Order no. 14/24.01.2000

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on approving the
Fundamental Norms for Radiological Safety

President of the National Commission for Nuclear Activities Control,

on the grounds of Art. 5 of the Law no. 111/1996 on the safe deployment of nuclear activities, republished,

on the grounds of Art. 9 of the Governmental Decision no. 287/1998 approving the National Commission for Nuclear Activities Control, with subsequent modifications and completions,

issues the following order:

Art. 1. – There are approved the **Fundamental Norms for Radiological Safety** provided in the appendix which is integral part of this order.

Art. 2. – General Division on Nuclear Power Plants and Nuclear Fuel Cycle, General Divion on Ionizing radiation application, General Division on surveillance the environmental radioactivity and the General Diviion on development and Resources within the National Commission for Nuclear Activities Control will fulfill the provisions of this order.

Art. 3. – This Order will be published in the published in the Romanian Official Bulletin, part I.

Art. 4. – At the date of entry into force of this Order, the Art. 1 – 86, 107 – 120 and 122 from the Republican Norms – Norms on radiation protection, approved by Joint Order no. 122/133/26/1976 of the President of State Committee for Nuclear Energy, Minister of Health and President of the National Council for Water, published in the Official Bulletin, part I, no. 48/24.05.1976 will be reappealed.

President of the National Commission for Nuclear Activities Control
Dan Cutoiu

Bucharest, 24 January 2000.
No. 14.

ANNEX

FUNDAMENTALS NORMS FOR RADIOLOGICAL SAFETY

Chapter I
SCOPE AND DEFINITIONS

Art. 1. – These norms set up the requirements concerning the assurance of radiological safety of occupational exposed workers, population and environment, in accordance with the provisions of Law 111/1996 on the safe deployment of nuclear activities ,republished.

Art. 2. - Terms and expressions used in these norms are defined in annexes No. 1 and 3.

Chapter II
APPLICABILITY

Art. 3. - (1) These norms shall apply to practices which involve the risk of exposure to ionizing radiation emanating from:

a) artificial sources;

b) natural radiation sources in cases where radionuclides are or have been processed in view of using their radioactive, fissile or fertile properties;

c) electrical equipment which operating at a potential difference of more than 5kV emit such radiation.

(2) These norms shall also apply to activities which involve the presence of natural radiation sources, in other situations than those provided under paragraph (1), b) and leading to a significant increase in the exposure of workers or members of the public.

(3) These norms shall also apply to intervention in case of radiological emergencies as well as in case of chronic exposure resulting from a radiological emergency or a past or old practice or work activity.

Art. 4. – These norms shall not apply in case of:

a) exposure to radon in dwellings;

b) exposure to the natural level of radiation;

c) practices provided under art. 3, paragraph (1), a) and b) which involve utilisation of materials for which exemption requirements from annex No. 2 are accomplished.

Chapter III
AUTHORIZATION OF PRACTICES

AUTHORIZATION

Art. 5. - (1) According to provisions under art. 8 of the Law 111/1996 on the safe deployment of nuclear activities, republished, the practices provided by art. 3, paragraph 1 shall require an authorisation issued by the National Commission for Nuclear Activities Control, hereinafter referred as CNCAN.

(2) The regime of authorisation shall also apply in case of radioactive waste storage after the final completion of practice, the final disposal, recycling or reutilization of the sealed, unsealed sources and of the radioactive materials arisen from any activity subject to authorisation requirements.

Art. 6. - (1) The authorisation issued by CNCAN according to provisions of art. 5 is prior to practice development.

(2) The exceptions regarding the prior character of authorisation are established by CNCAN through specific regulations according to the law.

Art. 7. -The content, conditions and stages of authorisations process of practices are established by the specific regulations issued by CNCAN.

Exemptions from the authorisation

Art. 8. - (1) There are exempted from the CNCAN authorisation the following practices:

a) which involve radioactive sources and radioactive materials whose total activity does not exceed the exemption value provided in column 5 of Table 2-B from annex No. 2 or, in special cases, another exemption value established by CNCAN, that satisfies the fundamental criteria set out in annex No. 2.

b) which involve radioactive sources and radioactive materials whose concentration of activity per unit mass do not exceed the exemption value set out in column 4 of Table 2-B to annex No. 2 or ,in special cases, another exemption value established by CNCAN, that satisfies the fundamental criteria set out in annex No. 2.

c) which involve nuclear facilities containing radioactive sources whose total activity and the concentration of activity exceed the exemption values set out in subparagraph (a) and (b) if the conditions established by CNCAN are satisfied.

d) which involve the cathode ray tubes intended for the display of visual images, or electrical apparatus operating at a potential difference not exceeding 30 kV, provided that this operation shall not cause, in normal operating conditions, a dose rating, an equivalent debit of ambient dose $H^*(10)$ and not one equivalent debit of directional dose $H'(0,07;\Omega)$ (whatever the direction Ω), more than 1 μSv per hour at a distance of 0,1m from any accessible surface of facility ;

e) which involve the electrical apparatus operating at a potential more than 30kV provided that the type of respective apparatus obtain an authorization of radiological safety where are mentioned the exception of utilization from the authorization, but the operation of apparatus shall not produce, in normal operating conditions, an equivalent debit of ambient dose $H^*(10)$ and not one equivalent debit of directional dose $H'(0,07;\Omega)$ (whatever the direction Ω), more than 1 μSv per hour at a distance of 0,1 m from any accessible surface of facility;

f) which involve materials contaminated with radionuclides arisen from authorised practices which accomplish the clearance levels from the regulatory control established by CNCAN.

(2) The provisions of the paragraph (1) do not apply to practices which involve the import, supply, reparation and assembling – installing.

(3) The clearance levels provided in the paragraph (1) f) shall apply only after obtaining the authorization from the CNCAN.

Art. 9. – For the purpose of exemption from the authorisation, the practices provided by the art. 8 c) shall accomplish cumulative the following conditions:

a) the radioactive sources are sealed sources;

b) the equivalent debit of ambient dose $H^*(10)$,and the equivalent debit of directional dose $H'(0,07;\Omega)$ (whatever the direction Ω), do not exceed 1 μSv per hour at a distance of 0,1 m from any accessible surface of facility;

c) are established the conditions for disposal as radioactive waste;

d) the type of facility has obtained the radiological safety authorisation where the exemption from the authorisation of practices involving the utilisation of respective facility are mentioned.

Art. 10. - (1) The natural and legal persons which posses, deposit or utilise the nuclear facilities provided under art. 8 c) shall comply with the provisions of use instructions issued by producer regarding the physical protection, radiation protection, record and accounting for sources, delivering as radioactive waste as well as reporting of loss or theft radioactive sources.

(2) The content of use instructions issued by producer are approved by CNCAN on occasion of issuing of the radiological safety authorisation of respective nuclear facilities.

Art. 11. - (1) The storage as radioactive waste after the final completion of practice, final disposal, recycling and reutilization of radioactive materials arising from any activity subject to the authorisation requirements, shall not be further subject of the authorisation requirements in case they accomplish the conditions regarding the clearance levels from the regulatory control which shall be established by CNCAN for each concrete situation.

(2) The clearance levels from the regulatory control shall be established by CNCAN taking into account technical norms of Community.

Chapter IV

JUSTIFICATION, OPTIMIZATION AND DOSE LIMITATION FOR PRACTICES FROM NUCLEAR FIELD

Section I
General principles

Justification of practices

Art. 12. - (1) All new practices which lead to exposure to ionising radiation shall be justified in writing by their initiator, underlining their economic, social or other nature advantages, in comparison with the detriment which they could cause to health.

(2) CNCAN shall authorise these practices, provided that consider the justification as being thorough.

Art. 13. - (1) Existing practices shall be reassessed whenever new situations appear regarding their consequences and efficiency in conditions provided in art. 12.

(2) The reassessment of practice justification is co-ordinated by CNCAN.

(3) If the practice does not justify any more, CNCAN may dispose practice extending reducing or even her stopping.

Art. 14. – They are considered unjustified the following practices :

a) that which involve activation through irradiation or deliberate introduction of radioactive substances in foodstuffs, drink, cosmetics, or any other goods or products destined to ingestion, inhalation or transdermic transfer by a human being;

b) that which involve utilization of radiation or radioactive substances for the purpose of entertainment, recreation or in products as toys, personal jewelry or ornaments.

Art. 15. – Provisions of art. 14 (a) shall not apply to practices regarding medical exposures.

Optimization of practices

Art. 16. –The applicant, respectively the authorisation holder, is forced to demonstrate that all actions to ensure radiation protection optimisation are undertaken, with a view to ensure that all exposures, including the potential ones, within the framework of practice developed are maintained at the lowest reasonable achievable level, taking into account the economic and social factors - ALARA principle .

Limitation of doses and dose constraints

Art. 17. - (1) The annual doses sum arising from all relevant practices shall not exceed the dose limits provided by these norms for exposed workers, trainees and members of population.

(2) Provisions under paragraph (1) shall not apply to the following types of exposure:

a) exposure of individuals as part of their own medical diagnosis or treatment ;

b) exposure of individuals knowingly and willingly helping ,besides their own occupation, in supporting the patients under medical diagnosis or treatment ;

c) exposure of volunteers participating in medical or biomedical research programmes.

Art. 18. - (1) CNCAN establishes, whenever is necessary, dose constraints for practices or for certain radiation sources within the practice.

(2) Doses constraints shall be used as maximum limit in the process of optimisation of radiation protection.

Art. 19. - In the process authorisation and control of practices involving medical exposure, CNCAN shall also verify:

a) compliance with the dose constraints established by the Ministry of Health as reference levels for medical exposure;

b) compliance with the dose constraints established by the Ministry of Health within the procedures applied to exposed individuals in accordance with art. 17 paragraph (2), b) and c).

Art. 20. - (1) The authorisation holder establishes, whenever is necessary, derived limits of emission for radioactive effluents, with the assistance of an approved expert or an approved occupational health service.

(2) CNCAN approves derived limits within the authorisation process.

Section II
Specific requirements for dose limitation

Dose limits for exposed workers

Art. 21. - It is forbidden the use of individuals under 18 years of age in activities which could lead to their professional exposure excepting the trainees for practices in nuclear field.

Art. 22. - (1) The limit of an effective dose for occupational exposed workers is 20 mSv (milisievert) in a year.

(2) In compliance with disposals of paragraph (1), there are also available the following limits on equivalent dose:

a) 150 mSv in a year for the lens of the eye ;

b) 500 mSv in a year for skin; the limit shall apply for the average of dose over any 1 cm^2 area of skin, regardless of the area exposed.;

c) 500 mSv in a year for the extremity of hands and legs.

Special protection during pregnancy and breastfeeding

Art. 23. - (1) As soon as a occupational exposed woman take notice of fact that she is pregnant, she shall inform in writing the authorisation holder about this fact.

(2) Authorisation holder shall take immediately all measures for ensuring the foetus protection at the level of dose provided for population.

(3) The working conditions of the pregnant woman shall ensure that the effective dose received by foetus is at the lowest reasonable achievable level, without exceeding 1 mSv during the remaining perlodine of pregnancy.

Art. 24. - (1) The nursing ocupational exposed women shall announce immediately, in writing, the authorisation holder about this fact.

(2) The authorisation holder shall immediately ensure that the respective women do not carry on, during breastfeeding, activities involving a significant risk of radioactive contamination.

Limits of dose for population

Art. 25. - (1) The limit of effective dose for population is 1 mSv in a year.

(2) In special conditions, CNCAN may authorise an annual maximum limit till 5 mSv in a year, providing that the average of the effective dose on 5 consecutive years does not exceed 1 mSv in a year.

Art. 26. - In compliance with the conditions provided under art. 25, the following limits of the equivalent dose are also available for the population:

a) 15 mSv in a year for the lens of the eye;

b) 50 mSv in a year for the skin; the limit shall apply to the average dose over any area of 1 cm^2, regardless of the area exposed.

Dose limits for the trainees

Art. 27. – The dose limits for apprentices aged under 16 years who, during the training, are obliged to use radiation sources, are those provided for in art. 25 and 26 for the population.

Art. 28. - (1) The limit on effective dose for individuals aged between 16 and 18 years who, during their training, are obliged to use the radiation sources, is 6 mSv in a year.

(2) In compliance with the provisions of paragraph (1), the following limits of the equivalent dose are also available:

a) 50 mSv in the year for the lens of the eye;

b) 150 mSv in the year for the skin; the limit shall apply for the average dose over any area of 1 cm^2, regardless of the area exposed;

c) 150 mSv in the year for the extremity of hands and legs.

Art. 29. – The dose limits for the individuals aged over 18 years who, during their training, are obliged to use the radiation sources, are those provided in art. 22 for the occupational exposed workers.

Specially authorized exposures

Art. 30. - In exceptional circumstances, excluding radiological emergencies, CNCAN may authorize individual occupational exposure of some identified workers exceeding the effective dose limit set out in art. 22 paragraph (1), providing that such exposure are limited in time, confined to certain working areas and are integrated below maximum value approved by CNCAN for the equivalent dose limits provided in art. 22 paragraph (2).

Art. 31. – The authorisation holder requiring special authorization for exposures shall respect the following conditions:

a) only occupational exposed workers category A may be subject to specially authorized exposures;

b) trainees, pregnant women and breastfeeding women may not be subject of the specially authorized exposures if that involves the possibility of incorporation or radioactive contamination;

c) to seriously justify these exposures and to discuss them in detail with workers, who should be volunteers, with their representatives, with the medical practitioner or with the approved occupational health services for the occupational exposed persons and with the approved expert or with the approved radiation protection service;

d) to ensure that all staff involved in specially authorized exposures shall be informed on presumed risks and on precautions necessary to be taken;

e) to ensure that all doses related to these specially authorized exposures are recorded separately in medical file and in individual monitoring record.

Art. 32. - In case of a specially authorized exposure, having as effect the exceeding of the effective dose limit provided in art. 22 paragraph (1), i the temporary or definitive change of the work place of the exposed worker is not obligatory, without his/her request.

Exposure of the population as a whole

Art. 33. - CNCAN shall take all measures to ensure that the exposure of population to radiation, caused by the nuclear practices to which these norms apply, is kept as low as reasonably achievable, the economic and social factors being taken into account.

Art. 34. - CNCAN shall perIodineically monitor the total value of the effective dose for the population as a whole per capita of inhabitant.

Chapter V
ESTIMATION OF DOSES

Art. 35. – For the estimation of effective dose and equivalent doses, to the external exposure, as well as of effective dose to internal exposure, there shall be used the values and relationships referred to in annex no. 3 and annex no. 4.

Art. 36. - CNCAN may also accept the use of other methods of estimation of doses.

Chapter VI

OPERATIONAL RADIATION PROTECTION OF OCCUPATIONAL EXPOSED WORKERS AND OF TRAINEES

General principles

Art. 37. – The authorisation holder shall take all necessary measures for reducing the exposure to radiation of workers, at the lowest reasonable achievable level. In this purpose:

a) he/she shall perform preliminary assessment, allowing the identification of nature and of size of radiological risk of occupational exposed workers and level to which the provisions concerning the optimisation of radiation protection in all work conditions are accomplished;

b) he/she shall perform the classification of workplaces, as applicable, into different areas, relying on the assessment of the foreseeable annual doses, as well as on the probability and the extent of the potential exposures;

c) he/she shall perform the classification into the categories of the occupational exposed workers;

d) he/she shall implement the control and surveillance measures adapted to different areas and working conditions, including those of individual surveillance, when imposed by a specific situation;

e) he/she shall ensure the medical surveillance;

f) he/she shall ensure the equipment of protection to radiation, both individual and collective;

g) he/she shall use in practice only the staff which possesses exercising permits available for the respective activity.

h) he/she shall accomplish any other necessary measurements for the assurance of the operational radiation protection of the occupational exposed workers , within the respective practice.

General requirements for zoning

Art. 38. - (1) In the all workplaces where there is the possibility of an exposure to ionising radiation higher than the dose limits for population provided in art. 25 and 26, the authorisation holder shall take the measures for the purpose of radiation protection, which shall be adapted to the nature of facilities and sources.

(2) The workplaces provided in the paragraph (1) shall be classified into controlled and monitored areas, in accordance with the specific criteria issued by CNCAN, in regulations regarding the respective practices.

Art. 39. - Both the extent of actions for prevention and surveillance, and their nature and quality shall be in accordance with the risks associated to work in conditions of exposure to the ionising radiation.

Art. 40. – The work conditions in controlled and monitored areas shall be perIodineically revised and, when necessary, they shall be revised by the authorisation holder.

Art. 41. – The legal regime of the controlled and monitored areas shall allow the authorisation holder to implement the tasks assigned within these norms.

Art. 42. - (1) For each controlled and monitored area, it shall be nominated in writing, at least one responsible with the radiological safety in charge with the application of these norms and the specific regulations in respective area.

(2) The responsible with the radiological safety shall possess an exercising permit issued by CNCAN for the field and speciality in accordance with the practices carried out in the controlled/monitored area.

(3) In certain cases, established by CNCAN through specific regulation, this position shall be ensured by a special department managed by an approved expert.

Requirements for controlled areas

Art. 43. - The minimum measures which the holder shall accomplish concerning a controlled area are as it follows:

a) he/she shall precisely delineate the area, which shall be accessible only for individuals having adequate training, and the access shall be controlled in accordance with the written instructions of the authorisation holder. In case of significant risk of the spread of radioactive contamination, it shall be taken special measures of prevention, including control of the

contamination at the entrance and the exit of individuals and goods and the assurance of decontamination of the individuals and goods;

b) he/she shall set up the radiological monitoring of the work environment taking into account the nature and the extent of the radiological risks in the controlled area;

c) he/she shall obligatory post up the signs of danger of radiation provided in annex no. 5, as well as indications concerning the type of the area, the nature of sources and associated risks;

d) he/she shall establish and implement working instructions adapted to the radiological risk associated with the sources and operations performed.

Art. 44. –Access and staying in the controlled area allowed for the following categories of individuals:

a) occupational exposed workers, nominated in writing, from the authorization holder own workers;

b) outside workers, nominated in writing, only after verification that occupational exposed workers has fulfilled the requirements and acquired specific work instructions.

Art. 45. - (1) Access and standing in controlled area of the individuals, other than those provided in art. 44, is allowed only in following situations:

a) if, by the nature of tasks of work, the individuals shall work in controlled area, for a limited perIodine of time and there is a writing procedure, establishing entrance and staying conditions, so it shall be proved that the respective individuals will not be exposed to doses higher than those authorized for the members of population;

b) where, without a writing procedure, it may be proved by individual monitoring or other adequate means that those dose limits for the members of population are fulfilled.

Requirements for supervised areas

Art. 46. – The measures which shall be ensured by the authorisation holder for a supervised area are as it follows:

a) he/she shall ensure the radiological surveillance of the working environment, taking into account the nature and the extent of the radiological risks from the supervised area;

b) he/she shall post up the adequate signs related to the type of area, nature of sources and their related risks;

c) he/she shall establish and implement work instructions adapted to the radiological risk associated with the sources and the operations performed.

Art. 47. – For the fulfilment of the requirements related to the controlled and supervised areas, the authorisation holder shall consult an approved expert or an approved radiation protection service, which shall certify the proposed zoning.

Classification of occupational exposed workers

Art. 48. – The occupational exposed workers are classified into two categories:

a) Category A: includes the occupational exposed workers for whom there is a significant probability of receiving an effective annual dose or an equivalent annual dose higher than three tenths of the limit of the respective dose provided in art. 22;

b) Category B: includes other individuals than those included in category A..

Information, training and authorisation of workers

Art. 49. – The authorisation holder shall ensure the information of the occupational exposed workers and of the trainees related to:

a) the health risks involved by the activity developed ;

b) the general radiation protection procedures and the special required measures, related both to the practices, in general and to any type of activity which may be developed;

c) the importance of complying with the technical, medical and administrative requirements;

d) the commitment of pregnant and of breastfeeding women of immediately informing on their situation, the authorisation holder, in writing, taking into account the exposure risks for their foetus and the contamination risk for nurseling, in case of mother internal contamination.

Art. 50. - (1) The authorisation holder shall ensure the adequate training for the occupational exposed workers, in the field of radiological safety, and his/her refreshing, at least once at 5 years, by a training system recognised by CNCAN.

(2) The first perIodine of 5 years for the application of the provisions of paragraph (1) shall be applied starting with the date on which these norms entry into force.

(3) Also, the authorisation holder shall train the trainees, prior they use or handle radiation sources.

Assessment and implementation of measures related to the radiation protection of occupational exposed workers

Art. 51. – The authorisation holder shall be responsible for the assessment and implementation of measures related to the radiation protection of exposed workers.

Art. 52. - (1) The authorisation holder shall consult approved experts or approved occupational health service related to the verification, testing of radiation sources, equipment and radiation protection devices, as well as of the dosimetric measurement instruments.

