{-2}	Water soluble inorganic compounds	9	3×10^{-1}	(83)	1.6
		2×10^{-3}	Insoluble compounds	8×10^{1}	4×10^{-1}	(16)	2.0×10^{-1}
U-236	inh. D	5×10^{-2}	Soluble compounds	9×10^{-1}	2×10^{-1}	(99)	1.6×10^{1}
(2.3415×10^{7}y)	W	5×10^{-2}	Less soluble compounds	3×10^{-1}	3×10^{-2}	(65)	5.6×10^{1}
	Y	2×10^{-3}	Highly insoluble oxides	1×10^{-2}	9×10^{-3}	(4)	1.0×10^{3}
	ing.	5×10^{-2}	Water soluble inorganic compounds	9	2×10^{-1}	(83)	1.6
		2×10^{-3}	Insoluble compounds	9×10^{1}	5×10^{-1}	(16)	1.7×10^{-1}
U-237	inh. D	5×10^{-2}	Soluble compounds	2×10^{3}	8	(77)	8.9×10^{-3}
(6.75d)	W	5×10^{-2}	Less soluble compounds	1×10^{3}	6	(12)	1.6×10^{-2}
	Y	2×10^{-3}	Highly insoluble oxides	9×10^{2}	5	(1)	1.7×10^{-2}
	ing.	5×10^{-2}	Water soluble inorganic compounds	5×10^{2}	2	(9)	3.1×10^{-2}
		2×10^{-3}	Insoluble compounds	5×10^{2}	2	(0)	3.3×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	(% sys)	H_{50} (rem/μCi)
U-238	inh. D	5×10^{-2}	Soluble compounds	1	2×10^{-1}	(99)	1.5×10^{1}
(4.468×10^{9}y)	W	5×10^{-2}	Less soluble compounds	3×10^{-1}	3×10^{-2}	(65)	5.3×10^{1}
	Y	2×10^{-3}	Highly insoluble oxides	2×10^{-2}	1×10^{-2}	(4)	9.8×10^{2}
	ing.	5×10^{-2}	Water soluble inorganic compounds	1×10^{1}	3×10^{-1}	(83)	1.5
		2×10^{-3}	Insoluble compounds	9×10^{1}	5×10^{-1}	(16)	1.7×10^{-1}
U-239	inh. D	5×10^{-2}	Soluble compounds	1×10^{5}	3	(28)	1.6×10^{-4}
(23.54m)	W	5×10^{-2}	Less soluble compounds	7×10^{4}	2	(12)	2.1×10^{-4}
	Y	2×10^{-3}	Highly insoluble oxides	7×10^{4}	1	(1)	2.3×10^{-4}
	ing.	5×10^{-2}	Water soluble inorganic compounds	2×10^{4}	1	(0)	6.5×10^{-4}
		2×10^{-3}	Insoluble compounds	2×10^{4}	1	(0)	6.5×10^{-4}
U-240	inh. D	5×10^{-2}	Soluble compounds	3×10^{3}	3	(47)	5.2×10^{-3}
(14.1h)	W	5×10^{-2}	Less soluble compounds	2×10^{3}	2	(11)	8.4×10^{-3}
	Y	2×10^{-3}	Highly insoluble oxides	2×10^{3}	2	(1)	9.2×10^{-3}
	ing.	5×10^{-2}	Water soluble inorganic compounds	4×10^{2}	8×10^{-1}	(3)	3.4×10^{-2}
		2×10^{-3}	Insoluble compounds	4×10^{2}	8×10^{-1}	(0)	3.5×10^{-2}
NP-232	inh. W	1×10^{-2}	All compounds	2×10^{3}	3×10^{-2}	(1)	2.1×10^{-2}
(14.7m)	ing.	1×10^{-2}	All compounds	3×10^{4}	1	(0)	1.6×10^{-3}
NP-233	inh. W	1×10^{-2}	All compounds	1×10^{6}	4×10^{1}	(3)	1.2×10^{-5}
(36.2m)	ing.	1×10^{-2}	All compounds	3×10^{5}	3×10^{1}	(0)	5.0×10^{-5}
NP-234	inh. W	1×10^{-2}	All compounds	3×10^{3}	1×10^{1}	(21)	5.9×10^{-3}
(4.4d)	ing.	1×10^{-2}	All compounds	1×10^{3}	4	(4)	1.5×10^{-2}
NP-235	inh. W	1×10^{-2}	All compounds	1×10^{3}	2×10^{2}	(84)	1.5×10^{-2}
(396.1d)	ing.	1×10^{-2}	All compounds	6×10^{3}	1×10^{2}	(74)	2.3×10^{-3}
NP-236	inh. W	1×10^{-2}	All compounds	3×10^{-2}	1×10^{-1}	(99)	1.8×10^{3}
(115×10^{3}y)	ing.	1×10^{-2}	All compounds	3×10^{-1}	1×10^{-1}	(99)	1.4×10^{2}
NP-236	inh. W	1×10^{-2}	All compounds	4×10^{1}	6×10^{-2}	(12)	1.3