(2) The consultation shall be made, in principal, for:

a) prior critical examination of plans for nuclear objectives and facilities from the point of view of radiological safety;

b) identification, for use purpose, only of nuclear facilities and radiation sources for which radiological safety authorisation has been issued;

c) acceptance of new or modified radiation sources, only after the verification from the point of view of radiological safety ;

d) regular checking of nuclear facilities, of radiation sources and of the efficiency of protective equipment, systems and techniques

e) regular calibration, checking of measuring instruments, as well as the assessment of their adequate use.

Radiological monitoring of the workplace

Art. 53. - (1) Radiological surveillance of the working environment, referred to in art. 43 b) and art. 46 a), shall comprise, where appropriate

a) the measurement of external dose rates, indicating the nature and quality of the radiation in question;

b) the measurement of air activity concentration and surface density of contaminating, indicating the radionuclides nature and their physical and chemical states.

(2) The results of these measurements shall be recorded and shall be used, if necessary, for estimating individual doses. The duration for the records retaining is established by CNCAN during the authorisation process.

Art. 54. – The radiological monitoring system of the workplace is approved by CNCAN during the process of practice authorisation.

Individual monitoring of radiation exposure of the occupational exposed workers

Art. 55. - (1) The authorisation holder shall ensure the systematic individual monitoring of all occupational exposed category A workers .

(2) The monitoring shall be performed by an approved dosimetric service.

Art. 56. - (1) In cases where category A workers are liable to receive significant internal contamination, individual monitoring referred to in art. 55 shall include internal contamination monitoring of these workers.

(2) The identification of workers referred to in paragraph (1) shall be made by consulting an approved expert or an approved radiological protection service.

Art. 57. - In cases where individual measurements provided for in art. 55 and 56 are impossible or inadequate, the individual monitoring shall be based on an estimate arrived at either from individual measurements made on other exposed workers or from the results of the surveillance of the workplace provided for in art. 53.

Art. 58. - (1) The individual monitoring of the professional exposed category B workers shall be at least sufficient to demonstrate that such workers are correctly classified in this category, following that this shall not be necessary afterwards.

(2) In case of certain practices, CNCAN may require that, for the professional exposed category B workers, individual monitoring in accordance with the provisions established for exposed category A workers to be ensured.

Art. 59. – The monitoring system of radiation exposure of the occupational exposed workers is approved by CNCAN during the authorisation process of the practice.

Monitoring of radiation exposure in case of accidental and emergency exposures

Art. 60. - In case of the accidental exposures, the authorisation holder shall ensure, for all the involved individuals, the immediately assessment of individual doses due both to the external exposure and to the internal exposure, as well as the distribution of these doses in the body.

Art. 61. - In case of the emergency exposure the authorisation holder shall ensure the individual dosimetric monitoring and/or the assessment of the received doses, as the case may be.

Art. 62. - For the confirmation of the results of the assessment of doses resulted following the accidental or emergency exposures, the authorisation holder shall consult an approved expert or an approved radiological protection health service.

Recording and reporting of the results of individual monitoring of radiation exposure

Art. 63. - The authorisation holder shall ensure the recording of results of the individual monitoring for each occupational exposed category A worker or occupational exposed category B worker, for which CNCAN has imposed to be ensured the individual monitoring, as well as for all workers subject to accidental or emergency exposure.

Art. 64. - (1) The authorisation holder shall ensure the retaining of records provided at art. 63 until the respective worker has or would have attained the age of, but not less than 30 years from the termination of the work as occupational exposed worker.

(2) In case of liquidation of the authorization holder legal person, the documents provided at art. 63 shall be taken over by the approved dosimetric service that has ensured the individual monitoring, which shall keep them in the conditions provided in paragraph (1).

(3) The recording of the results of individual monitoring shall include:

a) recording of the individual doses measured or assessed, as the case may be;

b) reports related to the circumstances and actions performed in case of accidental and emergency exposures;

c) results of the radiological surveillance of the workplace, used for the doses assessment, where appropriate.

(4) The results of the individual monitoring of specially authorised exposures, of the accidental or emergency exposures shall be recorded apart from those of the systematic individual monitoring.

Art. 65. - In cases where the authorisation holder uses external workers, the responsibility for recording the results of the individual monitoring shall be both for the authorisation holder which is using them, and for the legal person to which the respective workers belong.

Art. 66. - (1) The authorisation holder shall request, when hiring an occupational exposed worker, his/her statement related to the prior doses received as occupational exposed worker.

(2) The authorisation holder shall request, from the last employer where the respective worker has been hired as occupational exposed, the official transmittal of the extract from the evidence of dose received by that worker.

Art. 67. - (1) The approved dosimetric services shall keep the records of the monitored occupational exposed workers and of doses received during the perIodine provided for in art. 64, paragraph (1), in the conditions established by the specific regulations issued by CNCAN.

(2) In case of liquidation of the approved dosimetric service, this one shall transmit to CNCAN the documents keeping the evidence of the individual monitoring of all recorded workers.

Art. 68. - (1) CNCAN organizes the centralized accounting of dose records for the occupational exposed workers.

(2) The authorization holders and the approved dosimetric services shall make available to CNCAN the results of the individual monitoring.

Art. 69. – The authorisation holder shall inform the involved worker on the results of his/her individual monitoring and to ensure the access of the involved person to the results of the measurements used for the assessment of dose of the respective worker and to the results of the radiological monitoring of the workplace used to assessment of the doses received by that person.

Art. 70. - The authorisation holder shall make available to the medical practitioner the results of the individual monitoring, for the interpretation of the involvement of radiation exposures in the exposed workers health.

Art. 71. - In case of the accidental or emergency exposure, as well as in case of finding of any dose limits exceeding, the approved dosimetric service shall immediately transmit to the authorisation holder the result of the individual monitoring, and that one shall immediately transmit this result to the approved medical practitioner and to CNCAN.

Investigation and reporting of over exposure and abnormal exposure

Art. 72. - (1) As soon as an authorisation holder presumes or has been informed that a worker has suffered an abnormal exposure or an over exposure as result of the practices for which he is responsible, he/she has the following responsibilities:

a) shall make a first investigation as basis to establish the preliminary value of the received dose;

b) shall make a detailed investigation for establishing the circumstances where the over exposure has arisen;

c) shall assess the received dose on the basis of all the available data, including the results of the individual dosimetric measurements and, if there is necessary, shall take measures to prevent the recurrence of such over exposures;

d) shall notify immediately the affected person ;

e) shall immediately inform CNCAN, the approved medical practitioner and the employer of the external worker (if the involved person is an external worker), on the presumed over exposure and the preliminary evaluated dose;

f) shall issue, in 10 days following the start of the investigation provided for in paragraph (1) has started, a report on this event, which shall have the retaining regime provided for in art. 64, paragraph (1) and shall be sent to persons provided for in paragraph e).

(2) In case when by the investigation provided for in paragraph (1) a) it has immediately and certainly been established that an over exposure did not happen, the holder is not responsible anymore to comply with the requirements provided for in paragraph (1), but he shall issue a report that he shall retain at least 2 years.

(3) In the assessment and investigation process provided for in paragraph (1) b) and c), the authorisation holder shall consult a approved expert or an approved radiological protection service.

Art. 73. – The over exposures shall be recorded in accordance with the provisions of art. 64, paragraph (1).

Art. 74. – The exposed workers who have suffered an over exposure may continue to work in controlled areas if there are no medical contra-indications .

Art. 75. – The approved dosimetric services shall immediately inform CNCAN and the local medical authority on each exceeding of the dose limit they have been informed on.

General requirements for to the medical surveillance of the occupational exposed workers

Art. 76. - The medical surveillance of the occupational exposed workers shall be made in accordance with the regulations issued by the Ministry of Health.

Medical conditioning of the use of occupational exposed workers

Art. 77. – No worker may be used in any circumstance as occupational exposed worker if he has not medical notification certifying that the respective person is able to fit with the respective post.

Special medical surveillance of the occupational exposed workers

Art. 78. - For the occupational exposed workers who have been exposed to doses higher than the dose limits provided for in art. 22, a special medical surveillance shall be ensured, in accordance with the regulations issued by the Ministry of Health.

Art. 79. - CNCAN shall verify the compliance of the conditions established by the approved medical practitioner related to the further exposure following an exceeding of the dose limits provided for in art. 22.

Protection system for ionising radiation

Art. 80. - (1) In accordance with the provisions of Law 111/1996 on the safe deployment of nuclear activities, as republished, the authorisation holder shall establish and maintain a protection system for ionising radiations.

(2) The protection system for ionising radiation involves at least the following measures:

a) use of approved experts or of an approved radiological protection service, as the case may be, in all situations where this is required by these norms;

b) compliance with the general principles provided for in art. 37 of these norms;

c) elaboration and implementation of a set of documents regulating the development practice in accordance with these norms and with the specific norms in the nuclear field;

d) use, during practice, only of individuals having valid exercising permit for the respective activity;

e) assignment of the responsibilities on radiological safety in accordance with the provisions of art. 42 of these norms.

Obligations of the occupational exposed workers

Art. 81. - An occupational exposed worker shall not expose herself/himself and shall not expose other individuals to radiations exceeding the reasonable limits necessary for the achievement of the job tasks.

Art. 82. - Occupational exposed workers shall not use the radiation sources or the nuclear facilities in other purposes than those for which they have been established and authorised, or for other works than those resulting from the job tasks.

Art. 83. - Each occupational exposed worker shall:

a) wear the individual protection equipment and the individual monitoring devices;

b) immediately inform the radiological safety responsible on any damage of the individual protection equipment, of the collective protection equipment, or to the warning system;

c) immediately hand over, after use, at the storage place, the individual protection equipment and the individual monitoring means;

d) comply with the work instructions and the indications of the responsible with the radiological safety for the controlled or supervised area;

e) be present at examinations or medical tests required by the approved medical practitioner, during the work time and on employer expenses, and to give all details regarding the health status required by the approved medical practitioner;

f) immediately notify, in writing inclusive, to the responsible with the radiological safety or to the authorisation holder management, whenever he has the very good reasons to believe that he or other individual had an over exposure or that it is arisen a special event such as loss/theft of a radiation source or nuclear facility, release of radioactive material, breakdowns that put in danger the safety of radiation sources, of nuclear facilities or the integrity of protection means;

g) keep adequately the document of individual radiological monitoring, referring to its own radiological monitoring in case where he is an outside worker.

The obligations regarding the submission of the information related to the individual monitoring

Art. 84. – The authorisation holder and the approved dosimetric services, which have ensured the individual monitoring at the last work place of a category A or B occupational exposed workers, for the cases provided in art. 58, shall ensure, at request, the submission of respective individual monitoring results to the authorisation holder which hires the respective person as occupational exposed worker.

Art. 85. - The authorisation holders and the approved dosimetric services shall ensure the submission to the appropriate services from abroad, at their request, of individual monitoring results of occupational exposed workers in Romania, which require to be assigned as occupational exposed workers in other countries.

CNCAN responsibilities related to ensure radiological safety in controlled and supervised areas

Art. 86. – The application of the provisions of these norms related to ensure radiological safety in controlled and supervised areas is controlled by CNCAN according to chapter, “The control regime” from the Law 111/1996 on safe deployment of nuclear activities, republished.

Art. 87. - CNCAN establishes by specific regulations the accreditation requirements for the approved experts, the approved radiation protection services and the approved dosimetric services and verifies if the conditions for training and re-training of those experts have been set up.

Operational radiation protection of trainees

Art. 88. – The exposure and operational radiation protection conditions of trainees, aged over 18 years, shall be equivalent to those of the occupational exposed category A or B workers, as appropriate.

Art. 89. - The exposure and operational radiation protection conditions of trainees, aged between 16 and 18 years, shall be equivalent to those of the occupational exposed workers, category B.

Chapter VII
THE SIGNIFICANT INCREASE OF EXPOSURE DUE TO NATURAL RADIATION SOURCES

Field of application

Art. 90. - The natural and legal persons which carry out professional activities at the working places of kind of that provided in art. 3 paragraph (2) shall identify through measurement and verification these working places and evaluate the consequences.

Art. 91. – The following activities involve the presence of natural radiation sources, which lead to a significant increase in the exposure of workers or of population:
a) professional activities where workers and/or population are exposed to radon, thoron and their daughters, to gamma radiation or other nuclear radiation due to natural environment, in working places such as spas, caves, mines, underground working places or aboveground working places in some identified areas;
b) professional activities where there are included extraction, processing, use or storage of materials not usually regarded as radioactive, but that contain naturally occurring radionuclides causing a significant increase in the exposure of population or workers;
c) professional activities which lead to the production of residues not usually regarded as radioactive, but which contain naturally occurring radionuclides, causing a significant increase in the exposure of population or workers;
d) aircraft operating.

Art. 92. - (1) If the result of evaluation provided in art. 90 establishes the increase of exposure of workers and/or of members of public to values that can not be disregarded from radiation protection point of view, the legal or natural person shall report the results to CNCAN and shall obtain the harmonisation of developed activities with the legal provisions.

(2) If the result of evaluation provided in paragraph (1) establishes the increase of exposure of members of public, as a result of the ulterior introduction in the economic and social circuit with a view of use or consumption, of products containing the natural radioactive substances, the legal or natural person which carries out the activity shall obtain the prior authorisation of the Ministry of Health, in accordance with the provisions of art. 38 paragraph (1) from the Law no.111/1996 on safe deployment of nuclear activities, republished.

Radiation protection against exposure from terrestrial natural radiation sources

Art. 93. - For each professional activity subject to authorisation system, the legal person carrying out the respective activity shall take the following measures:
a) to implement an adequate system for monitoring exposure;
b) to apply the protection measures against radiation in accordance with these norms;
c) if CNCAN requires the carrying out of an intervention, to ensure the implementation of measures with a view to reduce the exposure, in accordance with the provisions of these norms referring to the interventions.

Radiation protection of air crews

Art. 94. – The legal persons who operate aircraft shall ensure the assessment of effective doses for the air crew.

Art. 95. – For individuals which could receive doses higher than the value of 1 mSv per year, the legal persons operating aircraft shall take the following measures:
a) to take into account the assessed dose when organising working schedules with a view to reducing the doses for the most exposed individuals;
b) to inform the workers concerned about the health risks their work involves;
c) to apply the provisions of art. 23 referring to female air crew.

Chapter VIII
IMPLEMENTATION OF RADIATION PROTECTION FOR THE POPULATION IN NORMAL CONDITIONS

Basic principles

Art. 96. – The authorisation holder shall ensure the best radiation protection for the population, based on the general principles set out in Chapter IV.

Conditions for authorisation of practices involving a risk from exposure to ionising radiation for the population

Art. 97. – With a view to ensure operational radiation protection for the population, CNCAN:
a) examines and approves the siting and construction of nuclear facilities from the radiation protection point of view;
b) accepts the commissioning of nuclear facilities with potential contamination outside their own perimeter, only if the appropriate measures on radiation protection have been taken according to the demographic, meteorological, geological, hydrological and ecological conditions;
c) assesses and approves the plans for discharge of radioactive effluents, including the derived limits of emission of radioactive effluents and verifies during the practice the observance of respective plans during the authorisation process of practices in which there are possible emissions of radioactive effluents;

d) assesses and approves,during the authorisation process, and verifies, during the development of practice, the measures of management and physical protection related to radiation sources and radioactive materials.

Art. 98. – The methods of accomplishment of those provided in art. 97 are established by CNCAN by specific regulations, depending on the extent of exposure risk involved.

Estimation of population doses

Art. 99. – In order to issue or maintain a practice authorisation, CNCAN shall verify if:
a) the estimations of population doses, arisen from all exposures resulted from the respective practice, including the potential ones, are correctly made, both for the whole population and the ethnic groups, in all sites where such critical groups may appear ;
b) the analysis of probability and severity of potential exposures is made in accordance with the limits provided in these norms ;
c) an adequate accounting system for relevant records for the population exposure exists and the accounting is kept during the duration established in the authorization process of practice.

Art. 100. - (1) The dose estimations provided in art. 99 paragraph a) shall include, based on the radiological risks:
a) the assessment of doses due to external exposure ,indicating, where appropriate, the quality of the radiation in question;
b) the assessment of the intake of radionuclides, indicating their nature, and, where necessary, their physical and chemical states, as well as the determination of total activity and of concentration of these radionuclides activity, where appropriate;
c) the indication of critical groups characteristics and of doses that the individuals within these groups are liable to receive.
(2) The frequency of dose estimations and of analyses provided under art. 99 paragraphs a) and b), as well as the frequency of environment monitoring necessary for the confirmation of dose estimations, shall be in accordance with the requirements that CNCAN shall establish during the authorisation process.

Control of radiation protection of population

Art. 101. – In accordance with their competeces, the bodies having the control right over nuclear activities follow the application of provisions related to ensure radiation protection of population as provided in Chapter IV, “The control regime” from the Law 111/1996 on safe deployment of nuclear activities, republished.

Obligations of authorisation holders

Art. 102. – The authorisation holder shall organise the deployment of practice in accordance with the principles of radiation protection of population including the fulfilment of following tasks:
a) achieving and maintaining an optimal level of radiation protection of the environment and the population;
b) perIodineically checking of the effectiveness of technical devices for radiation protection of the population and environment;
c) using of apparatus, equipment and procedures for measurement and assessment of radiation exposure and radioactive contamination of population and environment, only as a result of a checking that certifies their capacity to adequately fulfil the related functions ;
d) ensuring calibration for all measuring instruments used for radiation protection of population and environment, meteorological checking and checking on their correct use.

Art. 103. - (1) The authorisation holder shall ensure the radioactivity monitoring of environmental factors around nuclear objectives, radioactive waste repositories and other important nuclear facilities that shall be established by CNCAN.
(2) The monitoring system of the environmental factors shall be approved by CNCAN during the authorisation process.

Art. 104. - (1) For the nuclear objectives and other nuclear facilities with risk of accident with consequences for the population, an exclusion area and an area with reduced population shall be established, where the exclusion measures, respectively restriction of siting of permanent residences for population and of deployment of social economic practices are taken.
(2) The criteria for the establishment of the two areas are based on the definition of release into environment of fission products and of some dose limits for nuclear accident, that are specified by CNCAN in specific norms.
Art. 105. - For the fulfilment of assigned obligations related to the radiation protection of population, the authorisation holder shall appeal the services of approved experts or of the approved radiation protection services.

Chapter IX
TRANSFER INTO ENVIRONMENT OF RADIOACTIVE WASTE

Basic principle

Art. 106. – The protection against negative effects of ionising radiation over the environment is realised through:
a) the interdiction of transfer of solid radioactive waste into the environment;
b) the interdiction of release into environment of liquid or gaseous radioactive waste which have total activities or concentrations of activity higher than derived limits of emission of radioactive effluents approved by CNCAN in accordance with the provisions of art. 20.
c) the optimization of releases into environment of liquid or gaseous radioactive effluents.

Control of transfer into the environment of radioactive waste

Art. 107. - As exception from the provisions of art. 106, paragraphs a) and b), the transfer into the environment of radioactive waste can be performed in a controlled manner:
a) by special units authorized by CNCAN for the disposal of radioactive waste;
b) only for solid waste, and only for total activities, concentrations of activity and surface contamination, lower than values established by CNCAN by the specific regulations, the system of collection and discharge of industrial waste.

Art. 108. - (1) The authorisation holders shall hand over to the authorised bodies for radioactive wastes collection, treatment and conditioning, all radioactive sources which are not used anymore during the respective practice and all radioactive waste arisen from the respective activity.
(2) If the authorisation holder for a certain practice is himself authorised for the treatment, conditioning, storage or disposal of its own waste, he shall develop these practices at the date and with the frequency imposed through the authorisation.

Release of radioactive effluents

Art. 109. - (1) The release into the environment of liquid or gaseous radioactive effluents can be made only with the compliance with the release derived limits approved by CNCAN, in accordance with the provisions of art. 20 and the conditions for records, reports and notifications, provided in these norms.
(2) For the liquid effluents shall be also fulfilled the condition that radioactive residues should be in the form of neutral solutions and perfectly miscible with water.

Art. 110. - The discharge of liquid radioactive effluents in the public sewerage may be performed only if cumulative the following conditions are observed:
a) the discharge is expressly provided in authorisation issued by CNCAN;
b) the radioactive residues are in the form of neutral solutions and perfectly miscible with water;
c) the total activities and activity concentrations are inferior to derived limits of evacuation in public sewerage of liquid radioactive effluents approved by CNCAN in accordance with the provisions of art. 20.

Art. 111. - If the conditions of evacuation from art. 109 are not accomplished, the authorisation holder shall take measures of liquid or gaseous radioactive waste storage, as case may be:
a) if there are short lived radionuclides, it is expected the fulfilment of conditions from the art. 109 and the waste is discharged as radioactive effluents. In case of liquid waste, the discharge shall be made at the sewerage of the unit connected to the public sewerage, only if the conditions provided in art. 110 are observed;
b) for the other cases, the radioactive waste shall be transferred to an authorised body for liquid or gaseous radioactive waste treatment or it shall be treated even by the organisation producing the waste, if this one is authorised for this practice.