(22.5h)	ing.	1×10^{-2}	All compounds	5×10^{2}	1	(1)	1.0×10^{-1}
NP-237	inh. W	1×10^{-2}	All compounds	6×10^{-3}	2×10^{-2}	(99)	8.8×10^{3}
(2.14×10^{6}y)	ing.	1×10^{-2}	All compounds	7×10^{-2}	2×10^{-2}	(99)	7.1×10^{2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
NP-238 (2.117d)	inh. W	1×10^{-2}	All compounds	9×10^{1}	3×10^{-1}	(16)	5.6×10^{-1}
	ing.	1×10^{-2}	All compounds	5×10^{2}	2	(2)	3.3×10^{-2}
NP-239 (2.355d)	inh. W	1×10^{-2}	All compounds	1×10^{3}	5	(17)	1.1×10^{-2}
	ing.	1×10^{-2}	All compounds	5×10^{2}	2	(2)	3.2×10^{-2}
NP-240 (65m)	inh. W	1×10^{-2}	All compounds	3×10^{4}	2	(4)	4.7×10^{-4}
	ing.	1×10^{-2}	All compounds	1×10^{4}	2	(0)	1.4×10^{-3}
PU-234 (8.8h)	inh. W	1×10^{-4}	All other compounds	9×10^{1}	5×10^{-2}	(9)	1.8×10^{-1}
	Y	1×10^{-5}	Dioxides	7×10^{1}	4×10^{-2}	(0)	2.2×10^{-1}
	ing.	1×10^{-4}	All other compounds	3×10^{3}	4	(0)	4.3×10^{-3}
		1×10^{-5}	Oxides and hydroxides	3×10^{3}	4	(0)	4.3×10^{-3}
PU-235 (25.3m)	inh. W	1×10^{-4}	All other compounds	1×10^{6}	2×10^{1}	(2)	1.4×10^{-5}
	Y	1×10^{-5}	Dioxides	9×10^{5}	2×10^{1}	(0)	1.7×10^{-5}
	ing.	1×10^{-4}	All other compounds	3×10^{5}	2×10^{1}	(0)	5.4×10^{-5}
		1×10^{-5}	Oxides and hydroxides	3×10^{5}	2×10^{1}	(0)	5.4×10^{-5}
PU-236 (2.851y)	inh. W	1×10^{-4}	All other compounds	2×10^{-2}	8×10^{-3}	(93)	2.8×10^{3}
	Y	1×10^{-5}	Dioxides	2×10^{-2}	7×10^{-3}	(24)	7.0×10^{2}
	ing.	1×10^{-4}	All other compounds	2×10^{1}	1×10^{-1}	(7)	2.3
		1×10^{-5}	Oxides and hydroxides	7×10^{1}	3×10^{-1}	(1)	2.2×10^{-1}
PU-237 (45.3d)	inh. W	1×10^{-4}	All other compounds	2×10^{3}	6×10^{1}	(46)	8.1×10^{-3}
	Y	1×10^{-5}	Dioxides	1×10^{3}	3×10^{1}	(3)	1.4×10^{-2}
	ing.	1×10^{-4}	All other compounds	4×10^{3}	2×10^{1}	(0)	3.8×10^{-3}
		1×10^{-5}	Oxides and hydroxides	4×10^{3}	2×10^{1}	(0)	3.8×10^{-3}
PU-238 (87.74y)	inh. W	1×10^{-4}	All other compounds	6×10^{-3}	2×10^{-2}	(99)	8.1×10^{3}
	Y	1×10^{-5}	Dioxides	1×10^{-2}	2×10^{-2}	(70)	1.2×10^{3}
	ing.	1×10^{-4}	All other compounds	7	6×10^{-2}	(37)	6.8
		1×10^{-5}	Oxides and hydroxides	7×10^{1}	4×10^{-1}	(6)	2.1×10^{-1}
PU-239 (24065y)	inh. W	1×10^{-4}	All other compounds	5×10^{-3}	2×10^{-2}	(99)	9.1×10^{3}
	Y	1×10^{-5}	Dioxides	1×10^{-2}	3×10^{-2}	(72)	1.2×10^{3}
	ing.	1×10^{-4}	All other compounds	7	5×10^{-2}	(42)	7.6
		1×10^{-5}	Oxides and hydroxides	7×10^{1}	3×10^{-1}	(7)	7.6×10^{-1}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/μCi)
PU-240	inh. W	1×10^{-4}	All other compounds	5×10^{-3}	2×10^{-2}	(99)	9.1×10^{3}
(6537y)	Y	1×10^{-5}	Dioxides	1×10^{-2}	3×10^{-2}	(72)	1.2×10^{3}
	ing.	1×10^{-4}	All other compounds	7	5×10^{-2}	(42)	7.6
		1×10^{-5}	Oxides and hydroxides	7×10^{1}	3×10^{-1}	(7)	7.6×10^{-1}
PU-241	inh. W	1×10^{-4}	All other compounds	3×10^{-1}	5×10^{-1}	(98)	1.9×10^{2}
(14.4y)	Y	1×10^{-5}	Dioxides	6×10^{-1}	6×10^{-1}	(57)	7.8×10^{1}
	ing.	1×10^{-4}	All other compounds	3×10^{2}	2	(23)	1.6×10^{-1}
		1×10^{-5}	Oxides and hydroxides	3×10^{3}	2×10^{1}	(3)	1.6×10^{-2}
PU-242	inh. W	1×10^{-4}	All other compounds	6×10^{-3}	2×10^{-2}	(99)	8.7×10^{3}
(3.763×10^{5}y)	Y	1×10^{-5}	Dioxides	1×10^{-2}	3×10^{-2}	(72)	1.1×10^{3}
	ing.	1×10^{-4}	All other compounds	7	6×10^{-2}	(42)	7.3
		1×10^{-5}	Oxides and hydroxides	7×10^{1}	4×10^{-1}	(7)	7.3×10^{-1}
PU-243	inh. W	1×10^{-4}	All other compounds	2×10^{4}	7	(8)	7.0×10^{-4}
(4.956h)	Y	1×10^{-5}	Dioxides	2×10^{4}	6	(0)	8.4×10^{-4}
	ing.	1×10^{-4}	All other compounds	7×10^{3}	5	(0)	2.2×10^{-3}
		1×10^{-5}	Oxides and hydroxides	7×10^{3}	5	(0)	2.2×10^{-3}
PU-244	inh. W	1×10^{-4}	All other compounds	6×10^{-3}	2×10^{-2}	(99)	8.5×10^{3}
(8.26×10^{7}y)	Y	1×10^{-5}	Dioxides	1×10^{-2}	3×10^{-2}	(72)	1.1×10^{3}
	ing.	1×10^{-4}	All other compounds	7	6×10^{-2}	(42)	7.1
		1×10^{-5}	Oxides and hydroxides	5×10^{1}	2×10^{-1}	(7)	3.1×10^{-1}
PU-245	inh. W	1×10^{-4}	All other compounds	3×10^{3}	2	(9)	4.8×10^{-3}
(10.5h)	Y	1×10^{-5}	Dioxides	3×10^{3}	2	(1)	5.2×10^{-3}
	ing.	1×10^{-4}	All other compounds	8×10^{2}	1	(0)	2.0×10^{-2}
		1×10^{-5}	Oxides and hydroxides	8×10^{2}	1	(0)	2.0×10^{-2}
AM-237	inh. W	5×10^{-4}	All compounds	1×10^{5}	7	(4)	1.5×10^{-4}
(73.0m)	ing.	5×10^{-4}	All compounds	5×10^{4}	9	(0)	3.3×10^{-4}
AM-238	inh. W	5×10^{-4}	All compounds	3×10^{3}	3×10^{-1}	(5)	1.7×10^{-2}
(98m)	ing.	5×10^{-4}	All compounds	3×10^{4}	9	(0)	4.5×10^{-4}
AM-239	inh. W	5×10^{-4}	All compounds	9×10^{3}	7	(10)	1.8×10^{-3}
(11.9h)	ing.	5×10^{-4}	All compounds	2×10^{3}	4	(0)	6.4×10^{-3}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
AM-240 (50.8h)	inh. W	5×10^{-4}	All compounds	3×10^{3}	1×10^{1}	(15)	4.8×10^{-3}
	ing.	5×10^{-4}	All compounds	1×10^{3}	3	(0)	1.5×10^{-2}
AM-241 (432.2y)	inh. W	5×10^{-4}	All compounds	5×10^{-3}	2×10^{-2}	(99)	9.4×10^{3}
	ing.	5×10^{-4}	All compounds	1	3×10^{-2}	(77)	3.9×10^{1}
AM-242 (16.02h)	inh. W	5×10^{-4}	All compounds	8×10^{1}	9×10^{-2}	(11)	1.9×10^{-1}
	ing.	5×10^{-4}	All compounds	2×10^{3}	3	(0)	9.4×10^{-3}
AM-242M (152y)	inh. W	5×10^{-4}	All compounds	5×10^{-3}	2×10^{-2}	(99)	9.2×10^{3}
	ing.	5×10^{-4}	All compounds	1	3×10^{-2}	(76)	3.8×10^{1}
AM-243 (7380y)	inh. W	5×10^{-4}	All compounds	5×10^{-3}	2×10^{-2}	(99)	9.4×10^{3}
	ing.	5×10^{-4}	All compounds	1	3×10^{-2}	(78)	3.9×10^{1}
AM-244 (10.1h)	inh. W	5×10^{-4}	All compounds	2×10^{2}	1×10^{-1}	(9)	3.1×10^{-1}
	ing.	5×10^{-4}	All compounds	1×10^{3}	2	(0)	1.1×10^{-2}
AM-244M (26m)	inh. W	5×10^{-4}	All compounds	4×10^{3}	9×10^{-2}	(2)	1.3×10^{-2}
	ing.	5×10^{-4}	All compounds	2×10^{4}	1	(0)	8.4×10^{-4}
AM-245 (2.05h)	inh. W	5×10^{-4}	All compounds	3×10^{4}	4	(5)	4.6×10^{-4}