Art. 112. - The removal of liquid radioactive effluents by the authorised authorities performing the waste treatment can be made only complying with the conditions provided under art. 109 and only if the concentrations of activity per volume unit of the receiving water, after dilution, accomplish the conditions established in the authorization process.

Chapter X
RADIATION PROTECTION IN INTERVENTIONS

Applicability and principles

Art. 113. -The provisions of this chapter shall apply for the intervention in case of radiological emergency or in case of chronic exposure as result of a radiological emergency or of a past professional practice and that has led to an unacceptable increasing of exposure.

Art. 114. – The radiation protection system related to the intervention shall comply with the following principles:
a) intervention shall be undertaken only if the reducing of detriment due to radiation justifies the possible damages that may be produced through intervention, as well as the costs of intervention, including social ones;
b) form, extent and duration of intervention shall be optimised so that the benefit obtained through the reducing of detriment due to radiation by subtraction of the detriment due to intervention, shall be maximum.
c) dose limits provided in Chapter IV shall not apply to interventions, exempting the situations of chronic exposures, when the dose limits provided in art. 22 shall apply for the individuals participating into the intervention;
d) intervention actions are carried out if the avoidable dose through the respective action is higher than the intervention levels which shall be provided as indications within the intervention plans.

General requirements

Art. 115. – The planning, preparedness and performance of intervention for radiological emergencies which might occur due to practices carried on within the country territory or abroad shall be made on the basis of specific regulations issued by CNCAN.

Art. 116. - CNCAN establishes agreements with the counterpart authorities from the neighbouring states with a view to organise the intervention in case of transboundary radiological emergencies that could occur whatever their origins are.

Potential exposures

Art. 117. - The authorisation by CNCAN of any practice shall be made, where appropriate, if the authorisation applicant:

a) takes into consideration the radiological emergencies which could appeare during the development of respective practice;
b) assesses the spatial and temporal distribution of radioactive substances dispersed in case of possible radiological emergencies identified as possible;
c) assess of the potential exposures related to these radiological emergencies.

Planning and preparedness of intervention

Art. 118. - (1) The planning of intervention in case of a radiological emergency consists in the existence of an appropriate intervention plan, at all necessary levels, depending on the extent of emergency.
(2) The intervention plans shall be drawn up taking into account the principles of radiation protection for intervention referred to in art. 114 and the intervention levels recommended in specific regulations elaborated according to art. 115.
(3) The intervention plans shall be tested at regular intervals through appropriate exercises.
(4) The public authorities shall establish and suitable train special teams for technical, medical and health intervention in case of radiological emergency.

Art. 119. – The intervention plan shall include the intervention form, the technical obligations of workers, the risks against the involved workers health, the protection means and those of individual dosimetric monitoring and of environment where the intervention took place, as well as the nomination of individuals which can approve the emergency exposure.

Performance of intervention

Art. 120. - The authorisation holder shall immediately notify any radiological emergency occurred at his nuclear objective or facility, in accordance with the provisions of specific regulations provided under art. 115 and shall take all appropriate measures to reduce the radiological emergency consequences, according to the provisions of intervention plan in case of an emergency.

Art. 121. - (1) For the adequate fulfilment of his own tasks concerning the intervention, the authorisation holder shall perform an initial provisional assessment of circumstances and consequences of the radiological emergency and shall communicate it immediately to the competent authority for the proper sizing of the response of other authorities involved in the intervention.
(2) In accordance with the provisions of intervention plans, the authorisation holder participates also in the subsequent assessments.

Art. 122. - (1) The interventions in case of a radiological emergency have as object, as appropriate:
a) the source, in order to reduce or stop the direct radiation and radionuclides emission;
b) the environment, in order to reduce the transfer of radioactive substances to individuals;
c) the individuals, in order to reduce the exposure and the organisation of treatment activity of the victims.

Art. 123. – All parties involved in the intervention shall assess and record the consequences of radiological emergency situation, as well as the effectiveness of the intervention.

Art. 124. - In case of a radiological emergency in Romania that could affect other countries, too, or in case of a radiological emergency on the territory of another country that could affect the Romanian territory, the provisions of international conventions to which Romania is party, shall be observed.

Emergency exposure

Art. 125. - (1) In case of emergencies, for rapid actions for helping the persons in danger, for prevention of exposure to radiation of a large number of people or for rescue of some facilities or goods, the annual dose limits established within art. 22 for occupational exposed workers can be exceeded.
(2) In the cases provided under paragraph (1), the dose limits established in art. 22 are replaced with levels of dose limit for emergency exposures included in the intervention plans and approved by CNCAN during the authorisation process.
(3) In exceptional circumstances, such as serious dangers against human life, the levels of dose limit provided under paragraph (2), for the emergency exposures can be exceeded.

Art. 126. - (1) The individuals participating in actions as those provided under art. 125-paragraph (1) are volunteers which are informed about the risks of their actions.
(2) These individuals are nominated in the emergency plan and shall be specially trained in order to reduce at minimum the doses resulted from the intervention.

Art. 127. – The actions of individuals involved in interventions as those provided in art. 125 paragraph (3) shall observe the principles of justification and optimisation of exposure in the case of the interventions provided under art. 114 paragraph a) and b) and the occurrence values for the deterministic effects provided in the specific regulations issued by CNCAN referring to the intervention planning, preparedness and performance.

Art. 128. - The members of in the intervention teams shall be the subject to the individual dosimetric monitoring and shall benefit by appropriate medical surveillance.

Intervention in case of chronic exposures

Art. 129. - (1**)** If there was identified a situation leading to a chronic exposure resulted from a radiological emergency or a practice or past professional activity, that led to a forbidden increase of the exposure, the owner of land or buildings shall notify CNCAN about the situation appeared.
(2) CNCAN can dispose, proportionally with the risk of exposure involved, the following measures:
a) to demarcate the area concerned;
b) to ensure an exposure monitoring system;

c) to ensure appropriate intervention measures taking into account the real characteristics of situation;
d) regulation of the use of lands or buildings located in the demarcated area, as well as of access to them.

Art. 130. – The owner of the land or buildings shall ensure the fulfilment of the measures set out in accordance with art. 129, paragraph (2).

Chapter XI
OTHER RECORDS, REPORTS, NOTIFICATIONS

RECORDS

Art. 131. - (1) The authorisation holder shall keep the strictly and daily records of entries, exits, traffic and consumption of radiation sources, radioactive materials and nuclear facilities.
(2) The authorisation holder shall keep the strictly and daily records of radioactive waste resulted within the authorised practice, of radioactive waste transferred to legal persons authorised with a view of their treatment and disposal, as well as of radioactive effluents released into the environment.
(3) The content of records is established in the specific norms or in the authorisation process.

Art. 132. – The authorisation holder shall keep the record provided in art. 131 paragraph (1) and (2) and after the ceasing of practice, on a minimum perIodine of 20 years, if by specific regulations it is not other wide provided .

Reports

Art. 133. The authorisation holder shall submit to CNCAN regular reports, including the main related radiological safety aspects in the authorised practice, in accordance with the provisions of specific norms or of authorisation.

Notifications

Art. 134. - (1) The authorisation holder shall immediately notify CNCAN in the event of:
a) release of gaseous or liquid radioactive effluents over the derived limits of emission set-up in the authorisation and/or in authorisation documentation;
b) release of radioactive effluents under the derived limits of emission of radioactive effluents, if the authorisation and/or the authorisation documentation request this issue.
(2) The authorisation holder shall immediately notify CNCAN, the local medical – sanitary authorities and police, within the area where the event has taken place, about any lost or theft of nuclear facilities, radiation sources or radioactive materials.

Chapter XII
TRANSITORY AND FINAL PROVISIONS

Art. 135. –The authorisations issued prior to the entry into force of these norms, but no more than 2 years from the date of entry into force of the present norms , remain valid.

Art. 136. -The individuals which have worked as occupational exposed workers before the date of entry into force of the present norms, shall be considered for the respective perIodine occupational exposed workers of category A.

Art. 137. – Until the issue of the regulations provided by law, the occupational exposed workers which possess the exercising permit level 2, issued by CNCAN, may be nominated as responsible with radiological safety for controlled and supervised areas where practices are developed in the field and speciality for which the exercising permit is valid.

Art. 138. - (1) The individuals having high degrees of education, possessing valid exercising permits level 2, may carry out their activity as approved experts in the field and speciality for which the exercising permits are valid, if, they has obtained beforehand as result of the agreement of CNCAN, as result of an individual request
(2) The duration of activity provided under paragraph (1) is no more than 3 months after the entry into force of these norms.

Art. 139. – In one a year after the entry into force these norms, the individual dosimetric services shall obtain the accreditation in accordance with the specific regulations, as approved dosimetric services.

Art. 140. - (1) The one year perIodine where the doses limitation is applied in accordance with the provisions of these norms is the same with the calendar year.
(2) If the exposure starts at another date, it is considered that the system of doses limitation was fulfilled, if the dose received until the end of the calendar year does not exceed the value obtained by the multiplication of the number of months remained until the end of the respective year (rounded by addition) with 1.8 mSv.

Art. 141. – In the authorisation process, on authorisation holder request, CNCAN may establish more dates for beginning one year perIodine, where the doses limitation is applied.

Art. 142. – Annexes 1, 2, 3, 4 and 5 are integral part of these norms.

ANNEX NO. 1

DEFINITIONS

Nuclear accident: nuclear event, which affects the facility and causes the irradiation or the contamination of the population or environment above the limits allowed by regulations in force.

Activation: process trough which a stable nuclide bombarded with particles or photons is transformed into a radioactive nuclide.

Activity (A): the number of radioactive nuclides, which are disintegrated in the time interval:

$$A = \frac{dN}{dt}$$

where *dN* represents the number of the radioactive nuclides which are disintegrated in the time interval *dt*.
The unit of activity A is the becquerel.

*Authorisation:*a document issued by CNCAN, to a legal person, on his request, allowing the development of a practice or another activity in the field of application of these norms;

Becquerel (Bq): special name of the unit of activity. One becquerel is equivalent to one disintegration per second.

Exposure pathways: the pathways through which the radioactive material reaches, or can irradiate, the human body.

Nuclear fuel: material or mechanical assembly containing nuclear raw material or fissionable material, specially destined to be used in a nuclear reactor for the purpose of producing nuclear energy.

National Commission for the Control of Nuclear Activities (CNCAN): is the national competent authority in the nuclear field which exercise the attributions of regulation, authorisation and control in accordance with the Law 111/1996 safe deployment of nuclear activities, republished in 1998.

Dose constraint: a constraint imposed on the doses that might be received by individuals from a certain radiation source and which is used for the design of radiation protection, in the purpose of optimization of radiation protection and of the compliance with dose limits in the event of cumulative exposure to radiation, due to more practices, and/or to more radiation sources within the same practice and/or emissions of effluents produced in time.

Radioactive contamination: the contamination of a material, surface, environment or of an individual with radioactive substances; in the specific case of the human body, the radioactive contamination includes both the external skin contamination and internal contamination, whatever is the route of intake.

Radioactive waste: those materials raised from nuclear activities for which no use was provided and which contain or are contaminated with radionuclides.

(Health) detriment: an estimate of the risk of reducing in length and life quality following the exposure to the ionising radiations; the losses due to somatic effects, cancer and sever generic disorder are included.

Disposal of radioactive waste (includes also the final disposal of spent nuclear fuel for, which no other use is provided: emplacement and keeping of radioactive waste in an arranged repository or a certain location, without the intention to be retrieved. The notion of final disposal of radioactive waste covers also the approved direct discharges, of radioactive effluents into environment.

Absorbed dose (D): fundamental dosimetric dimension defined as average energy imparted by the ionising radiation to the irradiated mass unit:

$$D = \frac{d\bar{\varepsilon}}{dm}$$

where:

- $d\bar{\varepsilon}$ is the average energy imparted by the ionizing radiation to the matter in a volume element
- *dm* is the mass of the matter in this volume element.

For the purpose of these norms, the absorbed dose means the dose averaged over a tissue or an organ.
The unit for the absorbed dose is the gray (Gy).

Equivalent dose H_T: the absorbed dose, in tissue or organ T, weighted for the quality of radiation R. It is given by the expression:

$$H_T = w_R D_{T,R}$$

where:

- $D_{T,R}$ is the absorbed dose averaged over on tissue or organ T, due to radiation R,
- w_R is the radiation weighting factor.

In the event where the radiation field is composed of more types of radiations having different energies (different values of w_R), the total equivalent dose, H_T, is given by :

$$H_T = \Sigma_R w_R D_{T,R}$$

The appropriate values w_R are specified in Annex 3.
The unit for the equivalent dose is the sievert (Sv).

Effective dose (E): the weighted sum of the equivalent doses arisen from external and internal exposure, in all tissues and organs specified in the Annex 3. It is defined by the expression:

$$E = \Sigma_T w_T H_T = \Sigma_T w_T \Sigma_R w_R D_{T,R}$$

where:

- $D_{T,R}$ is the absorbed dose average over tissue or organ T, due to radiation R,
- w_R is the radiation weighting factor,
- w_T este is the weighting factor for tissue or organ T.

The unit for the effective dose is the sievert.

Committed equivalent dose $\left(H_T(\tau)\right)$: integral over time (τ) of equivalent dose rate in organ or tissue T of a human body which will be received as result of an intake. For an intake at moment τ_0 it is defined by the formula:

$$H_T(\tau) = \int_{\tau_0}^{\tau_0+\tau} \dot{H}_T(t)dt$$

where:

- τ_0 is the intake moment,
- $\dot{H}_T(\tau)$ is the equivalent dose rate in organ or tissue T, due to respective intake ,
- τ is the time over which the integration is performed.

When the time it is not specified, it is presumed equal with 50 years- for the adults, respectively with the duration from the intake moment until reaching the age of 70 years – for children.

The unit for the committed equivalent dose is the sievert.

Committed effective dose $E(\tau)$: weighted sum of committed equivalent doses by the organ and tissue of a human body $\left(H_T(\tau)\right)$ as result of an intake; each of the committed equivalent doses by an organ or tissue is weighted with the respective organ or tissue weighting factor w_T (see Annex 3).

$$E(\tau) = \sum_T w_T H_T(\tau)$$

where:

- τ is the time over which the integration is perfomed (see the definition of committed equivalent dose).

The unit for the committed effective dose is the sievert.

Preventable dose: dose whose receiving can be avoided by an intervention measure; it represents the difference between the dose received in the absence of intervention measure and the dose received in the event of implementation of respective measure.

Determinist effect : the loss of tissual function as result of living organism irradiation with ionising radiation over a certain dose, named threshold, and above it the effect increases with the dose.

Radioactive effluents: radioactive substances under the liquid or gaseous form released and dispersed in the environment.

Approved expert: an individual having the necessary knowledge and training needed to carry out the physical, technical or radiochemical tests which allow the doses evaluation and/or to give advice in order to ensure an effective protection of individuals and the correct use of protective equipment and whose capacity to act as expert in this respect is recognised by CNCAN. This recognition consists in issuing an exercising permit, in accordance with the specific regulations issued by CNCAN.

Exposure: the irradiation process of an individual.

Accidental exposure : an exposure to radiation of individuals as result of an accident (it does not include the emergency exposure).

Abnormal exposure : an exposure due to an activity, where, the dose received in real time exceeds significantly the dose foreseen to be received as result of the respective activity; the accidental and emergency exposures are considered abnormal exposures even in the case of no overexposures.

Chronic exposure : a situation of chronic exposure , as result of a radiological emergency or a past or old practice or professional activity leading to an unacceptable increasing of doses.

Emergency exposure : radiation exposure of individuals performing rapid actions for helping individuals in danger, prevention of radiation exposure of a large number of people or saving of facilities or valuable goods and where some dose limits for occupational exposed workers can be exceeded. Emergency exposure shall be applied only to volunteers.

Potential exposure: radiation exposure which is not expected to be certainly produced, but which can appear as result of a nuclear accident or, more generally, of an event or sequence events of probabilistic nature involving radiation exposure.

Background radiation: radiation:
a) due to natural radionuclides contained in the human body and unincorporated as result of a practice;
b) cosmic radiation at the ground level;
c) the presence above the ground, due to natural radionuclides from the unperturbed geological environment.

Gray (Gy): the special name of the unit of absorbed dose. One Gray is equal to one Joule per Kilogram:

$$1\ Gy = 1\ J\ kg^{-1}$$

Critical group: a group of members of the public, reasonably homogenous concerning its exposure to a certain radiation source and a certain exposure pathway, and which receives the highest effective dose (or equivalent dose, as the case may be) by this exposure pathway and from this source.

Intake:
a) qualitative meaning – process of body penetration by radionuclides from the environment;
b) quantitative meaning – activities of radionuclides penetrating the body, from the environment.

Nuclear facility:
- facility producing ionising radiation, and/or
- facility, apparatus or device extracting, producing, processing or containing radioactive substances.

The nuclear facility also includes related buildings or structures.

Intervention: any activity that prevents or reduces the exposure or probability of exposure to sources which are not part of a practice under control or to sources which are out of control, as a result of an accident.

Dose limits: maximum references laid down for the annual dose resulting from the exposure to ionising radiation, over the natural background, referred to in these norms; the limit shall apply to the sum of doses from external exposures in the specified perIodine and the committed doses from intakes of radioactive substances in the same perIodine.

The dose limits refer to: effective dose, equivalent dose for lens of the eye, equivalent dose for skin and equivalent dose for the hands extremities (forearms, palms, fingers) and feet extremities (ankles, feet, toes); the values of dose limits are established in Chapter IV.

Derived limits (of emission of radioactive effluents or radionuclides concentration in air or water); limit values for the activity or activity concentration, established by the authorisation holder by means of an approved expert or of an approved occupartional health service, with a view of compliance with the dose limits for the occupational exposed workers and/or for the members of public, or of the compliance with dose constraints; the derived limits are approved by CNCAN during the authorisation process.

Outside workers: an occupational exposed individual carrying out activities in controlled area owned by an authorisation holder other than the organisation to which the respective person belongs.

Radioactive material: any material containing radionuclides which activity or specific activity cannot be dirsregarded from radiation protection point of view.

Approved medical practitioner: a medical free practitioner, responsible, under these norms, for the medical surveillance of occupational exposed workers, and whose capacity to act in this respect is recognised by the Ministry of Health.

Intervention level: a value of preventable dose equivalent, of preventable effective dose or of a derived quantity at which intervention measures should be taken into account; value of preventable dose or of a derived quantity is only that one associated with the exposure pathway for which the intervention measure is applied.

Clearance levels for the authorisation requirements: values established by CNCAN, expressed in the terms of activity concentration and of surface activity below which the radioactive materials arising from any practice subject to the authorisation requirements can be released from the requirements of these norms.

Exempting levels: values established by CNCAN, expressed in terms of total and specific activity, below which the practice is exempted from the authorisation requirements of these norms.

Nuclear objectives: any nuclear reactor, whatever the power is, including critical and sub-critical assemblies, facilities for nuclear fuel fabrication, repositories for nuclear spent fuel storage and final disposal.

Approved occupational health service: a body carrying out activities related to the radiation protection of occupational exposed workers and/or members of the public and whose capacity to act in this field is recognised by CNCAN.

Approved dosimetric body: a body responsible for calibration and checking of instruments for individual dosimetric monitoring and for reading and interpretation of their indications, or for radioactivity measurements in the human body or in biological samples, or for the doses assessment and assignment, whose capacity to act in this way is recognised by CNCAN

Exercising permit: the document which shall be owned, according to the provisions of Law No. 111/1996, republished, by any individual used by the authorisation holder, in practices subject of the respective authorisation. The exercising permit shall be valid for the activities carried out by the respective individual.

Occupational exposed worker: a person hired at a commercial society (eventually his own society), who is subject to exposure arising due to activities carried out within a practice under the incidence of these norms, exposures which, summing up a year, can exceed the dose limits provided for the members of the public.

Member of the public:
a) any individual from the population, as a whole;
b) the representative individual from a critical group, in case of verification of the compliance with the annual limits of doses for the members of the public.

Trainee: a pupil, apprentice or student over 16 years old, being under practical and theoretical training, under the responsibility of an authorisation holder, in the purpose of acquiring knowledge in the nuclear field.

Practice: any human activity which can increase the exposure of individuals to radiation from artificial sources, or from any electrical equipment generating ionising radiation or produced by natural sources (where natural radionuclides are processed, taking into account their properties of radioactive, fissile or fertile substances), except emergency exposures.
As practices there are mentioned, without considering the list as exhaustive: the production, processing, use, handling, possession, storage, transportation, supply, rent, transfer, transit, import, export, disposal of radiation sources and of radioactive materials, as well as extraction and processing of uranium or thorium ores.

Radionuclide: radioactive nucleus

Ionising radiation: emission and propagation, involving energy transportation, of particles or electromagnetic waves having the wave length of maximum 100 nano-meters, the ionising radiation is able to produce ions, directly or indirectly.

Operational radiation protection of occupational exposed workers (members of the public): represents the ensemble of measures, disposals and controls which contribute to identify and remove factors which, during the practice carried out , are liable to create for the occupational exposed workers (members of the public), an exposure risk not negligible from the point of view of radiation protection.