	ing.	5×10^{-4}	All compounds	2×10^{4}	5	(0)	9.7×10^{-4}
AM-246 (39m)	inh. W	5×10^{-4}	All compounds	4×10^{4}	1	(3)	4.1×10^{-4}
	ing.	5×10^{-4}	All compounds	1×10^{4}	1	(0)	1.5×10^{-3}
AM-246M (25.0m)	inh. W	5×10^{-4}	All compounds	7×10^{4}	2	(2)	2.1×10^{-4}
	ing.	5×10^{-4}	All compounds	2×10^{4}	1	(0)	9.4×10^{-4}
CM-238 (2.4h)	inh. W	5×10^{-4}	All compounds	5×10^{2}	7×10^{-2}	(6)	3.2×10^{-2}
	ing.	5×10^{-4}	All compounds	9×10^{3}	3	(0)	1.7×10^{-3}
CM-240 (27d)	inh. W	5×10^{-4}	All compounds	5×10^{-1}	1×10^{-2}	(38)	2.8×10^{1}
	ing.	5×10^{-4}	All compounds	7×10^{1}	3×10^{-1}	(1)	2.3×10^{-1}
CM-241 (32.8d)	inh. W	5×10^{-4}	All compounds	2×10^{1}	6×10^{-1}	(41)	2.2
	ing.	5×10^{-4}	All compounds	5×10^{2}	2	(1)	3.2×10^{-2}
CM-242 (162.8d)	inh. W	5×10^{-4}	All compounds	3×10^{-1}	2×10^{-2}	(69)	5.7×10^{1}
	ing.	5×10^{-4}	All compounds	6×10^{1}	3×10^{-1}	(6)	8.5×10^{-1}
CM-243 (28.5y)	inh. W	5×10^{-4}	All compounds	8×10^{-3}	2×10^{-2}	(99)	6.2×10^{3}
	ing.	5×10^{-4}	All compounds	2	3×10^{-2}	(69)	2.6×10^{1}
CM-244 (18.11y)	inh. W	5×10^{-4}	All compounds	1×10^{-2}	2×10^{-2}	(98)	4.8×10^{3}
	ing.	5×10^{-4}	All compounds	2	3×10^{-2}	(63)	2.0×10^{1}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
CM-245	inh. W	5×10^{-4}	All compounds	5×10^{-3}	2×10^{-2}	(99)	9.7×10^{3}
(8500y)	ing.	5×10^{-4}	All compounds	1	3×10^{-2}	(78)	4.0×10^{1}
CM-246	inh. W	5×10^{-4}	All compounds	5×10^{-3}	2×10^{-2}	(99)	9.6×10^{3}
(4730y)	ing.	5×10^{-4}	All compounds	1	3×10^{-2}	(78)	4.0×10^{1}
CM-247	inh. W	5×10^{-4}	All compounds	6×10^{-3}	2×10^{-2}	(99)	8.8×10^{3}
(1.56×10^{7}y)	ing.	5×10^{-4}	All compounds	1	3×10^{-2}	(78)	3.7×10^{1}
CM-248	inh. W	5×10^{-4}	All compounds	1×10^{-3}	6×10^{-3}	(99)	3.5×10^{4}
(3.39×10^{5}y)	ing.	5×10^{-4}	All compounds	3×10^{-1}	7×10^{-3}	(78)	1.5×10^{2}
CM-249	inh. W	5×10^{-4}	All compounds	1×10^{4}	9×10^{-1}	(4)	3.4×10^{-3}
(64.15m)	ing.	5×10^{-4}	All compounds	2×10^{4}	4	(0)	7.4×10^{-4}
BK-245	inh. W	5×10^{-4}	All compounds	9×10^{2}	5	(21)	1.8×10^{-2}
(4.94d)	ing.	5×10^{-4}	All compounds	7×10^{2}	3	(0)	2.2×10^{-2}
BK-246	inh. W	5×10^{-4}	All compounds	4×10^{3}	1×10^{1}	(15)	3.5×10^{-3}
(1.83d)	ing.	5×10^{-4}	All compounds	1×10^{3}	4	(0)	1.1×10^{-2}
BK-247	inh. W	5×10^{-4}	All compounds	5×10^{-3}	2×10^{-2}	(99)	9.9×10^{3}
(1380y)	ing.	5×10^{-4}	All compounds	1	3×10^{-2}	(78)	4.1×10^{1}
BK-249	inh. W	5×10^{-4}	All compounds	2	3×10^{-1}	(80)	2.4×10^{1}
(320d)	ing.	5×10^{-4}	All compounds	5×10^{2}	3	(10)	1.0×10^{-1}
BK-250	inh. W	5×10^{-4}	All compounds	4×10^{2}	9×10^{-2}	(6)	1.2×10^{-1}
(3.222h)	ing.	5×10^{-4}	All compounds	5×10^{3}	3	(0)	2.8×10^{-3}
CF-244	inh. W	5×10^{-4}	All other compounds	3×10^{2}	4×10^{-3}	(2)	5.8×10^{-2}
(19.4m)	Y	5×10^{-4}	Oxides and hydroxides	2×10^{2}	4×10^{-3}	(0)	7.5×10^{-2}
	ing.	5×10^{-4}	All compounds	8×10^{3}	4×10^{-1}	(0)	2.0×10^{-3}
CF-246	inh. W	5×10^{-4}	All other compounds	4	1×10^{-2}	(14)	3.5
(35.7h)	Y	5×10^{-4}	Oxides and hydroxides	3	7×10^{-3}	(1)	4.8
	ing.	5×10^{-4}	All compounds	1×10^{2}	3×10^{-1}	(0)	1.3×10^{-1}
CF-248	inh. W	5×10^{-4}	All other compounds	9×10^{-2}	1×10^{-2}	(81)	5.6×10^{2}
(333.5d)	Y	5×10^{-4}	Oxides and hydroxides	4×10^{-2}	6×10^{-3}	(10)	3.6×10^{2}
	ing.	5×10^{-4}	All compounds	2×10^{1}	1×10^{-1}	(11)	2.4
CF-249	inh. W	5×10^{-4}	All other compounds	5×10^{-3}	2×10^{-2}	(99)	9.9×10^{3}
(350.6y)	Y	5×10^{-4}	Oxides and hydroxides	1×10^{-2}	2×10^{-2}	(72)	1.3×10^{3}
	ing.	5×10^{-4}	All compounds	1	3×10^{-2}	(77)	4.1×10^{1}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
CF-250	inh. W	5×10^{-4}	All other compounds	1×10^{-2}	2×10^{-2}	(98)	4.1×10^{3}
(13.08y)	Y	5×10^{-4}	Oxides and hydroxides	1×10^{-2}	1×10^{-2}	(55)	1.0×10^{3}
	ing.	5×10^{-4}	All compounds	3	3×10^{-2}	(58)	1.7×10^{1}
CF-251	inh. W	5×10^{-4}	All other compounds	5×10^{-3}	2×10^{-2}	(99)	1.0×10^{4}
(898y)	Y	5×10^{-4}	Oxides and hydroxides	1×10^{-2}	2×10^{-2}	(72)	1.3×10^{3}
	ing.	5×10^{-4}	All compounds	1	3×10^{-2}	(78)	4.2×10^{1}
CF-252	inh. W	5×10^{-4}	All other compounds	3×10^{-2}	1×10^{-2}	(92)	1.8×10^{3}
(2.638y)	Y	5×10^{-4}	Oxides and hydroxides	1×10^{-2}	4×10^{-3}	(23)	1.1×10^{3}
	ing.	5×10^{-4}	All compounds	7	4×10^{-2}	(26)	7.7
CF-253	inh. W	5×10^{-4}	All other compounds	1	2×10^{-2}	(33)	1.5×10^{1}
(17.81d)	Y	5×10^{-4}	Oxides and hydroxides	6×10^{-1}	8×10^{-3}	(2)	2.5×10^{1}
	ing.	5×10^{-4}	All compounds	5×10^{2}	2	(1)	2.8×10^{-2}
CF-254	inh. W	5×10^{-4}	All other compounds	1×10^{-2}	5×10^{-4}	(51)	1.2×10^{3}
(60.5d)	Y	5×10^{-4}	Oxides and hydroxides	6×10^{-3}	2×10^{-4}	(3)	2.4×10^{3}
	ing.	5×10^{-4}	All compounds	1	6×10^{-3}	(2)	1.1×10^{1}
ES-250	inh. W	5×10^{-4}	All compounds	7×10^{2}	8×10^{-2}	(5)	7.5×10^{-2}
(2.1h)	ing.	5×10^{-4}	All compounds	5×10^{4}	2×10^{1}	(0)	3.2×10^{-4}
ES-251	inh. W	5×10^{-4}	All compounds	1×10^{3}	2	(13)	1.5×10^{-2}
(33h)	ing.	5×10^{-4}	All compounds	3×10^{3}	7	(0)	6.0×10^{-3}
ES-253	inh. W	5×10^{-4}	All compounds	6×10^{-1}	1×10^{-2}	(34)	2.3×10^{1}
(20.47d)	ing.	5×10^{-4}	All compounds	6×10^{1}	3×10^{-1}	(1)	2.4×10^{-1}
ES-254	inh. W	5×10^{-4}	All compounds	1×10^{-1}	1×10^{-2}	(78)	5.1×10^{2}
(275.7d)	ing.	5×10^{-4}	All compounds	2×10^{1}	1×10^{-1}	(9)	2.2
ES-254M	inh. W	5×10^{-4}	All compounds	5	1×10^{-2}	(14)	3.3
(39.3h)	ing.	5×10^{-4}	All compounds	9×10^{1}	3×10^{-1}	(0)	1.8×10^{-1}
FM-252	inh. W	5×10^{-4}	All compounds	6	1×10^{-2}	(12)	2.3
(22.7h)	ing.	5×10^{-4}	All compounds	2×10^{2}	4×10^{-1}	(0)	9.6×10^{-2}
FM-253	inh. W	5×10^{-4}	All compounds	4	2×10^{-2}	(18)	3.4
(3.00d)	ing.	5×10^{-4}	All compounds	4×10^{2}	2	(0)	3.5×10^{-2}