Responsible with radiological safety: the individual who is responsible for the application of the provisions of these norms and of specific regulations in the controlled area and in the adjacent supervised area.

Radiological safety: assurance of human being protection against the radiation exposure and of safety of nuclear facilities and of radioactive sources, including the provision of means for achieving this protection and safety and of means for accidents prevention and of mitigation of their consequences, once the accidents are produced; the nuclear objectives and radiation sources safety presenting criticality risk, is treated by the nuclear safety.

Sievert: special name of the unit of equivalent or effective dose. One Sievert is equivalent to one Joule per Kilogram.

$$1\ Sv = 1\ J\ kg^{-1}$$

Overexposure: an exposure leading to the exceeding of one of dose limits.

Radiation source: any ionising radiation emitter, including any radioactive material and any generating ionising radiation device.

Unsealed source: a radioactive source which is not complying with the condition of sealed source.

Sealed source: a radioactive source whose structure is such as to prevent, under normal conditions of use, any dispersion of the radioactive materials into the environment.

Radioactive source: an ionising radiation emitter due to the contained radioactive materials.

Artificial sources: radiation sources produced as result of human practice.

Natural sources: radioactive sources with natural origin (terrestrial or cosmic).

Treatment and conditioning of radioactive waste: succession of technological processes by which the radioactive waste is transformed into a stabile and non-dispersible form adequate for long term storage or final disposal is.

Authorisation holder: any legal person who has obtained, from CNCAN, an authorisation for carrying out a practice or another activity in the field of these norms.

Radiological emergency: consecutive situation of a nuclear accident or of another event involving radiation sources requiring an emergency activity for protection of occupatrional exposed workers, members of the public or population, either partially or entirely.

Controlled area: an area subject to special rules for the purpose of protection against ionising radiation or of preventing the radioactive contamination mitigation and to which access is controlled.

Exclusion zone: area around a nuclear objective or another nuclear facility with accident risk, with consequences against population, established by the authorisation holder and approved by CNCAN, where exclusion measures are taken for siting of permanent residences for population and for carrying on economic and social activities, which are not directly related to the operation of the respective nuclear objective or respective nuclear facility

Area with reduced population: area around a nuclear objective or another nuclear facility with risk of accident, having consequences against population, established by the authorisation holder and approved by CNCAN, where restricting measures are taken for siting of permanent residences for population and for carrying on economic and social activities.

Supervised area: an area subject to the adequate surveillance in the purpose of protection against ionising radiation.

ANNEX NO. 2

CLEARANCE AND EXEMPTING REQUIREMENTS AND CRITERIA

1. The clearance requirement from the application of the provisions of these norms, according to the stipulations of art.4 c), is that line condition for all the lines of table 2-A referring to the involved materials, objects, waste or wastewater shall be accomplished line condition.
The line condition is accomplished, if at least one of the provided values from the line is not exceeded.

2. The clearance levels from Table 2-B, column 2, are deduced supposing that ingestion of one kilogram of material shall conduct to a committed effective dose of 10μSv In case where the deduced clearance level exceeds one of the exempting levels, the deduced clearance level has been replaced with the exempted one.

3. The levels of superficial contamination from Table 2-B, column 3, are mediated values on 100 cm². For the calculation of these levels it has been considered the most unfavorable case resulted from the following hypoteses:

a) skin irradiation during 8760 hours per year leads to an effective dose of 0,5 mSv per year;

b) daily ingestion of the activity which could be found on 10 cm² of hand area leads to a committed effective dose of 0,5 mSv per year;

c) inhalation of the entire activity on 100 cm² leads to a dose of 5 mSv per year.

4. In case of radionuclides mixtures, the clearance level from Table 2-B, column 3, respectively the contamination level from Table 2-B, column 3, is considered to be complied with, if the sum of ratios between the real values and the levels for each radionuclide, provided in the respective columns, is lower than 1.

5. The fundamental criteria taken into account for exempting the practices from the authorisation system, are as follows:

a) radiological risks for a person, caused by the exempted practice, shall be low enough in order to be not subject to regulation;
b) colective radiological impact of the exempted practice shall be low enough in order not to subject regulation i
c) the exempted practice is intrinsic without radiological significance, meaning with unsignificant probability of arising for scenarious which could lead to the noncompliance with criteria a) and b)

6. A practice can be exempted from the authorisation system requirements without an additional assessment, in accordance with the provisions of art. 8 para. a) and b) if either the total activity or the concentration of activity of the involved radionuclides does not exceed the exempting level mentioned in column 5, respectively in column 4 of the table 2 – B.

7. Exceptionally, as it is provided in art. 8 para. a) and b), CNCAN may decide the exemption of a practice without an addition assessment, in accordance with the fundamental criteria, even if the exempted levels from Table 2-B are exceeded, provided that the following criteria are cumulative achieved in all the foreseeable situations:

a) committed annual effective dose for any individual from population due to the respective practice shall be of 10 μSv or lower;
b) either the committed collective effective dose during one year of the respective practice does not exceed 1 manSv, or an assessment of radiation protection optimization shall lead to the conclusion that exception is the optimum solution.

8. In all cases where the practice involves more radionuclides, including radionuclides mixtures, the exempting levels from the requirements of the authorisation system shall be deduced by applying the summing criteria mentioned below:

a) the sum of ratios between the real total activities and the excepting levels from column 5 of Table 2-B or assigned by CNCAN according to the provisions of para. 7, for all the radionuclides involved in practice, shall be lower than 1.
b) the sum of ratios between the real values of the activities concentrations and the exempting levels from column 4 of Table 2-B or assigned by CNCAN according to the provisions of para. 7, for all the radionuclides from mixture, shall be lower than 1.

9. The clearance and exempting levels for the total activities from Table 2-B, or those assigned by CNCAN according to the provisions of paragraph 7, respectively the requirement under paragraph 8 a), refer to the total inventory of radioactive substances hold by a natural or legal person, at any time.

10. Nucleus marked with " * " or "nat" in Table 2-B represent precursors nucleus in equilibrium with their daughters and are listed in Table 2-C. In this case, the values from Table 2-B given referring only to the precursor nucleus, have already been taken into account the presence of their daughters.

11. For radionuclides not listed in Table 2-B, as well as for radionuclides listed in Table 2-B, without assigned exclusion or contamination levels , CNCAN shall assign the adequate levels, as necessary.

TABLE 2-A

1. Materials and objects

Solid substances	-	-	Ambient dose rate at 10 cm from surface, after the background (0,1 μSv/h) is released
Solid substances	-	-	Contamination level from the table 2-A, col.3.
Liquids	Clereance level from the table 2-B, col. 2	Clereance level from the table 2-B, col. 2	-
Water	In accordance with the regulations of the Ministry of Health	-	-
Food products	In accordance with the regulations of the Ministry of Health	-	-
Consummer goods destinated to population	In accordance with the regulations of the Ministry of Health	-	-
Minerals, minerals and stones colections	1000 times the clearance level from the table 2-B, col. 2	10 g natural thorium or 100g natural uranium	-

2. Waste and wastewaters

Waste, wastewaters	Specific activity	Activity	Contamination, dose rate
Solid waste	The clearance level from the table 2-B, col. 2	100 times clearance level from the table 2-B, col. 2., per month, at release into environment	-
Solid waste	-	-	Ambient dose rate at 10 cm from surface, after the background (0,1 μSv/h) is released
Solid waste	-	-	Contamination level from table 2-A, col.3.
Liquid waste	The clearance level from table 2-B, col. 2	100 times clearance level from tablel 2-B, col. 2., per month, at release into environment	-
Waste water	1% from clearance level from table 2-B, col. 2., (as weekly average in wastewaters of work area)	100 times clearance level from table 2-B, col. 2., per month	-
Waste under gaseous form (bottled)	-	The exempting level from table 2-B, col.5.	-

TABLE 2-B

Nuclide	Clearance level (Bq/kg or Bq)	Contamination level (Bq/cm²)	Exempting level (Bq/g)	Exempting level (Bq)
1	2	3	4	5
H-3	2 E+05	1000	1 E+06	1 E+09
Be-7	4 E+05	1000	1 E+03	1 E+07
C-14	2 E+04	30	1 E+04	1 E+07
O-15	-	3	1 E+02	1 E+09
F-18	1 E+04	3	1 E+01	1 E+06
Na-22	3 E+03	3	1 E+01	1 E+06
Na-24	1 E+04	3	1 E+01	1 E+05
Si-31	6 E+04	3	1 E+03	1 E+06
P-32	4 E+03	3	1 E+03	1 E+05
P-33	4 E+04	10	1 E+05	1 E+08
S-35	4 E+04	30	1 E+05	1 E+08
Cl-36	1 E+04	3	1 E+04	1 E+06
Cl-38	1 E+04	3	1 E+01	1 E+05
Ar-37	-	1000	1 E+06	1 E+08
Ar-41	-	3	1 E+02	1 E+09
K-40	2 E+03	3	1 E+02	1 E+06
K-42	2 E+04	3	1 E+02	1 E+06
K-43	1 E+04	3	1 E+01	1 E+06
Ca-45	1 E+04	10	1 E+04	1 E+07
Ca-47	6 E+03	3	1 E+01	1 E+06
Sc-46	7 E+03	3	1 E+01	1 E+06
Sc-47	2 E+04	3	1 E+02	1 E+06
Sc-48	5 E+03	3	1 E+01	1 E+05
V-48	5 E+03	3	1 E+01	1 E+05
Cr-51	3 E+05	100	1 E+03	1 E+07
Mn-51	1 E+04	3	1 E+01	1 E+05
Mn-52	6 E+03	10	1 E+01	1 E+05
Mn-52m	1 E+04	3	1 E+01	1 E+05
Mn-53	3 E+05	1000	1 E+04	1 E+09
Mn-54	1 E+04	100	1 E+01	1 E+06
Mn-56	1 E+04	3	1 E+01	1 E+05
Fe-52	7 E+03	3	1 E+01	1 E+06
Fe-55	3 E+04	300	1 E+04	1 E+06
Fe-59	6 E+03	3	1 E+01	1 E+06
Co-55	9 E+03	3	1 E+01	1 E+06
Co-56	4 E+03	10	1 E+01	1 E+05
Co-57	5 E+04	100	1 E+02	1 E+06
Co-58	1 E+04	30	1 E+01	1 E+06
Co-58m	3 E+05	1000	1 E+04	1 E+07
Co-60	1 E+03	3	1 E+01	1 E+05
Co-60m	1 E+06	300	1 E+03	1 E+06
Co-61	1 E+05	3	1 E+02	1 E+06
Co-62m	1 E+04	3	1 E+01	1 E+05
Ni-59	2 E+05	1000	1 E+04	1 E+08
Ni-63	7 E+04	1000	1 E+05	1 E+08
Ni-65	1 E+04	3	1 E+01	1 E+06
Cu-64	8 E+04	10	1 E+02	1 E+06
Zn-65	3 E+03	30	1 E+01	1 E+06
Zn-69	3 E+05	3	1 E+04	1 E+06
Zn-69m	3 E+04	3	1 E+02	1 E+06
Ga-72	9 E+03	3	1 E+01	1 E+05
Ge-71	8 E+05	1000	1 E+04	1 E+08
As-73	4 E+04	300	1 E+03	1 E+07
As-74	8 E+03	3	1 E+01	1 E+06
As-76	6 E+03	3	1 E+02	1 E+05
As-77	3 E+04	3	1 E+03	1 E+06
Se-75	4 E+03	30	1 E+02	1 E+06

Br-82	1 E+04	3	1 E+01	1 E+06
Kr-74	-	-	1 E+02	1 E+09
Kr-76	-	-	1 E+02	1 E+09
Kr-77	-	-	1 E+02	1 E+09
Kr-79	-	30	1 E+03	1 E+05
Kr-81	-	1000	1 E+04	1 E+07
Kr-83m	-	1000	1 E+05	1 E+12
Kr-85	-	3	1 E+05	1 E+04
Kr-85m	-	3	1 E+03	1 E+10
Kr-87	-	3	1 E+02	1 E+09
Kr-88	-	3	1 E+02	1 E+09
Rb-86	4 E+03	3	1 E+02	1 E+05
Sr-85	2 E+04	100	1 E+02	1 E+06
Sr-85m	1 E+05	100	1 E+02	1 E+07
Sr-87m	1 E+05	30	1 E+02	1 E+06
Sr-89	4 E+03	3	1 E+03	1 E+06
Sr-90*	4 E+02	3	1 E+02	1 E+04
Sr-91	1 E+04	3	1 E+01	1 E+05
Sr-92	1 E+04	3	1 E+01	1 E+06
Y-90	4 E+03	3	1 E+03	1 E+05
Y-91	4 E+03	3	1 E+03	1 E+06
Y-91m	1 E+05	30	1 E+02	1 E+06
Y-92	2 E+04	3	1 E+02	1 E+05
Y-93	8 E+03	3	1 E+02	1 E+05
Zr-93*	4 E+04	100	1 E+03	1 E+07
Zr-95	1 E+04	3	1 E+01	1 E+06
Zr-97*	5 E+03	3	1 E+01	1 E+05
Nb-93m	8 E+04	1000	1 E+04	1 E+07
Nb-94	6 E+03	3	1 E+01	1 E+06
Nb-95	1 E+04	30	1 E+01	1 E+06
Nb-97	1 E+04	3	1 E+01	1 E+06
Nb-98	1 E+04	3	1 E+01	1 E+05
Mo-90	1 E+04	3	1 E+01	1 E+06
Mo-93	4 E+04	300	1 E+03	1 E+08
Mo-99	8 E+03	3	1 E+02	1 E+06
Mo-101	1 E+04	3	1 E+01	1 E+06
Tc-96	9 E+03	30	1 E+01	1 E+06
Tc-96m	8 E+05	1000	1 E+03	1 E+07
Tc-97	1 E+05	1000	1 E+03	1 E+08
Tc-97m	2 E+04	10	1 E+03	1 E+07
Tc-99	1 E+04	3	1 E+04	1 E+07
Tc-99m	1 E+05	30	1 E+02	1 E+07
Ru-97	7 E+04	100	1 E+02	1 E+07
Ru-103	1 E+04	10	1 E+02	1 E+06
Ru-105	1 E+04	3	1 E+01	1 E+06
Ru-106*	1 E+03	3	1 E+02	1 E+05
Rh-103m	3 E+06	1000	1 E+04	1 E+08
Rh-105	3 E+04	3	1 E+02	1 E+07
Pd-103	5 E+04	300	1 E+03	1 E+08
Pd-109	2 E+04	3	1 E+03	1 E+06
Ag-105	2 E+04	100	1 E+02	1 E+06
Ag-110m	4 E+03	10	1 E+01	1 E+06
Ag-111	8 E+03	3	1 E+03	1 E+06
Cd-109	5 E+03	10	1 E+04	1 E+06
Cd-115	7 E+03	3	1 E+02	1 E+06
Cd-115m	3 E+03	3	1 E+03	1 E+06
In-111	3 E+04	10	1 E+02	1 E+06
In-113m	1 E+05	10	1 E+02	1 E+06
In-114m	2 E+03	3	1 E+02	1 E+06
In-115m	1 E+05	10	1 E+02	1 E+06
Sn-113	1 E+04	100	1 E+03	1 E+07
Sn-125	3 E+03	3	1 E+02	1 E+05
Sb-122	6 E+03	3	1 E+02	1 E+04

Sb-124	4 E+03	3	1 E+01	1 E+06
Sb-125	9 E+03	10	1 E+02	1 E+06
Te-123m	7 E+03	10	1 E+02	1 E+07
Te-125m	1 E+04	3	1 E+03	1 E+07
Te-127	6 E+04	3	1 E+03	1 E+06
Te-127m	4 E+03	10	1 E+03	1 E+07
Te-129	1 E+05	3	1 E+02	1 E+06
Te-129m	3 E+03	3	1 E+03	1 E+06
Te-131	1 E+05	3	1 E+02	1 E+05
Te-131m	5 E+03	3	1 E+01	1 E+06
Te-132	3 E+03	10	1 E+02	1 E+07
Te-133	1 E+04	3	1 E+01	1 E+05
Te-133m	1 E+04	3	1 E+01	1 E+05
Te-134	1 E+04	3	1 E+01	1 E+06
I-123	5 E+04	10	1 E+02	1 E+07
I-125	7 E+02	10	1 E+03	1 E+06
I-126	3 E+02	3	1 E+02	1 E+06
I-129	9 E+01	1	1 E+02	1 E+05
I-130	5 E+03	3	1 E+01	1 E+06
I-131	5 E+02	3	1 E+02	1 E+06
I-132	1 E+04	3	1 E+01	1 E+05
I-133	2 E+03	3	1 E+01	1 E+06
I-134	1 E+04	3	1 E+01	1 E+05
I-135	1 E+04	3	1 E+01	1 E+06
Xe131m	-	3	1 E+04	1 E+04
Xe-133	-	10	1 E+03	1 E+04
Xe-135	-	3	1 E+03	1 E+10
Cs-129	1 E+05	100	1 E+02	1 E+05
Cs-131	2 E+05	1000	1 E+03	1 E+06
Cs-132	1 E+04	100	1 E+01	1 E+05
Cs-134m	1 E+05	3	1 E+03	1 E+05
Cs-134	5 E+02	3	1 E+01	1 E+04
Cs-135	5 E+03	10	1 E+04	1 E+07
Cs-136	3 E+03	3	1 E+01	1 E+05
Cs-137*	8 E+02	3	1 E+01	1 E+04
Cs-138	1 E+04	3	1 E+01	1 E+04
Ba-131	2 E+04	10	1 E+02	1 E+06
Ba-140*	4 E+03	3	1 E+01	1 E+05
La-140	4 E+03	3	1 E+01	1 E+05
Ce-139	4 E+04	10	1 E+02	1 E+06
Ce-141	1 E+04	3	1 E+02	1 E+07
Ce-143	9 E+03	3	1 E+02	1 E+06
Ce-144*	2 E+03	10	1 E+02	1 E+05
Pr-142	8 E+03	3	1 E+02	1 E+05
Pr-143	8 E+03	3	1 E+04	1 E+06
Nd-147	9 E+03	3	1 E+02	1 E+06
Nd-149	8 E+04	3	1 E+02	1 E+06
Pm-147	4 E+04	10	1 E+04	1 E+07
Pm-149	1 E+04	3	1 E+03	1 E+06
Sm-151	1 E+05	100	1 E+04	1 E+08
Sm-153	1 E+04	3	1 E+02	1 E+06
Eu-152	7 E+03	10	1 E+01	1 E+06
Eu-152m	2 E+04	3	1 E+02	1 E+06
Eu-154	5 E+03	3	1 E+01	1 E+06
Eu-155	3 E+04	30	1 E+02	1 E+07
Gd-153	4 E+04	30	1 E+02	1 E+07
Gd-159	2 E+04	3	1 E+03	1 E+06
Tb-160	6 E+03	3	1 E+01	1 E+06
Dy-165	9 E+04	3	1 E+03	1 E+06
Dy-166	6 E+03	3	1 E+03	1 E+06
Ho-166	7 E+03	3	1 E+03	1 E+05
Er-169	3 E+04	10	1 E+04	1 E+07
Er-171	3 E+04	3	1 E+02	1 E+06

Tm-170	8 E+03	3	1 E+03	1 E+06
Tm-171	9 E+04	1000	1 E+04	1 E+08
Yb-175	2 E+04	3	1 E+03	1 E+07
Lu-177	2 E+04	3	1 E+03	1 E+07
Hf-181	9 E+03	3	1 E+01	1 E+06
Ta-182	7 E+03	3	1 E+01	1 E+04
W-181	1 E+05	1000	1 E+03	1 E+07
W-185	2 E+04	3	1 E+04	1 E+07
W-187	1 E+04	3	1 E+02	1 E+06
Re-186	7 E+03	3	1 E+03	1 E+06
Re-188	7 E+03	3	1 E+02	1 E+05
Os-185	1 E+04	100	1 E+01	1 E+06
Os-191	2 E+04	10	1 E+02	1 E+07
Os-191m	1 E+05	100	1 E+03	1 E+07
Os-193	1 E+04	3	1 E+02	1 E+06
Ir-190	8 E+03	3	1 E+01	1 E+06
Ir-192	7 E+03	3	1 E+01	1 E+04
Ir-194	8 E+03	3	1 E+02	1 E+05
Pt-191	3 E+04	30	1 E+02	1 E+06
Pt-193m	2 E+04	3	1 E+03	1 E+07
Pt-197	3 E+04	3	1 E+03	1 E+06
Pt-197m	1 E+05	3	1 E+02	1 E+06
Au-198	1 E+04	3	1 E+02	1 E+06
Au-199	2 E+04	3	1 E+02	1 E+06
Hg-197	4 E+04	100	1 E+02	1 E+07
Hg197m	2 E+04	3	1 E+02	1 E+06
Hg-203	5 E+03	10	1 E+02	1 E+05
Tl-200	1 E+04	30	1 E+01	1 E+06
Tl-201	1 E+05	30	1 E+02	1 E+06
Tl-202	2 E+04	100	1 E+02	1 E+06
Tl-204	8 E+03	3	1 E+04	1 E+04
Pb-203	4 E+04	10	1 E+02	1 E+06
Pb-210*	1 E+01	0,3	1 E+01	1 E+04
Pb-212*	2 E+03	3	1 E+01	1 E+05
Bi-206	5 E+03	10	1 E+01	1 E+05
Bi-207	8 E+03	30	1 E+01	1 E+06
Bi-210	8 E+03	3	1 E+03	1 E+06
Bi-212*	1 E+04	3	1 E+01	1 E+05
Po-203	1 E+04	10	1 E+01	1 E+06
Po-205	1 E+04	30	1 E+01	1 E+06
Po-207	1 E+04	30	1 E+01	1 E+06
Po-210	4 E+01	1	1 E+01	1 E+04
At-211	9 E+02	10	1 E+03	1 E+07
Rn-220*	-	-	1 E+04	1 E+07
Rn-222*	-	-	1 E+01	1 E+08
Ra-223*	1 E+02	1	1 E+02	1 E+05
Ra-224*	2 E+02	3	1 E+01	1 E+05
Ra-225	1 E+02	3	1 E+02	1 E+05
Ra-226*	4 E+01	1	1 E+01	1 E+04
Ra-227	1 E+05	3	1 E+02	1 E+06
Ra-228*	1 E+01	0,3	1 E+01	1 E+05
Ac-228	1 E+04	3	1 E+01	1 E+06
Th-226*	3 E+04	30	1 E+03	1 E+07
Th-227	1 E+03	10	1 E+01	1 E+04
Th-228*	1 E+02	0,1	1 E+00	1 E+04
Th-229*	2 E+01	0,1	1 E+00	1 E+03
Th-230	5 E+01	0,1	1 E+00	1 E+04
Th-231	3 E+04	10	1 E+03	1 E+07
Th-nat (incl.Th-232)	1 E+00	0,1	1 E+00	1 E+03
Th-234*	3 E+05	3	1 E+03	1 E+05
Pa-230	1 E+04	30	1 E+01	1 E+06

Pa-231	1 E+01	0,1	1 E+00	1 E+03
Pa-233	1 E+04	3	1 E+02	1 E+07
U-230*	2 E+02	1	1 E+01	1 E+05
U-231	4 E+04	100	1 E+02	1 E+07
U-232*	3 E+01	0,3	1 E+00	1 E+03
U-233	2 E+02	1	1 E+01	1 E+04
U-234	2 E+02	1	1 E+01	1 E+04
U-235*	2 E+02	1	1 E+01	1 E+04
U-236	2 E+02	1	1 E+01	1 E+04
U-237	1 E+04	3	1 E+02	1 E+06
U-238*	2 E+02	1	1 E+01	1 E+04
U-nat	4 E+02	1	1 E+00	1 E+03
U-239	1 E+05	3	1 E+02	1 E+06
U-240	9 E+03	-	1 E+03	1 E+07
U-240*	-	-	1 E+01	1 E+06
Np-237*	9 E+01	0,3	1 E+00	1 E+03
Np-239	1 E+04	3	1 E+02	1 E+07
Np-240	1 E+04	1	1 E+01	1 E+06
Pu-234	6 E+04	300	1 E+02	1 E+07
Pu-235	1 E+05	300	1 E+02	1 E+07
Pu-236	1 E+02	1	1 E+01	1 E+04
Pu-237	1 E+05	300	1 E+03	1 E+07
Pu-238	4 E+01	0,3	1 E+00	1 E+04
Pu-239	4 E+01	0,3	1 E+00	1 E+04
Pu-240	4 E+01	0,3	1 E+00	1 E+03
Pu-241	2 E+03	10	1 E+02	1 E+05
Pu-242	4 E+01	0,3	1 E+00	1 E+04
Pu-243	1 E+05	3	1 E+03	1 E+07
Pu-244	4 E+01	0,3	1 E+00	1 E+04
Am-241	5 E+01	0,3	1 E+00	1 E+04
Am-242	3 E+04	3	1 E+03	1 E+06
Am-242m*	5 E+01	0,3	1 E+00	1 E+04
Am243*	5 E+01	0,3	1 E+00	1 E+03
Cm-242	8 E+02	10	1 E+02	1 E+05
Cm-243	7 E+01	0,3	1 E+00	1 E+04
Cm-244	8 E+01	0,3	1 E+01	1 E+04
Cm-245	5 E+01	0,3	1 E+00	1 E+03
Cm-246	5 E+01	0,3	1 E+00	1 E+03
Cm-247	5 E+01	0,3	1 E+00	1 E+04
Cm-248	1 E+01	0,1	1 E+00	1 E+03
Bk-249	1 E+04	100	1 E+03	1 E+06
Cf-246	3 E+03	30	1 E+03	1 E+06
Cf-248	4 E+02	3	1 E+01	1 E+04
Cf-249	3 E+01	0,3	1 E+00	1 E+03
Cf-250	6 E+01	0,3	1 E+01	1 E+04
Cf-251	3 E+01	0,3	1 E+00	1 E+03
Cf-252	1 E+02	1	1 E+01	1 E+04
Cf-253	7 E+03	10	1 E+02	1 E+05
Cf-254	3 E+01	0,3	1 E+00	1 E+03
Es-253	2 E+03	10	1 E+02	1 E+05
Es-254	4 E+02	3	1 E+01	1 E+04
Es-254m	2 E+03	3	1 E+02	1 E+06
Fm-254	2 E+04	300	1 E+04	1 E+07
Fm-255	4 E+03	30	1 E+03	1 E+06

TABLE 2-C

LIST OF NUCLIDES IN EQUILIBRIUM

Sr-90	Y-90
Zr-93	Nb-93m
Zr-97	Nb-97
Ru-106	Rh-106
Cs-137	Ba-137m
Ba-140	La-140
Ce-134	La-134
Ce-144	Pr-144
Pb-210	Bi-210, Po-210
Pb-212	Bi-212, Tl-208 (0.36), Po-212 (0.64)
Bi-212	Tl-208 (0.36), Po-212 (0.64)
Rn-220	Po-216
Rn-222	Po-218, Pb-214, Bi-214, Po-214
Ra-223	Rn-219, Po-215, Pb-211, Bi-211, Tl-207
Ra-224	Rn-220, Po-216, Pb-212, Bi-212, Tl-208(0.36), Po-212(0.64)
Ra-226	Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
Ra-228	Ac-228
Th-226	Ra-222, Rn-218, Po-214
Th-228	Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
Th-229	Ra-225, Ac-225, Fr-221, At-217, Bi-213, Po-213, Pb-209
Th-nat	Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
Th-234	Pa-234m
U-230	Th-226, Ra-222, Rn-218, Po-214
U-232	Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
U-235	Th-231
U-238	Th-234, Pa-234m
U-nat	Th-234, Pa-234m, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
U-240	Np-240m
Np-237	Pa-233
Am-242m	Am-242
Am-243	Np-239

ANNEX no. 3

RADIATION AND TISSUES WEIGHTING FACTORS

1. Definition of terms used in this annex

Expanded field: a field derived from the actual field, where the fluence and the directional and energy distribution have the same values throughout the volume of interest as in the actual field at the point of reference.

Expanded and aligned field: a radiation field in which the fluence and the directional and energy distribution are the same as in the expanded field, but the fluence is unidirectional.

Tisue or organ absorbed dose (D_T): the quotient of the total energy imparted in a tisue or organ and the mass of that tissue or organ. The special name for the unit is gray (Gy).

Directional dose equivalent $H'(d,\Omega)$: the dose equivalent at a point in a radiation field that would be produced by the corresponding expanded field, in the ICRU sphere at a depth, d, on a radius in a specified direction, Ω. The special name for the measurement unit is sievert (Sv).

Ambient dose equivalent $H^*(d)$: the dose equivalent at a point in a radiation field that would be produced by the corresponding expanded and aligned on in the ICRU sphere at a depth, d, on the radius opposing the direction of the aligned field. The special name for the measurement unit is sievert (Sv).

Individual dose equivalent $H_p(d)$: the dose equivalent in the soft tissues, at a corresponding depth, d, under a specificated point on the body. The special name for the measurement unit is sievert (Sv).

Quality factor (Q): a function of unrestricted linear energy transfer (L) used for weighting absorbed doses at a point in such a way as to take into account the quality of radiation.

Mean quality factor, $\overline{Q}$: average value of the quality factor at a point in tissue where the absorbed dose is delivered by particles with different L values. Its value is calculated according to the expression:

$$\overline{Q} = 1/D \int_0^{\infty} Q(L)D(L)dL$$

where D is the absorbed dose at the point of interest and D(L)dL is absorbed dose due to charged particles having the unrestricted linear energy transfer included betwen L and L+dL. The Q(L) is the corresponding quality factor at point of interest. The Q – L relationships are given in par. 3.

Radiation weithing factor for radiation (w_R): a dimensionless factor used to weight the tissue or organ absorbed dose. The appropriate (w_R) values are given in para. 2.

Tissue weighting factor (w_T): a dimensionless factor used to weight the equivalent dose in a tisue or organ (T). The appropriate (w_T) are given in para. 4.

Fluence, Φ: the quotient of *dN* by *da*, where *dN* is the number of particles which enter a sphere of cross-sectional area *da*:

$$\Phi = \frac{dN}{da}$$

ICRU sphere: a standardised body introduced by the International Commission on Radiation Units (ICRU) to approximate the human body as regards the energy absorbed from ionising radiation; it consists of a 30 cm, diameter tissue equivalent sphere with a density of 1 $g.cm^{-3}$ and a mass composition of 76,2% oxygen, 11,1% carbon, 10,1% hydrogen and 2,6% nitrogen.

Unrestricted linear energy transfer (L_∞): a quantity defined as:

$$L\infty = \frac{dE}{dl}$$

where dE is the mean energy lost by a charged particle of energy E, by collision with electrons, in traversing a distance dl in water. In these norms, L_∞ is noted by L.

3. Values of radiation weithing factor, W_R

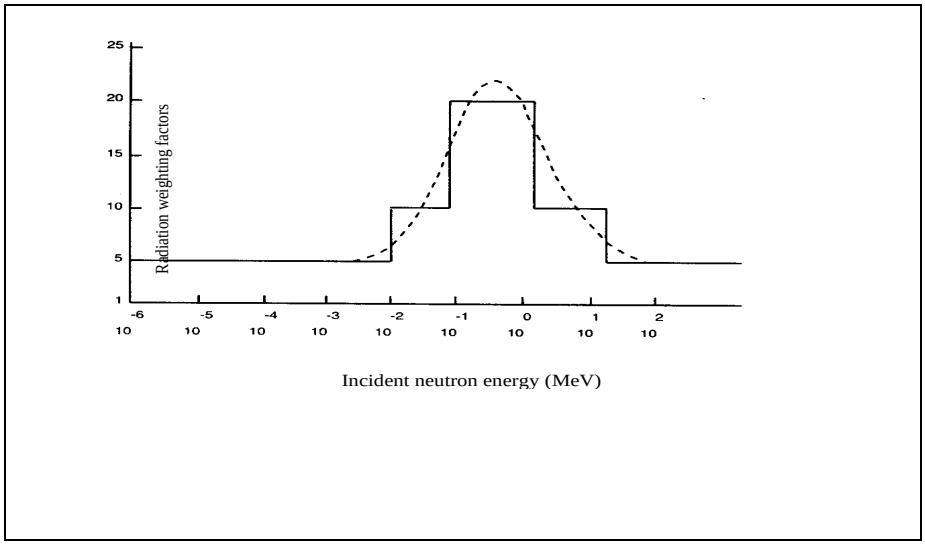
The values of radiation weighting factor w_R, depend on the type and quality of the external radiation field or on the type and quality of the radiation emitted by an internally deposited radionuclide.
When the radiation field is composed of types and energies with different values of w_R, the absorbed dose must be subdivided into blocks, each with its own value of w_R, values which are added to give the total equivalent dose. Alternatively, it may be expressed as a continuous distribution in energy where each element of absorbed dose from the energy interval between E and E + dE is multiplied by the appropriate value of w_R from the Table below.

Type and energy range	Radiation weighting factor, w_R
Photons, all energies	1
Electrons and muons, all energies	1
Neutrons, energy < 10 keV	5
10 keV to 100 keV	10
>100 keV to 2 MeV	20
>2 MeV to 20 MeV	10
>20 MeV	5
Protons, other than recoil protons, energy > 2 MeV	5
Alpha particles, fission fragments , heavy nuclei	20

In calculations involving neutrons, difficulties may arise if step function values are applied. In these cases, it may be preferable to use a continuous function described by the following matematical relationships

$$w_R = 5 + 17e^{-(\ln(2E))^2/6}$$

where E is the neutron energy in MeV.
A direct comparison of the two approaches is given, in Figure 1.The smooth curve is to be treated as an



approximation.
For radiation types and energy which are not included in the table, an approximation of w_R may be obtained by calculating the mean quality factor $\overline{Q}$ at a depth of 10 mm in a ICRU sphere.

3. Relationship between the quality factor, Q(L), and unrestricted linear energy transfer, L

Unrestricted linear energy transfer, L in water (keV μm^{-1})	Q(L)
< 10	1
10 – 100	0,32 L – 2,2
> 100	$300/\sqrt{L}$

4.Values of tissue weighting factor, w_T

Values of tissue weighting factor, w_T, are shown below:

Tissue or organ	Tissue weighting factors, w_T (1)
Gonads	0,20
Bone marrow (red)	0,12
Colon	0,12

Lung	0,12
Stomach	0,12
Bladder	0,05
Breast	0,05
Liver	0,05
Oesophagus	0,05
Thyroid`	0,05
Skin	0,01
Bone surface	0,01
Remainder	0,05(2,3)

(1) The values have been obtained from a reference population of equal numbers of both sexes and a wide range of ages. In the definition of the effective dose,these values apply to workers, to the whole population and whatever sex.

(2) For the purposes of calculation, the remainder is composed by the following tissues and organs: adrenals, brain, upper large intestine, kidney, muscle, pancreas, spleen, thymus and uretus. The list includes organs which are likely to be selectively irradiated. Some organs in the list are susceptible to cancer induction. If other tissues and organs shall be subsequently identified, then they will be included in the list either with a specific w_T or in the remainder. The remainder can also include other organs and tissues selectively irradiated.

(3) In those exceptional situations in which a single one of the remainder receives an equivalent dose in excess in comparison with the highest dose in any of the 12 organs for which a weighting factor is specified, a weighting factor of 0,025 should be applied to that tissue or organ, and a weightinh factor of 0,025 for the average dose in the rest of the remainder as defined above.

5. Operational quantities for external radiation

1. Individual monitoring:
-personal dose equivalent $H_P(d)$,
where d represents the depth in mm in the body.
2. Area monitoring:
-ambient dose equivalent $H^*(d)$,
-directional dose equivalent $H'(d,\Omega)$, where
d represents the depth in mm under the surface of the sphere given in par. III-1, and
Ω represents the specificate direction (in accordance with the publication ICRU Report 51/1993).
3. For strongly penetrating radiation a depth of 10 mm, for weakly penetrating radiation a depth of 0,07 mm for the skin and 3 mm for the eye is recommended.

ANNEX no. 4

VERIFICATION IN COMPLIANCE WITH DOSE LIMITS

1. Except the cases mentioned in these norms, dose limits apply to the sum of the relevant doses from external exposure in one year perIodine and the relevant 50-year commited doses (up to age 70 for children) from intakes in the same perIodine.

In general the effective dose E incurred by an individual in the group of age g will be determined according to the following formula:

$$E = E_{extemal} + \sum_j h(g)_{j,ing} J_{j,ing} + \sum_j h(g)_{j,inh} J_{j,inh}$$

Where $E_{external}$ is the relevant effective dose from external exposure; $h(g)_{j,inh}$ and $h(g)_{j,ing}$ are the commited effective doses per unit-intake for ingested or inhaled radionuclide j (Sv/Bq) by an individual in the group of age g; $J_{j,ing}$ and $J_{j,inh}$ respectively are the relevant intake via ingestion or inhalation of the radionuclide j, (Bq).

2. Values of the committed effective dose for unit intake for ingestion and inhalation are given for members of the public and for trainees aged between 16 and 18 years, except those due to radon and thoron progeny, are given in Tables 4-A and 4-B to this Annex. Except for radon progeny and thoron progeny, values of the committed effective dose for unit intake for ingestion and inhalation for exposed workers and for trainees aged 18 years or more are given in Table 4-C1 to this Annex.

For exposure of members of the public, Table 4-A for ingestion includes values corresponding to different gut transfer factors f_1 for infants and for older persons. Also for exposure of members of the public, Table 4-B for inhalation includes values for different lung retention types with appropriate f_1 values for the component of the intake cleared to the gastrointestinal tract.If information is available on these parameters, the appropriate value shall be used; if not, the most restrictive value shall be used.

For occupational exposure, Table 4-C1 includes values for ingestion corresponding to different gut transfer factors f_1 and values for inhalation for different lung retention types with appropriate f_1 values for the component of the intake cleared to the gastrointestinal tract.

Table 4-D presents gut transfer factors f_1 by element and compounds for occupational exposed workers and where appropriate members of the public for intake by ingestion. Table 4-E presents lung absorbtion types and gut transfer factors f_1, also by element and compounds and also for exposed workers and for trainees aged 18 years or more, for intake by inhalation.

For members of the public the lung absorption types and gut transfer factors f_1, shall take into account the chemical form of the element on the basis of available international guidance. In general, if no information is available on these parameters, the most conservative value should be used.

3. For radon progeny and thoron progeny the following conventional conversion factors apply set forth in effective dose per unit potential alpha-energy exposure (Sv/Jhm^{-3}):

Radon at home: 1,1
Radon at work: 1,4
Thoron at work: 0,5

Potential alpha energy (of radon progeny and thoron progeny) is the total alpha energy emitted during the decay of radon progeny and thoron progeny through the respective decay chain, up to but not including ^{210}Pb for progeny of ^{222}Rn and up to stable ^{208}Pb for progeny of ^{220}Rn. The unit for energy is Joule, with symbol J.For the exposure to a given concentration for a given time the unit is Jhm^{-3}.

The following tolerated units are used too:

Work level (WL): An unit for concentration of potential alpha energy resulted of presence of radon progeny or thoron progeny which represents emission of $1,3 \times 10^5$ MeV alpha energy per litre of air. In SI an WL corresponds to $2,1 \times 10^{-5}$ Jm^{-3}.

Long work level (WLM): 1 WLM = 170 WLh which corresponds to SI for 3,54 $mJhm^{-3}$.

4. Tables:

(4-A) Committed effective dose on unit of incorporation through ingestion ($Sv\ Bq^{-1}$) for members of the public.
(4-B) Committed effective dose on unit of incorporation through inhalation ($Sv\ Bq^{-1}$) for members of the public.
(4-C1) Effective dose coefficent ($Sv\ Bq^{-1}$).
(4-C2) Effective dose coefficients for soluble or active chemical gas.
(4-D) Compounds and values for factors f_1 which have been used in calculation of dose coefficients for ingestion.
(4-E) Compounds, types of lung absorbtion and the values for factors f_1 which have been used in calculation of dose coefficients for inhalation.