TABLE 4. (CONT.)

NUCLIDE (Half-life)	LUNG CLASS	f_1	COMPOUNDS	ANNUAL INTAKE (μCi)	BODY BURDEN (μCi)	BODY BURDEN (% sys)	H_{50} (rem/ μCi)
FM-254	inh. W	5×10^{-4}	All compounds	4×10^{1}	8×10^{-3}	(6)	4.0×10^{-1}
(3.240h)	ing.	5×10^{-4}	All compounds	1×10^{3}	8×10^{-1}	(0)	1.0×10^{-2}
FM-255	inh. W	5×10^{-4}	All compounds	8	1×10^{-2}	(11)	1.9
(20.07h)	ing.	5×10^{-4}	All compounds	2×10^{2}	4×10^{-1}	(0)	9.1×10^{-2}
FM-257	inh. W	5×10^{-4}	All compounds	2×10^{-1}	1×10^{-2}	(60)	8.2×10^{1}
(100.5d)	ing.	5×10^{-4}	All compounds	5×10^{1}	3×10^{-1}	(4)	9.4×10^{-1}
MD-257	inh. W	5×10^{-4}	All compounds	6×10^{1}	2×10^{-2}	(8)	2.4×10^{-1}
(5.2h)	ing.	5×10^{-4}	All compounds	6×10^{3}	5	(0)	2.6×10^{-3}
MD-258	inh. W	5×10^{-4}	All compounds	3×10^{-1}	1×10^{-2}	(49)	5.3×10^{1}
(55d)	ing.	5×10^{-4}	All compounds	5×10^{1}	3×10^{-1}	(2)	2.8×10^{-1}