TABLE 4-A

Commited effective dose per unit of incorporation by ingestion (Sv Bq^{-1}) for individuals from population

Nucleus	Half Life	Age g ≤ 1 a		f_1 for	Age 1-2 a	Age 2-7 a	Age 7-12 a	Age 12-17a	Age >17 a
		f_1	h(g)	g > 1 a	h(g)	h(g)	h(g)	h(g)	h(g)
Hydrogen									
H_3O	12.3 a	1.000	6.4 E-11	1.000	4.8 E-11	3.1 E-11	2.3 E-11	1.8 E-11	1.8 E-11
Tritium organic linked	12.3 a	1.000	1.2 E-10	1.000	1.2 E-10	7.3 E-11	5.7 E-11	4.2 E-11	4.2 E-11
Beryllium									
Be-7	53.3 d	0.020	1.8 E-10	0.005	1.3 E-10	7.7 E-11	5.3 E-11	3.5 E-11	2.8 E-11
Be-10	1.60 E+06 a	0.020	1.4 E-08	0.005	8.0 E-09	4.1 E-09	2.4 E-09	1.4 E-09	1.1 E-09
Carbon									
C-11	0.340 h	1.000	2.6 E-10	1.000	1.5 E-10	7.3 E-11	4.3 E-11	3.0 E-11	2.4 E-11
C-14	5.73 E+03 a	1.000	1.4 E-09	1.000	1.6 E-09	9.9 E-10	8.0 E-10	5.7 E-10	5.8 E-10
Fluorine									
F-18	1.83 h	1.000	5.2 E-10	1.000	3.0 E-10	1.5 E-10	9.1 E-11	6.2 E-11	4.9 E-11
Sodium									
Na-22	2.60 a	1.000	2.1 E-08	1.000	1.5 E-08	8.4 E-09	5.5 E-09	3.7 E-09	3.2 E-09
Na-24	15.0 h	1.000	3.5 E-09	1.000	2.3 E-09	1.2 E-09	7.7 E-10	5.2 E-10	4.3 E-10
Magnesium									
Mg-28	20.9 h	1.000	1.2 E-08	0.500	1.4 E-08	7.4 E-09	4.5 E-09	2.7 E-09	2.2 E-09
Aluminum									
Al-26	7.16 E+05 a	0.020	3.4 E-08	0.010	2.1 E-08	1.1 E-08	7.1 E-09	4.3 E-09	3.5 E-09
Silicon									
Si-31	2.62 h	0.020	1.9 E-09	0.010	1.0 E-09	5.1 E-10	3.0 E-10	1.8 E-10	1.6 E-10
Si-32	4.50 E+02 a	0.020	7.3 E-09	0.010	4.1 E-09	2.0 E-09	1.2 E-09	7.0 E-10	5.6 E-10
Phosphorus									
P-32	14.3 d	1.000	3.1 E-08	0.800	1.9 E-08	9.4 E-09	5.3 E-09	3.1 E-09	2.4 E-09
P-33	25.4 d	1.000	2.7 E-09	0.800	1.8 E-09	9.1 E-10	5.3 E-10	3.1 E-10	2.4 E-10
Sulphur									
S-35 (anorganic)	87.4 d	1.000	1.3 E-09	1.000	8.7 E-10	4.4 E-10	2.7 E-10	1.6 E-10	1.3 E-10
S-35 (organic)	87.4 d	1.000	7.7 E-09	1.000	5.4 E-09	2.7 E-09	1.6 E-09	9.5 E-10	7.7 E-10
Chlorine									
Cl-36	3.01 E+05 a	1.000	9.8 E-09	1.000	6.3 E-09	3.2 E-09	1.9 E-09	1.2 E-09	9.3 E-10
Cl-38	0.620 h	1.000	1.4 E-09	1.000	7.7 E-10	3.8 E-10	2.2 E-10	1.5 E-10	1.2 E-10
Cl-39	0.927 h	1.000	9.7 E-10	1.000	5.5 E-10	2.7 E-10	1.6 E-10	1.1 E-10	8.5 E-11
Potassium									
K-40	1.28 E+09 a	1.000	6.2 E-08	1.000	4.2 E-08	2.1 E-08	1.3 E-08	7.6 E-09	6.2 E-09
K-42	12.4 h	1.000	5.1 E-09	1.000	3.0 E-09	1.5 E-09	8.6 E-10	5.4 E-10	4.3 E-10
K-43	22.6 h	1.000	2.3 E-09	1.000	1.4 E-09	7.6 E-10	4.7 E-10	3.0 E-10	2.5 E-10
K-44	0.369 h	1.000	1.0 E-09	1.000	5.5 E-10	2.7 E-10	1.6 E-10	1.1 E-10	8.4 E-11
K-45	0.333 h	1.000	6.2 E-10	1.000	3.5 E-10	1.7 E-10	9.9 E-11	6.8 E-11	5.4 E-11
Calcium (*)									
Ca-41	1.40 E+05 a	0.600	1.2 E-09	0.300	5.2 E-10	3.9 E-10	4.8 E-10	5.0 E-10	1.9 E-10
Ca-45	163 d	0.600	1.1 E-08	0.300	4.9 E-09	2.6 E-09	1.8 E-09	1.3 E-09	7.1 E-10
Ca-47	4.53 d	0.600	1.3 E-08	0.300	9.3 E-09	4.9 E-09	3.0 E-09	1.8 E-09	1.6 E-09

Scandium									
Sc-43	3.89 h	0.001	1.8 E-09	1.0 E-04	1.2 E-09	6.1 E-10	3.7 E-10	2.3 E-10	1.9 E-10
Sc-44	3.93 h	0.001	3.5 E-09	1.0 E-04	2.2 E-09	1.2 E-09	7.1 E-10	4.4 E-10	3.5 E-10
Sc-44m	2.44 d	0.001	2.4 E-08	1.0 E-04	1.6 E-08	8.3 E-09	5.1 E-09	3.1 E-09	2.4 E-09
Sc-46	83.8 d	0.001	1.1 E-08	1.0 E-04	7.9 E-09	4.4 E-09	2.9 E-09	1.8 E-09	1.5 E-09
Sc-47	3.35 d	0.001	6.1 E-09	1.0 E-04	3.9 E-09	2.0 E-09	1.2 E-09	6.8 E-10	5.4 E-10
Sc-48	1.82 d	0.001	1.3 E-08	1.0 E-04	9.3 E-09	5.1 E-09	3.3 E-09	2.1 E-09	1.7 E-09
Sc-49	0.956 h	0.001	1.0 E-09	1.0 E-04	5.7 E-10	2.8 E-10	1.6 E-10	1.0 E-10	8.2 E-11
Titanium									
Ti-44	47.3 a	0.020	5.5 E-08	0.010	3.1 E-08	1.7 E-08	1.1 E-08	6.9 E-09	5.8 E-09
Ti-45	3.08 h	0.020	1.6 E-09	0.010	9.8 E-10	5.0 E-10	3.1 E-10	1.9 E-10	1.5 E-10
Vanadium									
V-47	0.543 h	0.020	7.3 E-10	0.010	4.1 E-10	2.0 E-10	1.2 E-10	8.0 E-11	6.3 E-11
V-48	16.2 d	0.020	1.5 E-08	0.010	1.1 E-08	5.9 E-09	3.9 E-09	2.5 E-09	2.0 E-09
V-49	330 d	0.020	2.2 E-10	0.010	1.4 E-10	6.9 E-11	4.0 E-11	2.3 E-11	1.8 E-11
Chromium									
Cr-48	23.0 h	0.200	1.4 E-09	0.100	9.9 E-10	5.7 E-10	3.8 E-10	2.5 E-10	2.0 E-10
		0.020	1.4 E-09	0.010	9.9 E-10	5.7 E-10	3.8 E-10	2.5 E-10	2.0 E-10
Cr-49	0.702 h	0.200	6.8 E-10	0.100	3.9 E-10	2.0 E-10	1.1 E-10	7.7 E-11	6.1 E-11
		0.020	6.8 E-10	0.010	3.9 E-10	2.0 E-10	1.1 E-10	7.7 E-11	6.1 E-11
Cr-51	27.7 d	0.200	3.5 E-10	0.100	2.3 E-10	1.2 E-10	7.8 E-11	4.8 E-11	3.8 E-11
		0.020	3.3 E-10	0.010	2.2 E-10	1.2 E-10	7.5 E-11	4.6 E-11	3.7 E-11
Manganese									
Mn-51	0.770 h	0.200	1.1 E-09	0.100	6.1 E-10	3.0 E-10	1.8 E-10	1.2 E-10	9.3 E-11
Mn-52	5.59 d	0.200	1.2 E-08	0.100	8.8 E-09	5.1 E-09	3.4 E-09	2.2 E-09	1.8 E-09
Mn-52m	0.352 h	0.200	7.8 E-10	0.100	4.4 E-10	2.2 E-10	1.3 E-10	8.8 E-11	6.9 E-11
Mn-53	3.70 E+06 a	0.200	4.1 E-10	0.100	2.2 E-10	1.1 E-10	6.5 E-11	3.7 E-11	3.0 E-11
Mn-54	312 d	0.200	5.4 E-09	0.100	3.1 E-09	1.9 E-09	1.3 E-09	8.7 E-10	7.1 E-10
Mn-56	2.58 h	0.200	2.7 E-09	0.100	1.7 E-09	8.5 E-10	5.1 E-10	3.2 E-10	2.5 E-10
Iron (*)									
Fe-52	8.28 h	0.600	1.3 E-08	0.100	9.1 E-09	4.6 E-09	2.8 E-09	1.7 E-09	1.4 E-09
Fe-55	2.70 a	0.600	7.6 E-09	0.100	2.4 E-09	1.7 E-09	1.1 E-09	7.7 E-10	3.3 E-10
Fe-59	44.5 d	0.600	3.9 E-08	0.100	1.3 E-08	7.5 E-09	4.7 E-09	3.1 E-09	1.8 E-09
Fe-60	1.00 E+05 a	0.600	7.9 E-07	0.100	2.7 E-07	2.7 E-07	2.5 E-07	2.3 E-07	1.1 E-07
Cobalt (*)									
Co-55	17.5 h	0.600	6.0 E-09	0.100	5.5 E-09	2.9 E-09	1.8 E-09	1.1 E-09	1.0 E-09
Co-56	78.7 d	0.600	2.5 E-08	0.100	1.5 E-08	8.8 E-09	5.8 E-09	3.8 E-09	2.5 E-09
Co-57	271 d	0.600	2.9 E-09	0.100	1.6 E-09	8.9 E-10	5.8 E-10	3.7 E-10	2.1 E-10
Co-58	70.8 d	0.600	7.3 E-09	0.100	4.4 E-09	2.6 E-09	1.7 E-09	1.1 E-09	7.4 E-10
Co-58m	9.15 h	0.600	2.0 E-10	0.100	1.5 E-10	7.8 E-11	4.7 E-11	2.8 E-11	2.4 E-11
Co-60	5.27 a	0.600	5.4 E-08	0.100	2.7 E-08	1.7 E-08	1.1 E-08	7.9 E-09	3.4 E-09
Co-60m	0.174 h	0.600	2.2 E-11	0.100	1.2 E-11	5.7 E-12	3.2 E-12	2.2 E-12	1.7 E-12
Co-61	1.65 h	0.600	8.2 E-10	0.100	5.1 E-10	2.5 E-10	1.4 E-10	9.2 E-11	7.4 E-11
Co-62m	0.232 h	0.600	5.3 E-10	0.100	3.0 E-10	1.5 E-10	8.7 E-11	6.0 E-11	4.7 E-11
Nickel									
Ni-56	6.10 d	0.100	5.3 E-09	0.050	4.0 E-09	2.3 E-09	1.6 E-09	1.1 E-09	8.6 E-10
Ni-57	1.50 d	0.100	6.8 E-09	0.050	4.9 E-09	2.7 E-09	1.7 E-09	1.1 E-09	8.7 E-10
Ni-59	7.50 E+04 a	0.100	6.4 E-10	0.050	3.4 E-10	1.9 E-10	1.1 E-10	7.3 E-11	6.3 E-11
Ni-63	96.0 a	0.100	1.6 E-09	0.050	8.4 E-10	4.6 E-10	2.8 E-10	1.8 E-10	1.5 E-10
Ni-65	2.52 h	0.100	2.1 E-09	0.050	1.3 E-09	6.3 E-10	3.8 E-10	2.3 E-10	1.8 E-10
Ni-66	2.27 d	0.100	3.3 E-08	0.050	2.2 E-08	1.1 E-08	6.6 E-09	3.7 E-09	3.0 E-09
Copper									
Cu-60	0.387 h	1.000	7.0 E-10	0.500	4.2 E-10	2.2 E-10	1.3 E-10	8.9 E-11	7.0 E-11
Cu-61	3.41 h	1.000	7.1 E-10	0.500	7.5 E-10	3.9 E-10	2.3 E-10	1.5 E-10	1.2 E-10

Cu-64	12.7 h	1.000	5.2 E-10	0.500	8.3 E-10	4.2 E-10	2.5 E-10	1.5 E-10	1.2 E-10
Cu-67	2.58 d	1.000	2.1 E-09	0.500	2.4 E-09	1.2 E-09	7.2 E-10	4.2 E-10	3.4 E-10
Zinc									
Zn-62	9.26 h	1.000	4.2 E-09	0.500	6.5 E-09	3.3 E-09	2.0 E-09	1.2 E-09	9.4 E-10
Zn-63	0.635 h	1.000	8.7 E-10	0.500	5.2 E-10	2.6 E-10	1.5 E-10	1.0 E-10	7.9 E-11
Zn-65	244 d	1.000	3.6 E-08	0.500	1.6 E-08	9.7 E-09	6.4 E-09	4.5 E-09	3.9 E-09
Zn-69	0.950 h	1.000	3.5 E-10	0.500	2.2 E-10	1.1 E-10	6.0 E-11	3.9 E-11	3.1 E-11
Zn-69m	13.8 h	1.000	1.3 E-09	0.500	2.3 E-09	1.2 E-09	7.0 E-10	4.1 E-10	3.3 E-10
Zn-71m	3.92 h	1.000	1.4 E-09	0.500	1.5 E-09	7.8 E-10	4.8 E-10	3.0 E-10	2.4 E-10
Zn-72	1.94 d	1.000	8.7 E-09	0.500	8.6 E-09	4.5 E-09	2.8 E-09	1.7 E-09	1.4 E-09
Gallium									
Ga-65	0.253 h	0.010	4.3 E-10	0.001	2.4 E-10	1.2 E-10	6.9 E-11	4.7 E-11	3.7 E-11
Ga-66	9.40 h	0.010	1.2 E-08	0.001	7.9 E-09	4.0 E-09	2.5 E-09	1.5 E-09	1.2 E-09
Ga-67	3.26 d	0.010	1.8 E-09	0.001	1.2 E-09	6.4 E-10	4.0 E-10	2.4 E-10	1.9 E-10
Ga-68	1.13 h	0.010	1.2 E-09	0.001	6.7 E-10	3.4 E-10	2.0 E-10	1.3 E-10	1.0 E-10
Ga-70	0.353 h	0.010	3.9 E-10	0.001	2.2 E-10	1.0 E-10	5.9 E-11	4.0 E-11	3.1 E-11
Ga-72	14.1 h	0.010	1.0 E-08	0.001	6.8 E-09	3.6 E-09	2.2 E-09	1.4 E-09	1.1 E-09
Ga-73	4.91 h	0.010	3.0 E-09	0.001	1.9 E-09	9.3 E-10	5.5 E-10	3.3 E-10	2.6 E-10
Germanium									
Ge-66	2.27 h	1.000	8.3 E-10	1.000	5.3 E-10	2.9 E-10	1.9 E-10	1.3 E-10	1.0 E-10
Ge-67	0.312 h	1.000	7.7 E-10	1.000	4.2 E-10	2.1 E-10	1.2 E-10	8.2 E-11	6.5 E-11
Ge-68	288 d	1.000	1.2 E-08	1.000	8.0 E-09	4.2 E-09	2.6 E-09	1.6 E-09	1.3 E-09
Ge-69	1.63 d	1.000	2.0 E-09	1.000	1.3 E-09	7.1 E-10	4.6 E-10	3.0 E-10	2.4 E-10
Ge-71	11.8 d	1.000	1.2 E-10	1.000	7.8 E-11	4.0 E-11	2.4 E-11	1.5 E-11	1.2 E-11
Ge-75	1.38 h	1.000	5.5 E-10	1.000	3.1 E-10	1.5 E-10	8.7 E-11	5.9 E-11	4.6 E-11
Ge-77	11.3 h	1.000	3.0 E-09	1.000	1.8 E-09	9.9 E-10	6.2 E-10	4.1 E-10	3.3 E-10
Ge-78	1.45 h	1.000	1.2 E-09	1.000	7.0 E-10	3.6 E-10	2.2 E-10	1.5 E-10	1.2 E-10
Arsenic									
As-69	0.253 h	1.000	6.6 E-10	0.500	3.7 E-10	1.8 E-10	1.1 E-10	7.2 E-11	5.7 E-11
As-70	0.876 h	1.000	1.2 E-09	0.500	7.8 E-10	4.1 E-10	2.5 E-10	1.7 E-10	1.3 E-10
As-71	2.70 d	1.000	2.8 E-09	0.500	2.8 E-09	1.5 E-09	9.3 E-10	5.7 E-10	4.6 E-10
As-72	1.08 d	1.000	1.1 E-08	0.500	1.2 E-08	6.3 E-09	3.8 E-09	2.3 E-09	1.8 E-09
As-73	80.3 d	1.000	2.6 E-09	0.500	1.9 E-09	9.3 E-10	5.6 E-10	3.2 E-10	2.6 E-10
As-74	17.8 d	1.000	1.0 E-08	0.500	8.2 E-09	4.3 E-09	2.6 E-09	1.6 E-09	1.3 E-09
As-76	1.10 d	1.000	1.0 E-08	0.500	1.1 E-08	5.8 E-09	3.4 E-09	2.0 E-09	1.6 E-09
As-77	1.62 d	1.000	2.7 E-09	0.500	2.9 E-09	1.5 E-09	8.7 E-10	5.0 E-10	4.0 E-10
As-78	1.51 h	1.000	2.0 E-09	0.500	1.4 E-09	7.0 E-10	4.1 E-10	2.7 E-10	2.1 E-10
Selenium									
Se-70	0.683 h	1.000	1.0 E-09	0.800	7.1 E-10	3.6 E-10	2.2 E-10	1.5 E-10	1.2 E-10
Se-73	7.15 h	1.000	1.6 E-09	0.800	1.4 E-09	7.4 E-10	4.8 E-10	2.5 E-10	2.1 E-10
Se-73m	0.650 h	1.000	2.6 E-10	0.800	1.8 E-10	9.5 E-11	5.9 E-11	3.5 E-11	2.8 E-11
Se-75	120 d	1.000	2.0 E-08	0.800	1.3 E-08	8.3 E-09	6.0 E-09	3.1 E-09	2.6 E-09
Se-79	6.50 E+04 a	1.000	4.1 E-08	0.800	2.8 E-08	1.9 E-08	1.4 E-08	4.1 E-09	2.9 E-09
Se-81	0.308 h	1.000	3.4 E-10	0.800	1.9 E-10	9.0 E-11	5.1 E-11	3.4 E-11	2.7 E-11
Se-81m	0.954 h	1.000	6.0 E-10	0.800	3.7 E-10	1.8 E-10	1.1 E-10	6.7 E-11	5.3 E-11
Se-83	0.375 h	1.000	4.6 E-10	0.800	2.9 E-10	1.5 E-10	8.7 E-11	5.9 E-11	4.7 E-11
Bromine									
Br-74	0.422 h	1.000	9.0 E-10	1.000	5.2 E-10	2.6 E-10	1.5 E-10	1.1 E-10	8.4 E-11
Br-74m	0.691 h	1.000	1.5 E-09	1.000	8.5 E-10	4.3 E-10	2.5 E-10	1.7 E-10	1.4 E-10
Br-75	1.63 h	1.000	8.5 E-10	1.000	4.9 E-10	2.5 E-10	1.5 E-10	9.9 E-11	7.9 E-11
Br-76	16.2 h	1.000	4.2 E-09	1.000	2.7 E-09	1.4 E-09	8.7 E-10	5.6 E-10	4.6 E-10
Br-77	2.33 d	1.000	6.3 E-10	1.000	4.4 E-10	2.5 E-10	1.7 E-10	1.1 E-10	9.6 E-11
Br-80	0.290 h	1.000	3.9 E-10	1.000	2.1 E-10	1.0 E-10	5.8 E-11	3.9 E-11	3.1 E-11
Br-80m	4.42 h	1.000	1.4 E-09	1.000	8.0 E-10	3.9 E-10	2.3 E-10	1.4 E-10	1.1 E-10
Br-82	1.47 d	1.000	3.7 E-09	1.000	2.6 E-09	1.5 E-09	9.5 E-10	6.4 E-10	5.4 E-10
Br-83	2.39 h	1.000	5.3 E-10	1.000	3.0 E-10	1.4 E-10	8.3 E-11	5.5 E-11	4.3 E-11
Br-84	0.530 h	1.000	1.0 E-09	1.000	5.8 E-10	2.8 E-10	1.6 E-10	1.1 E-10	8.8 E-11

Rubidium									
Rb-79	0.382 h	1.000	5.7 E-10	1.000	3.2 E-10	1.6 E-10	9.2 E-11	6.3 E-11	5.0 E-11
Rb-81	4.58 h	1.000	5.4 E-10	1.000	3.2 E-10	1.6 E-10	1.0 E-10	6.7 E-11	5.4 E-11
Rb-81m	0.533 h	1.000	1.1 E-10	1.000	6.2 E-11	3.1 E-11	1.8 E-11	1.2 E-11	9.7 E-12
Rb-82m	6.20 h	1.000	8.7 E-10	1.000	5.9 E-10	3.4 E-10	2.2 E-10	1.5 E-10	1.3 E-10
Rb-83	86.2 d	1.000	1.1 E-08	1.000	8.4 E-09	4.9 E-09	3.2 E-09	2.2 E-09	1.9 E-09
Rb-84	32.8 d	1.000	2.0 E-08	1.000	1.4 E-08	7.9 E-09	5.0 E-09	3.3 E-09	2.8 E-09
Rb-86	18.7 d	1.000	3.1 E-08	1.000	2.0 E-08	9.9 E-09	5.9 E-09	3.5 E-09	2.8 E-09
Rb-87	4.70 E+10 a	1.000	1.5 E-08	1.000	1.0 E-08	5.2 E-09	3.1 E-09	1.8 E-09	1.5 E-09
Rb-88	0.297 h	1.000	1.1 E-09	1.000	6.2 E-10	3.0 E-10	1.7 E-10	1.2 E-10	9.0 E-11
Rb-89	0.253 h	1.000	5.4 E-10	1.000	3.0 E-10	1.5 E-10	8.6 E-11	5.9 E-11	4.7 E-11
Strontium (*)									
Sr-80	1.67 h	0.600	3.7 E-09	0.300	2.3 E-09	1.1 E-09	6.5 E-10	4.2 E-10	3.4 E-10
Sr-81	0.425 h	0.600	8.4 E-10	0.300	4.9 E-10	2.4 E-10	1.4 E-10	9.6 E-11	7.7 E-11
Sr-82	25.0 d	0.600	7.2 E-08	0.300	4.1 E-08	2.1 E-08	1.3 E-08	8.7 E-09	6.1 E-09
Sr-83	1.35 d	0.600	3.4 E-09	0.300	2.7 E-09	1.4 E-09	9.1 E-10	5.7 E-10	4.9 E-10
Sr-85	64.8 d	0.600	7.7 E-09	0.300	3.1 E-09	1.7 E-09	1.5 E-09	1.3 E-09	5.6 E-10
Sr-85m	1.16 h	0.600	4.5 E-11	0.300	3.0 E-11	1.7 E-11	1.1 E-11	7.8 E-12	6.1 E-12
Sr-87m	2.80 h	0.600	2.4 E-10	0.300	1.7 E-10	9.0 E-11	5.6 E-11	3.6 E-11	3.0 E-11
Sr-89	50.5 d	0.600	3.6 E-08	0.300	1.8 E-08	8.9 E-09	5.8 E-09	4.0 E-09	2.6 E-09
Sr-90	29.1 a	0.600	2.3 E-07	0.300	7.3 E-08	4.7 E-08	6.0 E-08	8.0 E-08	2.8 E-08
Sr-91	9.50 h	0.600	5.2 E-09	0.300	4.0 E-09	2.1 E-09	1.2 E-09	7.4 E-10	6.5 E-10
Sr-92	2.71 h	0.600	3.4 E-09	0.300	2.7 E-09	1.4 E-09	8.2 E-10	4.8 E-10	4.3 E-10
Ytrium									
Y-86	14.7 h	0.001	7.6 E-09	1.0 E-04	5.2 E-09	2.9 E-09	1.9 E-09	1.2 E-09	9.6 E-10
Y-86m	0.800 h	0.001	4.5 E-10	1.0 E-04	3.1 E-10	1.7 E-10	1.1 E-10	7.1 E-11	5.6 E-11
Y-87	3.35 d	0.001	4.6 E-09	1.0 E-04	3.2 E-09	1.8 E-09	1.1 E-09	7.0 E-10	5.5 E-10
Y-88	107 d	0.001	8.1 E-09	1.0 E-04	6.0 E-09	3.5 E-09	2.4 E-09	1.6 E-09	1.3 E-09
Y-90	2.67 d	0.001	3.1 E-08	1.0 E-04	2.0 E-08	1.0 E-08	5.9 E-09	3.3 E-09	2.7 E-09
Y-90m	3.19 h	0.001	1.8 E-09	1.0 E-04	1.2 E-09	6.1 E-10	3.7 E-10	2.2 E-10	1.7 E-10
Y-91	58.5 d	0.001	2.8 E-08	1.0 E-04	1.8 E-08	8.8 E-09	5.2 E-09	2.9 E-09	2.4 E-09
Y-91m	0.828 h	0.001	9.2 E-11	1.0 E-04	6.0 E-11	3.3 E-11	2.1 E-11	1.4 E-11	1.1 E-11
Y-92	3.54 h	0.001	5.9 E-09	1.0 E-04	3.6 E-09	1.8 E-09	1.0 E-09	6.2 E-10	4.9 E-10
Y-93	10.1 h	0.001	1.4 E-08	1.0 E-04	8.5 E-09	4.3 E-09	2.5 E-09	1.4 E-09	1.2 E-09
Y-94	0.318 h	0.001	9.9 E-10	1.0 E-04	5.5 E-10	2.7 E-10	1.5 E-10	1.0 E-10	8.1 E-11
Y-95	0.178 h	0.001	5.7 E-10	1.0 E-04	3.1 E-10	1.5 E-10	8.7 E-11	5.9 E-11	4.6 E-11
Zirconium									
Zr-86	16.5 h	0.020	6.9 E-09	0.010	4.8 E-09	2.7 E-09	1.7 E-09	1.1 E-09	8.6 E-10
Zr-88	83.4 d	0.020	2.8 E-09	0.010	2.0 E-09	1.2 E-09	8.0 E-10	5.4 E-10	4.5 E-10
Zr-89	3.27 d	0.020	6.5 E-09	0.010	4.5 E-09	2.5 E-09	1.6 E-09	9.9 E-10	7.9 E-10
Zr-93	1.53 E+06 a	0.020	1.2 E-09	0.010	7.6 E-10	5.1 E-10	5.8 E-10	8.6 E-10	1.1 E-09
Zr-95	64.0 d	0.020	8.5 E-09	0.010	5.6 E-09	3.0 E-09	1.9 E-09	1.2 E-09	9.5 E-10
Zr-97	16.9 h	0.020	2.2 E-08	0.010	1.4 E-08	7.3 E-09	4.4 E-09	2.6 E-09	2.1 E-09
Niobium									
Nb-88	0.238 h	0.020	6.7 E-10	0.010	3.8 E-10	1.9 E-10	1.1 E-10	7.9 E-11	6.3 E-11
Nb-89	2.03 h	0.020	3.0 E-09	0.010	2.0 E-09	1.0 E-09	6.0 E-10	3.4 E-10	2.7 E-10
Nb-89	1.10 h	0.020	1.5 E-09	0.010	8.7 E-10	4.4 E-10	2.7 E-10	1.8 E-10	1.4 E-10
Nb-90	14.6 h	0.020	1.1 E-08	0.010	7.2 E-09	3.9 E-09	2.5 E-09	1.6 E-09	1.2 E-09
Nb-93m	13.6 a	0.020	1.5 E-09	0.010	9.1 E-10	4.6 E-10	2.7 E-10	1.5 E-10	1.2 E-10
Nb-94	2.03 E+04 a	0.020	1.5 E-08	0.010	9.7 E-09	5.3 E-09	3.4 E-09	2.1 E-09	1.7 E-09
Nb-95	35.1 d	0.020	4.6 E-09	0.010	3.2 E-09	1.8 E-09	1.1 E-09	7.4 E-10	5.8 E-10
Nb-95m	3.61 d	0.020	6.4 E-09	0.010	4.1 E-09	2.1 E-09	1.2 E-09	7.1 E-10	5.6 E-10
Nb-96	23.3 h	0.020	9.2 E-09	0.010	6.3 E-09	3.4 E-09	2.2 E-09	1.4 E-09	1.1 E-09
Nb-97	1.20 h	0.020	7.7 E-10	0.010	4.5 E-10	2.3 E-10	1.3 E-10	8.7 E-11	6.8 E-11
Nb-98	0.858 h	0.020	1.2 E-09	0.010	7.1 E-10	3.6 E-10	2.2 E-10	1.4 E-10	1.1 E-10
Molybdenum									
Mo-90	5.67 h	1.000	1.7 E-09	1.000	1.2 E-09	6.3 E-10	4.0 E-10	2.7 E-10	2.2 E-10

Mo-93	3.50 E+03 a	1.000	7.9 E-09	1.000	6.9 E-09	5.0 E-09	4.0 E-09	3.4 E-09	3.1 E-09
Mo-93m	6.85 h	1.000	8.0 E-10	1.000	5.4 E-10	3.1 E-10	2.0 E-10	1.4 E-10	1.1 E-10
Mo-99	2.75 d	1.000	5.5 E-09	1.000	3.5 E-09	1.8 E-09	1.1 E-09	7.6 E-10	6.0 E-10
Mo-101	0.244 h	1.000	4.8 E-10	1.000	2.7 E-10	1.3 E-10	7.6 E-11	5.2 E-11	4.1 E-11
Technetium									
Tc-93	2.75 h	1.000	2.7 E-10	0.500	2.5 E-10	1.5 E-10	9.8 E-11	6.8 E-11	5.5 E-11
Tc-93m	0.725 h	1.000	2.0 E-10	0.500	1.3 E-10	7.3 E-11	4.6 E-11	3.2 E-11	2.5 E-11
Tc-94	4.88 h	1.000	1.2 E-09	0.500	1.0 E-09	5.8 E-10	3.7 E-10	2.5 E-10	2.0 E-10
Tc-94m	0.867 h	1.000	1.3 E-09	0.500	6.5 E-10	3.3 E-10	1.9 E-10	1.3 E-10	1.0 E-10
Tc-95	20.0 h	1.000	9.9 E-10	0.500	8.7 E-10	5.0 E-10	3.3 E-10	2.3 E-10	1.8 E-10
Tc-95m	61.0 d	1.000	4.7 E-09	0.500	2.8 E-09	1.6 E-09	1.0 E-09	7.0 E-10	5.6 E-10
Tc-96	4.28 d	1.000	6.7 E-09	0.500	5.1 E-09	3.0 E-09	2.0 E-09	1.4 E-09	1.1 E-09
Tc-96m	0.858 h	1.000	1.0 E-10	0.500	6.5 E-11	3.6 E-11	2.3 E-11	1.6 E-11	1.2 E-11
Tc-97	2.60 E+06 a	1.000	9.9 E-10	0.500	4.9 E-10	2.4 E-10	1.4 E-10	8.8 E-11	6.8 E-11
Tc-97m	87.0 d	1.000	8.7 E-09	0.500	4.1 E-09	2.0 E-09	1.1 E-09	7.0 E-10	5.5 E-10
Tc-98	4.20 E+06 a	1.000	2.3 E-08	0.500	1.2 E-08	6.1 E-09	3.7 E-09	2.5 E-09	2.0 E-09
Tc-99	2.13 E+05 a	1.000	1.0 E-08	0.500	4.8 E-09	2.3 E-09	1.3 E-09	8.2 E-10	6.4 E-10
Tc-99m	6.02 h	1.000	2.0 E-10	0.500	1.3 E-10	7.2 E-11	4.3 E-11	2.8 E-11	2.2 E-11
Tc-101	0.237 h	1.000	2.4 E-10	0.500	1.3 E-10	6.1 E-11	3.5 E-11	2.4 E-11	1.9 E-11
Tc-104	0.303 h	1.000	1.0 E-09	0.500	5.3 E-10	2.6 E-10	1.5 E-10	1.0 E-10	8.0 E-11
Ruthenium									
Ru-94	0.863 h	0.100	9.3 E-10	0.050	5.9 E-10	3.1 E-10	1.9 E-10	1.2 E-10	9.4 E-11
Ru-97	2.90 d	0.100	1.2 E-09	0.050	8.5 E-10	4.7 E-10	3.0 E-10	1.9 E-10	1.5 E-10
Ru-103	39.3 d	0.100	7.1 E-09	0.050	4.6 E-09	2.4 E-09	1.5 E-09	9.2 E-10	7.3 E-10
Ru-105	4.44 h	0.100	2.7 E-09	0.050	1.8 E-09	9.1 E-10	5.5 E-10	3.3 E-10	2.6 E-10
Ru-106	1.01 a	0.100	8.4 E-08	0.050	4.9 E-08	2.5 E-08	1.5 E-08	8.6 E-09	7.0 E-09
Rhodium									
Rh-99	16.0 d	0.100	4.2 E-09	0.050	2.9 E-09	1.6 E-09	1.0 E-09	6.5 E-10	5.1 E-10
Rh-99m	4.70 h	0.100	4.9 E-10	0.050	3.5 E-10	2.0 E-10	1.3 E-10	8.3 E-11	6.6 E-11
Rh-100	20.8 h	0.100	4.9 E-09	0.050	3.6 E-09	2.0 E-09	1.4 E-09	8.8 E-10	7.1 E-10
Rh-101	3.20 a	0.100	4.9 E-09	0.050	2.8 E-09	1.6 E-09	1.0 E-09	6.7 E-10	5.5 E-10
Rh-101m	4.34 d	0.100	1.7 E-09	0.050	1.2 E-09	6.8 E-10	4.4 E-10	2.8 E-10	2.2 E-10
Rh-102	2.90 a	0.100	1.9 E-08	0.050	1.0 E-08	6.4 E-09	4.3 E-09	3.0 E-09	2.6 E-09
Rh-102m	207 d	0.100	1.2 E-08	0.050	7.4 E-09	3.9 E-09	2.4 E-09	1.4 E-09	1.2 E-09
Rh-103m	0.935 h	0.100	4.7 E-11	0.050	2.7 E-11	1.3 E-11	7.4 E-12	4.8 E-12	3.8 E-12
Rh-105	1.47 d	0.100	4.0 E-09	0.050	2.7 E-09	1.3 E-09	8.0 E-10	4.6 E-10	3.7 E-10
Rh-106m	2.20 h	0.100	1.4 E-09	0.050	9.7 E-10	5.3 E-10	3.3 E-10	2.0 E-10	1.6 E-10
Rh-107	0.362 h	0.100	2.9 E-10	0.050	1.6 E-10	7.9 E-11	4.5 E-11	3.1 E-11	2.4 E-11
Palladium									
Pd-100	3.63 d	0.050	7.4 E-09	0.005	5.2 E-09	2.9 E-09	1.9 E-09	1.2 E-09	9.4 E-10
Pd-101	8.27 h	0.050	8.2 E-10	0.005	5.7 E-10	3.1 E-10	1.9 E-10	1.2 E-10	9.4 E-11
Pd-103	17.0 d	0.050	2.2 E-09	0.005	1.4 E-09	7.2 E-10	4.3 E-10	2.4 E-10	1.9 E-10
Pd-107	6.50 E+06 a	0.050	4.4 E-10	0.005	2.8 E-10	1.4 E-10	8.1 E-11	4.6 E-11	3.7 E-11
Pd-109	13.4 h	0.050	6.3 E-09	0.005	4.1 E-09	2.0 E-09	1.2 E-09	6.8 E-10	5.5 E-10
Silver									
Ag-102	0.215 h	0.100	4.2 E-10	0.050	2.4 E-10	1.2 E-10	7.3 E-11	5.0 E-11	4.0 E-11
Ag-103	1.09 h	0.100	4.5 E-10	0.050	2.7 E-10	1.4 E-10	8.3 E-11	5.5 E-11	4.3 E-11
Ag-104	1.15 h	0.100	4.3 E-10	0.050	2.9 E-10	1.7 E-10	1.1 E-10	7.5 E-11	6.0 E-11
Ag-104m	0.558 h	0.100	5.6 E-10	0.050	3.3 E-10	1.7 E-10	1.0 E-10	6.8 E-11	5.4 E-11
Ag-105	41.0 d	0.100	3.9 E-09	0.050	2.5 E-09	1.4 E-09	9.1 E-10	5.9 E-10	4.7 E-10
Ag-106	0.399 h	0.100	3.7 E-10	0.050	2.1 E-10	1.0 E-10	6.0 E-11	4.1 E-11	3.2 E-11
Ag-106m	8.41 d	0.100	9.7 E-09	0.050	6.9 E-09	4.1 E-09	2.8 E-09	1.8 E-09	1.5 E-09
Ag-108m	1.27 E+02 a	0.100	2.1 E-08	0.050	1.1 E-08	6.5 E-09	4.3 E-09	2.8 E-09	2.3 E-09
Ag-110m	250 d	0.100	2.4 E-08	0.050	1.4 E-08	7.8 E-09	5.2 E-09	3.4 E-09	2.8 E-09
Ag-111	7.45 d	0.100	1.4 E-08	0.050	9.3 E-09	4.6 E-09	2.7 E-09	1.6 E-09	1.3 E-09
Ag-112	3.12 h	0.100	4.9 E-09	0.050	3.0 E-09	1.5 E-09	8.9 E-10	5.4 E-10	4.3 E-10
Ag-115	0.333 h	0.100	7.2 E-10	0.050	4.1 E-10	2.0 E-10	1.2 E-10	7.7 E-11	6.0 E-11

Cadmium									
Cd-104	0.961 h	0.100	4.2 E-10	0.050	2.9 E-10	1.7 E-10	1.1 E-10	7.2 E-11	5.4 E-11
Cd-107	6.49 h	0.100	7.1 E-10	0.050	4.6 E-10	2.3 E-10	1.3 E-10	7.8 E-11	6.2 E-11
Cd-109	1.27 a	0.100	2.1 E-08	0.050	9.5 E-09	5.5 E-09	3.5 E-09	2.4 E-09	2.0 E-09
Cd-113	9.30 E+15 a	0.100	1.0 E-07	0.050	4.8 E-08	3.7 E-08	3.0 E-08	2.6 E-08	2.5 E-08
Cd-113m	13.6 a	0.100	1.2 E-07	0.050	5.6 E-08	3.9 E-08	2.9 E-08	2.4 E-08	2.3 E-08
Cd-115	2.23 d	0.100	1.4 E-08	0.050	9.7 E-09	4.9 E-09	2.9 E-09	1.7 E-09	1.4 E-09
Cd-115m	44.6 d	0.100	4.1 E-08	0.050	1.9 E-08	9.7 E-09	6.9 E-09	4.1 E-09	3.3 E-09
Cd-117	2.49 h	0.100	2.9 E-09	0.050	1.9 E-09	9.5 E-10	5.7 E-10	3.5 E-10	2.8 E-10
Cd-117m	3.36 h	0.100	2.6 E-09	0.050	1.7 E-09	9.0 E-10	5.6 E-10	3.5 E-10	2.8 E-10
Indium									
In-109	4.20 h	0.040	5.2 E-10	0.020	3.6 E-10	2.0 E-10	1.3 E-10	8.2 E-11	6.6 E-11
In-110	4.90 h	0.040	1.5 E-09	0.020	1.1 E-09	6.5 E-10	4.4 E-10	3.0 E-10	2.4 E-10
In-110	1.15 h	0.040	1.1 E-09	0.020	6.4 E-10	3.2 E-10	1.9 E-10	1.3 E-10	1.0 E-10
In-111	2.83 d	0.040	2.4 E-09	0.020	1.7 E-09	9.1 E-10	5.9 E-10	3.7 E-10	2.9 E-10
In-112	0.240 h	0.040	1.2 E-10	0.020	6.7 E-11	3.3 E-11	1.9 E-11	1.3 E-11	1.0 E-11
In-113m	1.66 h	0.040	3.0 E-10	0.020	1.8 E-10	9.3 E-11	6.2 E-11	3.6 E-11	2.8 E-11
In-114m	49.5 d	0.040	5.6 E-08	0.020	3.1 E-08	1.5 E-08	9.0 E-09	5.2 E-09	4.1 E-09
In-115	5.10 E+15 a	0.040	1.3 E-07	0.020	6.4 E-08	4.8 E-08	4.3 E-08	3.6 E-08	3.2 E-08
In-115m	4.49 h	0.040	9.6 E-10	0.020	6.0 E-10	3.0 E-10	1.8 E-10	1.1 E-10	8.6 E-11
In-116m	0.902 h	0.040	5.8 E-10	0.020	3.6 E-10	1.9 E-10	1.2 E-10	8.0 E-11	6.4 E-11
In-117	0.730 h	0.040	3.3 E-10	0.020	1.9 E-10	9.7 E-11	5.8 E-11	3.9 E-11	3.1 E-11
In-117m	1.94 h	0.040	1.4 E-09	0.020	8.6 E-10	4.3 E-10	2.5 E-10	1.6 E-10	1.2 E-10
In-119m	0.300 h	0.040	5.9 E-10	0.020	3.2 E-10	1.6 E-10	8.8 E-11	6.0 E-11	4.7 E-11
Tin									
Sn-110	4.00 h	0.040	3.5 E-09	0.020	2.3 E-09	1.2 E-09	7.4 E-10	4.4 E-10	3.5 E-10
Sn-111	0.588 h	0.040	2.5 E-10	0.020	1.5 E-10	7.4 E-11	4.4 E-11	3.0 E-11	2.3 E-11
Sn-113	115 d	0.040	7.8 E-09	0.020	5.0 E-09	2.6 E-09	1.6 E-09	9.2 E-10	7.3 E-10
Sn-117m	13.6 d	0.040	7.7 E-09	0.020	5.0 E-09	2.5 E-09	1.5 E-09	8.8 E-10	7.1 E-10
Sn-119m	293 d	0.040	4.1 E-09	0.020	2.5 E-09	1.3 E-09	7.5 E-10	4.3 E-10	3.4 E-10
Sn-121	1.13 d	0.040	2.6 E-09	0.020	1.7 E-09	8.4 E-10	5.0 E-10	2.8 E-10	2.3 E-10
Sn-121m	55.0 a	0.040	4.6 E-09	0.020	2.7 E-09	1.4 E-09	8.2 E-10	4.7 E-10	3.8 E-10
Sn-123	129 d	0.040	2.5 E-08	0.020	1.6 E-08	7.8 E-09	4.6 E-09	2.6 E-09	2.1 E-09
Sn-123m	0.668 h	0.040	4.7 E-10	0.020	2.6 E-10	1.3 E-10	7.3 E-11	4.9 E-11	3.8 E-11
Sn-125	9.64 d	0.040	3.5 E-08	0.020	2.2 E-08	1.1 E-08	6.7 E-09	3.8 E-09	3.1 E-09
Sn-126	1.00 E+05 a	0.040	5.0 E-08	0.020	3.0 E-08	1.6 E-08	9.8 E-09	5.9 E-09	4.7 E-09
Sn-127	2.10 h	0.040	2.0 E-09	0.020	1.3 E-09	6.6 E-10	4.0 E-10	2.5 E-10	2.0 E-10
Sn-128	0.985 h	0.040	1.6 E-09	0.020	9.7 E-10	4.9 E-10	3.0 E-10	1.9 E-10	1.5 E-10
Stibium									
Sb-115	0.530 h	0.200	2.5 E-10	0.100	1.5 E-10	7.5 E-11	4.5 E-11	3.1 E-11	2.4 E-11
Sb-116	0.263 h	0.200	2.7 E-10	0.100	1.6 E-10	8.0 E-11	4.8 E-11	3.3 E-11	2.6 E-11
Sb-116m	1.00 h	0.200	5.0 E-10	0.100	3.3 E-10	1.9 E-10	1.2 E-10	8.3 E-11	6.7 E-11
Sb-117	2.80 h	0.200	1.6 E-10	0.100	1.0 E-10	5.6 E-11	3.5 E-11	2.2 E-11	1.8 E-11
Sb-118m	5.00 h	0.200	1.3 E-09	0.100	1.0 E-09	5.8 E-10	3.9 E-10	2.6 E-10	2.1 E-10
Sb-119	1.59 d	0.200	8.4 E-10	0.100	5.8 E-10	3.0 E-10	1.8 E-10	1.0 E-10	8.0 E-11
Sb-120	5.76 d	0.200	8.1 E-09	0.100	6.0 E-09	3.5 E-09	2.3 E-09	1.6 E-09	1.2 E-09
Sb-120	0.265 h	0.200	1.7 E-10	0.100	9.4 E-11	4.6 E-11	2.7 E-11	1.8 E-11	1.4 E-11
Sb-122	2.70 d	0.200	1.8 E-08	0.100	1.2 E-08	6.1 E-09	3.7 E-09	2.1 E-09	1.7 E-09
Sb-124	60.2 d	0.200	2.5 E-08	0.100	1.6 E-08	8.4 E-09	5.2 E-09	3.2 E-09	2.5 E-09
Sb-124m	0.337 h	0.200	8.5 E-11	0.100	4.9 E-11	2.5 E-11	1.5 E-11	1.0 E-11	8.0 E-12
Sb-125	2.77 a	0.200	1.1 E-08	0.100	6.1 E-09	3.4 E-09	2.1 E-09	1.4 E-09	1.1 E-09
Sb-126	12.4 d	0.200	2.0 E-08	0.100	1.4 E-08	7.6 E-09	4.9 E-09	3.1 E-09	2.4 E-09
Sb-126m	0.317 h	0.200	3.9 E-10	0.100	2.2 E-10	1.1 E-10	6.6 E-11	4.5 E-11	3.6 E-11
Sb-127	3.85 d	0.200	1.7 E-08	0.100	1.2 E-08	5.9 E-09	3.6 E-09	2.1 E-09	1.7 E-09
Sb-128	9.01 h	0.200	6.3 E-09	0.100	4.5 E-09	2.4 E-09	1.5 E-09	9.5 E-10	7.6 E-10
Sb-128	0.173 h	0.200	3.7 E-10	0.100	2.1 E-10	1.0 E-10	6.0 E-11	4.1 E-11	3.3 E-11
Sb-129	4.32 h	0.200	4.3 E-09	0.100	2.8 E-09	1.5 E-09	8.8 E-10	5.3 E-10	4.2 E-10
Sb-130	0.667 h	0.200	9.1 E-10	0.100	5.4 E-10	2.8 E-10	1.7 E-10	1.2 E-10	9.1 E-11
Sb-131	0.383 h	0.200	1.1 E-09	0.100	7.3 E-10	3.9 E-10	2.1 E-10	1.4 E-10	1.0 E-10