GLOSSARY

Absorbed Dose (D): The quotient of $d\bar{\epsilon}$ by dm, where $d\bar{\epsilon}$ is the mean energy imparted by ionizing radiation to matter of mass dm. The special SI unit of absorbed dose is the gray (Gy); the conventional unit rad is still in use (1 rad = 0.01 Gy).

Absorbed Fraction: The fraction of energy emitted as a specific radiation type in a specified region which is absorbed in a specified target tissue.

Activity Median Aerodynamic Diameter (*AMAD*): The diameter of a unit density sphere with the same terminal settling velocity in air as that of the aerosol particle whose activity is the median for the entire aerosol.

Annual Intake: The total activity of a radionuclide inhaled or ingested by a worker (Reference Man) during a working year if concentrations in the work environment correspond to the *RCG*.

Becquerel (Bq): The special name for the SI unit of activity, 1 Bq = 1 s^{-1}, which is $\sim 2.7 \times 10^{-11}$ Ci.

Committed Dose Equivalent ($H_{50,T}$): The total dose equivalent averaged throughout tissue T in the 50-year period following the intake of a radionuclide into the body.

Curie (Ci): The special name for the conventional unit of activity, 1 Ci = 3.7×10^{10} Bq.

Decay Products: A radionuclide or a series of radionuclides formed by the nuclear transformation of another radionuclide, which in this context is referred to as the parent.

Dose Equivalent (H): The product of the absorbed dose (D), the quality factor (Q), and any other modifying factors (N). The SI special unit of dose equivalent is the sievert (Sv); the conventional unit rem is still in use (1 rem = 0.01 Sv).

External Radiation: Irradiation of body tissues by radiations incident upon the body from a source external to the body.

Internal Radiation: Irradiation of body tissues by radiation emitted from radionuclides distributed within the body.

Ionizing Radiation: Any radiation displacing electrons from atoms or molecules, thereby producing ions.

Lung Clearance Class (D, W, or Y): A classification scheme for inhaled material according to its clearance halftime on the order of days, weeks, or years from the pulmonary region of the lung.

Nuclear Transformation: The spontaneous transformation of one nuclide into a different nuclide or into a different energy state of the same nuclide.

Quality Factor (*Q*): The principal modifying factor that is employed in deriving dose equivalent, *H*, from absorbed dose, *D*. The quality factor is chosen to be a smooth function of the collision-stopping power of charged particles.

Radiation Protection Guide (*RPG*): This term refers to the radiation dose which should not be exceeded without careful consideration of the reasons for doing so; every effort should be made to encourage the maintenance of radiation doses as far below this guide as practicable.

Radioactivity Concentration Guide (*RCG*): The concentration of a radionuclide in air or water which is determined to result in organ doses equal to the Radiation Protection Guide.

Rem: The conventional unit of dose equivalent. 1 rem = 0.01 joule per kilogram = 0.01 Sv.

Sievert (Sv): The special name for the SI unit of dose equivalent. 1 Sv = 1 joule per kilogram = 100 rem.

Source Tissue (*S*): Any tissue or organ of the body which contains a significant amount of a radionuclide following intake of that radionuclide into the body.

Specific Effective Energy [$SEE(T \leftarrow S)$]: The energy (MeV), suitably modified for the radiation quality factor, imparted per gram of a target tissue *T* as a consequence of the emissions of radiations in the nuclear transformation of a radionuclide in source region *S*.

Target Tissue (*T*): Any tissue or organ of the body in which radiation is absorbed.

Working Level (WL): Any combination of short-lived radon decay products in 1 L of air that will result in the ultimate emission of 1.3×10^5 MeV of potential alpha energy.

Working Level Month (WLM): An exposure of 1 WLM corresponds to the inhalation of air with a concentration of radon decay products of 1 WL for 170 working hours (1 working month).

REFERENCES

ACGIH (1980). American Conference of Governmental Industrial Hygienists, "Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment," (ACGIH, Cincinnati, OH).

EPA (1971a). Environmental Protection Agency, "Underground Mining of Uranium Ore, Radiation Protection Guidance for Federal Agencies," *Federal Register* **36,** No. 101, 9480.

EPA (1971b). Environmental Protection Agency, "Underground Mining of Uranium Ore, Radiation Protection Guidance for Federal Agencies," *Federal Register* **36,** No. 132, 12921.

Eve, I. S. (1966). "A review of the physiology of the gastrointestinal tract in relation to radiation doses from radioactive material," *Health Phys.* **12,** 131 (Pergamon Press, New York).

FRC (1960). Federal Radiation Council, "Radiation Protection Guidance for Federal Agencies," *Federal Register* **25,** 4402.

FRC (1967). Federal Radiation Council, "Radiation Protection Guidance for Federal Agencies," *Federal Register* **32,** No. 147, 11183.

FRC (1969). Federal Radiation Council, "Radiation Protection Guidance for Federal Agencies," *Federal Register* **34,** No. 10, 576.

FRC (1970). Federal Radiation Council, "Radiation Protection Guidance for Federal Agencies," *Federal Register* **35,** No. 245, 19218.

ICRP (1959). International Commission on Radiological Protection, "Permissible Dose for Internal Radiation," ICRP Publication 2 (Pergamon Press, New York).

ICRP (1964). International Commission on Radiological Protection, "Recommendations of the International Commission on Radiological Protection," ICRP Publication 6 (Pergamon Press, New York).

ICRP (1966). International Commission on Radiological Protection, "Deposition and retention models for internal dosimetry of the human respiratory tract," *Health Phys.* **12,** 173 (Pergamon Press, New York).

ICRP (1968). International Commission on Radiological Protection, "Task Group on Radiosensitivity of Tissues in Bone," ICRP Publication 11 (Pergamon Press, New York).

ICRP (1972). International Commission on Radiological Protection, "The Metabolism of Compounds of Plutonium and Other Actinides," ICRP Publication 19 (Pergamon Press, New York).

ICRP (1973a). International Commission on Radiological Protection, "Alkaline Earth Metabolism in Adult Man," ICRP Publication 20 (Pergamon Press, New York).

ICRP (1973b). International Commission on Radiological Protection, "Data for Protection Against Ionizing Radiation from External Sources," ICRP Publication 21 (Pergamon Press, New York).

ICRP (1975). International Commission on Radiological Protection, "Report of the Task Group on Reference Man," ICRP Publication 23 (Pergamon Press, New York).

ICRP (1977). International Commission on Radiological Protection, ICRP Publication 26, *Annals of the ICRP* **2,** No. 3/4 (Pergamon Press, New York).

ICRP (1979a). International Commission on Radiological Protection, "Limits for Intake by Workers," ICRP Publication 30, Part 1, *Annals of the ICRP* **2,** No. 3/4 (Pergamon Press, New York).

ICRP (1979b). International Commission on Radiological Protection, "Limits for Intake by Workers," ICRP Publication 30, Supplement to Part 1, *Annals of the ICRP* **3,** No. 1–4 (Pergamon Press, New York).

ICRP (1980). International Commission on Radiological Protection, "Limits for Intake by Workers," ICRP Publication 30, Part 2, *Annals of the ICRP* **4,** No. 3/4 (Pergamon Press, New York).

ICRP (1981a). International Commission on Radiological Protection, "Limits for Intake by Workers," ICRP Publication 30, Supplement to Part 2, *Annals of the ICRP* **5,** No. 1–6 (Pergamon Press, New York).

ICRP (1981b). International Commission on Radiological Protection, "Limits for Inhalation of Radon Daughters by Workers," ICRP Publication 32, *Annals of the ICRP* **6,** No. 1 (Pergamon Press, New York).

ICRP (1981c). International Commission on Radiological Protection, "Limits for Intake by Workers," ICRP Publication 30, Part 3, *Annals of the ICRP* **6,** No. 2/3 (Pergamon Press, New York).

ICRP (1982a). International Commission on Radiological Protection, "Limits for Intake by Workers," ICRP Publication 30, Supplement A to Part 3, *Annals of the ICRP* **7,** No. 1–3 (Pergamon Press, New York).

ICRP (1982b). International Commission on Radiological Protection, "Limits for Intake by Workers," ICRP Publication 30, Supplement B to Part 3, *Annals of the ICRP* **8,** No. 1–3 (Pergamon Press, New York).

ICRP (1983). International Commission on Radiological Protection, "Radionuclide Transformations: Energy and Intensity of Emissions," *Annals of the ICRP* **11–13** (Pergamon Press, New York).

ICRU (1980). International Commission on Radiation Units and Measurements, "Radiation Quantities and Units," ICRU Report 33 (ICRU, Washington, DC).

NCRP (1959). National Council on Radiation Protection and Measurements, "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," NCRP Report 22, published as National Bureau of Standards Handbook No. 69 (NCRP, Washington, DC).

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