Tellurium									
Te-116	2.49 h	0.600	1.4 E-09	0.300	1.0 E-09	5.5 E-10	3.4 E-10	2.1 E-10	1.7 E-10
Te-121	17.0 d	0.600	3.1 E-09	0.300	2.0 E-09	1.2 E-09	8.0 E-10	5.4 E-10	4.3 E-10
Te-121m	154 d	0.600	2.7 E-08	0.300	1.2 E-08	6.9 E-09	4.2 E-09	2.8 E-09	2.3 E-09
Te-123	1.00 E+13 a	0.600	2.0 E-08	0.300	9.3 E-09	6.9 E-09	5.4 E-09	4.7 E-09	4.4 E-09
Te-123m	120 d	0.600	1.9 E-08	0.300	8.8 E-09	4.9 E-09	2.8 E-09	1.7 E-09	1.4 E-09
Te-125m	58.0 d	0.600	1.3 E-08	0.300	6.3 E-09	3.3 E-09	1.9 E-09	1.1 E-09	8.7 E-10
Te-127	9.35 h	0.600	1.5 E-09	0.300	1.2 E-09	6.2 E-10	3.6 E-10	2.1 E-10	1.7 E-10
Te-127m	109 d	0.600	4.1 E-08	0.300	1.8 E-08	9.5 E-09	5.2 E-09	3.0 E-09	2.3 E-09
Te-129	1.16 h	0.600	7.5 E-10	0.300	4.4 E-10	2.1 E-10	1.2 E-10	8.0 E-11	6.3 E-11
Te-129m	33.6 d	0.600	4.4 E-08	0.300	2.4 E-08	1.2 E-08	6.6 E-09	3.9 E-09	3.0 E-09
Te-131	0.417 h	0.600	9.0 E-10	0.300	6.6 E-10	3.5 E-10	1.9 E-10	1.2 E-10	8.7 E-11
Te-131m	1.25 d	0.600	2.0 E-08	0.300	1.4 E-08	7.8 E-09	4.3 E-09	2.7 E-09	1.9 E-09
Te-132	3.26 d	0.600	4.8 E-08	0.300	3.0 E-08	1.6 E-08	8.3 E-09	5.3 E-09	3.8 E-09
Te-133	0.207 h	0.600	8.4 E-10	0.300	6.3 E-10	3.3 E-10	1.6 E-10	1.1 E-10	7.2 E-11
Te-133m	0.923 h	0.600	3.1 E-09	0.300	2.4 E-09	1.3 E-09	6.3 E-10	4.1 E-10	2.8 E-10
Te-134	0.696 h	0.600	1.1 E-09	0.300	7.5 E-10	3.9 E-10	2.2 E-10	1.4 E-10	1.1 E-10
Iodine									
I-120	1.35 h	1.000	3.9 E-09	1.000	2.8 E-09	1.4 E-09	7.2 E-10	4.8 E-10	3.4 E-10
I-120m	0.883 h	1.000	2.3 E-09	1.000	1.5 E-09	7.8 E-10	4.2 E-10	2.9 E-10	2.1 E-10
I-121	2.12 h	1.000	6.2 E-10	1.000	5.3 E-10	3.1 E-10	1.7 E-10	1.2 E-10	8.2 E-11
I-123	13.2 h	1.000	2.2 E-09	1.000	1.9 E-09	1.1 E-09	4.9 E-10	3.3 E-10	2.1 E-10
I-124	4.18 d	1.000	1.2 E-07	1.000	1.1 E-07	6.3 E-08	3.1 E-08	2.0 E-08	1.3 E-08
I-125	60.1 d	1.000	5.2 E-08	1.000	5.7 E-08	4.1 E-08	3.1 E-08	2.2 E-08	1.5 E-08
I-126	13.0 d	1.000	2.1 E-07	1.000	2.1 E-07	1.3 E-07	6.8 E-08	4.5 E-08	2.9 E-08
I-128	0.416 h	1.000	5.7 E-10	1.000	3.3 E-10	1.6 E-10	8.9 E-11	6.0 E-11	4.6 E-11
I-129	1.57 E+07 a	1.000	1.8 E-07	1.000	2.2 E-07	1.7 E-07	1.9 E-07	1.4 E-07	1.1 E-07
I-130	12.4 h	1.000	2.1 E-08	1.000	1.8 E-08	9.8 E-09	4.6 E-09	3.0 E-09	2.0 E-09
I-131	8.04 d	1.000	1.8 E-07	1.000	1.8 E-07	1.0 E-07	5.2 E-08	3.4 E-08	2.2 E-08
I-132	2.30 h	1.000	3.0 E-09	1.000	2.4 E-09	1.3 E-09	6.2 E-10	4.1 E-10	2.9 E-10
I-132m	1.39 h	1.000	2.4 E-09	1.000	2.0 E-09	1.1 E-09	5.0 E-10	3.3 E-10	2.2 E-10
I-133	20.8 h	1.000	4.9 E-08	1.000	4.4 E-08	2.3 E-08	1.0 E-08	6.8 E-09	4.3 E-09
I-134	0.876 h	1.000	1.1 E-09	1.000	7.5 E-10	3.9 E-10	2.1 E-10	1.4 E-10	1.1 E-10
I-135	6.61 h	1.000	1.0 E-08	1.000	8.9 E-09	4.7 E-09	2.2 E-09	1.4 E-09	9.3 E-10
Caesium									
Cs-125	0.750 h	1.000	3.9 E-10	1.000	2.2 E-10	1.1 E-10	6.5 E-11	4.4 E-11	3.5 E-11
Cs-127	6.25 h	1.000	1.8 E-10	1.000	1.2 E-10	6.6 E-11	4.2 E-11	2.9 E-11	2.4 E-11
Cs-129	1.34 d	1.000	4.4 E-10	1.000	3.0 E-10	1.7 E-10	1.1 E-10	7.2 E-11	6.0 E-11
Cs-130	0.498 h	1.000	3.3 E-10	1.000	1.8 E-10	9.0 E-11	5.2 E-11	3.6 E-11	2.8 E-11
Cs-131	9.69 d	1.000	4.6 E-10	1.000	2.9 E-10	1.6 E-10	1.0 E-10	6.9 E-11	5.8 E-11
Cs-132	6.48 d	1.000	2.7 E-09	1.000	1.8 E-09	1.1 E-09	7.7 E-10	5.7 E-10	5.0 E-10
Cs-134	2.06 a	1.000	2.6 E-08	1.000	1.6 E-08	1.3 E-08	1.4 E-08	1.9 E-08	1.9 E-08
Cs-134m	2.90 h	1.000	2.1 E-10	1.000	1.2 E-10	5.9 E-11	3.5 E-11	2.5 E-11	2.0 E-11
Cs-135	2.30 E+06 a	1.000	4.1 E-09	1.000	2.3 E-09	1.7 E-09	1.7 E-09	2.0 E-09	2.0 E-09
Cs-135m	0.883 h	1.000	1.3 E-10	1.000	8.6 E-11	4.9 E-11	3.2 E-11	2.3 E-11	1.9 E-11
Cs-136	13.1 d	1.000	1.5 E-08	1.000	9.5 E-09	6.1 E-09	4.4 E-09	3.4 E-09	3.0 E-09
Cs-137	30.0 a	1.000	2.1 E-08	1.000	1.2 E-08	9.6 E-09	1.0 E-08	1.3 E-08	1.3 E-08
Cs-138	0.536 h	1.000	1.1 E-09	1.000	5.9 E-10	2.9 E-10	1.7 E-10	1.2 E-10	9.2 E-11
Barium (*)									
Ba-126	1.61 h	0.600	2.7 E-09	0.200	1.7 E-09	8.5 E-10	5.0 E-10	3.1 E-10	2.6 E-10
Ba-128	2.43 d	0.600	2.0 E-08	0.200	1.7 E-08	9.0 E-09	5.2 E-09	3.0 E-09	2.7 E-09
Ba-131	11.8 d	0.600	4.2 E-09	0.200	2.6 E-09	1.4 E-09	9.4 E-10	6.2 E-10	4.5 E-10
Ba-131m	0.243 h	0.600	5.8 E-11	0.200	3.2 E-11	1.6 E-11	9.3 E-12	6.3 E-12	4.9 E-12
Ba-133	10.7 a	0.600	2.2 E-08	0.200	6.2 E-09	3.9 E-09	4.6 E-09	7.3 E-09	1.5 E-09
Ba-133m	1.62 d	0.600	4.2 E-09	0.200	3.6 E-09	1.8 E-09	1.1 E-09	5.9 E-10	5.4 E-10
Ba-135m	1.20 d	0.600	3.3 E-09	0.200	2.9 E-09	1.5 E-09	8.5 E-10	4.7 E-10	4.3 E-10
Ba-139	1.38 h	0.600	1.4 E-09	0.200	8.4 E-10	4.1 E-10	2.4 E-10	1.5 E-10	1.2 E-10
Ba-140	12.7 d	0.600	3.2 E-08	0.200	1.8 E-08	9.2 E-09	5.8 E-09	3.7 E-09	2.6 E-09
Ba-141	0.305 h	0.600	7.6 E-10	0.200	4.7 E-10	2.3 E-10	1.3 E-10	8.6 E-11	7.0 E-11
Ba-142	0.177 h	0.600	3.6 E-10	0.200	2.2 E-10	1.1 E-10	6.6 E-11	4.3 E-11	3.5 E-11

Lanthanum									
La-131	0.983 h	0.005	3.5 E-10	5.0 E-04	2.1 E-10	1.1 E-10	6.6 E-11	4.4 E-11	3.5 E-11
La-132	4.80 h	0.005	3.8 E-09	5.0 E-04	2.4 E-09	1.3 E-09	7.8 E-10	4.8 E-10	3.9 E-10
La-135	19.5 h	0.005	2.8 E-10	5.0 E-04	1.9 E-10	1.0 E-10	6.4 E-11	3.9 E-11	3.0 E-11
La-137	6.00 E+04 a	0.005	1.1 E-09	5.0 E-04	4.5 E-10	2.5 E-10	1.6 E-10	1.0 E-10	8.1 E-11
La-138	1.35 E+11 a	0.005	1.3 E-08	5.0 E-04	4.6 E-09	2.7 E-09	1.9 E-09	1.3 E-09	1.1 E-09
La-140	1.68 d	0.005	2.0 E-08	5.0 E-04	1.3 E-08	6.8 E-09	4.2 E-09	2.5 E-09	2.0 E-09
La-141	3.93 h	0.005	4.3 E-09	5.0 E-04	2.6 E-09	1.3 E-09	7.6 E-10	4.5 E-10	3.6 E-10
La-142	1.54 h	0.005	1.9 E-09	5.0 E-04	1.1 E-09	5.8 E-10	3.5 E-10	2.3 E-10	1.8 E-10
La-143	0.237 h	0.005	6.9 E-10	5.0 E-04	3.9 E-10	1.9 E-10	1.1 E-10	7.1 E-11	5.6 E-11
Cerium									
Ce-134	3.00 d	0.005	2.8 E-08	5.0 E-04	1.8 E-08	9.1 E-09	5.5 E-09	3.2 E-09	2.5 E-09
Ce-135	17.6 h	0.005	7.0 E-09	5.0 E-04	4.7 E-09	2.6 E-09	1.6 E-09	1.0 E-09	7.9 E-10
Ce-137	9.00 h	0.005	2.6 E-10	5.0 E-04	1.7 E-10	8.8 E-11	5.4 E-11	3.2 E-11	2.5 E-11
Ce-137m	1.43 d	0.005	6.1 E-09	5.0 E-04	3.9 E-09	2.0 E-09	1.2 E-09	6.8 E-10	5.4 E-10
Ce-139	138 d	0.005	2.6 E-09	5.0 E-04	1.6 E-09	8.6 E-10	5.4 E-10	3.3 E-10	2.6 E-10
Ce-141	32.5 d	0.005	8.1 E-09	5.0 E-04	5.1 E-09	2.6 E-09	1.5 E-09	8.8 E-10	7.1 E-10
Ce-143	1.38 d	0.005	1.2 E-08	5.0 E-04	8.0 E-09	4.1 E-09	2.4 E-09	1.4 E-09	1.1 E-09
Ce-144	284 d	0.005	6.6 E-08	5.0 E-04	3.9 E-08	1.9 E-08	1.1 E-08	6.5 E-09	5.2 E-09
Praseodymium									
Pr-136	0.218 h	0.005	3.7 E-10	5.0 E-04	2.1 E-10	1.0 E-10	6.1 E-11	4.2 E-11	3.3 E-11
Pr-137	1.28 h	0.005	4.1 E-10	5.0 E-04	2.5 E-10	1.3 E-10	7.7 E-11	5.0 E-11	4.0 E-11
Pr-138m	2.10 h	0.005	1.0 E-09	5.0 E-04	7.4 E-10	4.1 E-10	2.6 E-10	1.6 E-10	1.3 E-10
Pr-139	4.51 h	0.005	3.2 E-10	5.0 E-04	2.0 E-10	1.1 E-10	6.5 E-11	4.0 E-11	3.1 E-11
Pr-142	19.1 h	0.005	1.5 E-08	5.0 E-04	9.8 E-09	4.9 E-09	2.9 E-09	1.6 E-09	1.3 E-09
Pr-142m	0.243 h	0.005	2.0 E-10	5.0 E-04	1.2 E-10	6.2 E-11	3.7 E-11	2.1 E-11	1.7 E-11
Pr-143	13.6 d	0.005	1.4 E-08	5.0 E-04	8.7 E-09	4.3 E-09	2.6 E-09	1.5 E-09	1.2 E-09
Pr-144	0.288 h	0.005	6.4 E-10	5.0 E-04	3.5 E-10	1.7 E-10	9.5 E-11	6.5 E-11	5.0 E-11
Pr-145	5.98 h	0.005	4.7 E-09	5.0 E-04	2.9 E-09	1.4 E-09	8.5 E-10	4.9 E-10	3.9 E-10
Pr-147	0.227 h	0.005	3.9 E-10	5.0 E-04	2.2 E-10	1.1 E-10	6.1 E-11	4.2 E-11	3.3 E-11
Neodymium									
Nd-136	0.844 h	0.005	1.0 E-09	5.0 E-04	6.1 E-10	3.1 E-10	1.9 E-10	1.2 E-10	9.9 E-11
Nd-138	5.04 h	0.005	7.2 E-09	5.0 E-04	4.5 E-09	2.3 E-09	1.3 E-09	8.0 E-10	6.4 E-10
Nd-139	0.495 h	0.005	2.1 E-10	5.0 E-04	1.2 E-10	6.3 E-11	3.7 E-11	2.5 E-11	2.0 E-11
Nd-139m	5.50 h	0.005	2.1 E-09	5.0 E-04	1.4 E-09	7.8 E-10	5.0 E-10	3.1 E-10	2.5 E-10
Nd-141	2.49 h	0.005	7.8 E-11	5.0 E-04	5.0 E-11	2.7 E-11	1.6 E-11	1.0 E-11	8.3 E-12
Nd-147	11.0 d	0.005	1.2 E-08	5.0 E-04	7.8 E-09	3.9 E-09	2.3 E-09	1.3 E-09	1.1 E-09
Nd-149	1.73 h	0.005	1.4 E-09	5.0 E-04	8.7 E-10	4.3 E-10	2.6 E-10	1.6 E-10	1.2 E-10
Nd-151	0.207 h	0.005	3.4 E-10	5.0 E-04	2.0 E-10	9.7 E-11	5.7 E-11	3.8 E-11	3.0 E-11
Promethium									
Pm-141	0.348 h	0.005	4.2 E-10	5.0 E-04	2.4 E-10	1.2 E-10	6.8 E-11	4.6 E-11	3.6 E-11
Pm-143	265 d	0.005	1.9 E-09	5.0 E-04	1.2 E-09	6.7 E-10	4.4 E-10	2.9 E-10	2.3 E-10
Pm-144	363 d	0.005	7.6 E-09	5.0 E-04	4.7 E-09	2.7 E-09	1.8 E-09	1.2 E-09	9.7 E-10
Pm-145	17.7 a	0.005	1.5 E-09	5.0 E-04	6.8 E-10	3.7 E-10	2.3 E-10	1.4 E-10	1.1 E-10
Pm-146	5.53 a	0.005	1.0 E-08	5.0 E-04	5.1 E-09	2.8 E-09	1.8 E-09	1.1 E-09	9.0 E-10
Pm-147	2.62 a	0.005	3.6 E-09	5.0 E-04	1.9 E-09	9.6 E-10	5.7 E-10	3.2 E-10	2.6 E-10
Pm-148	5.37 d	0.005	3.0 E-08	5.0 E-04	1.9 E-08	9.7 E-09	5.8 E-09	3.3 E-09	2.7 E-09
Pm-148m	41.3 d	0.005	1.5 E-08	5.0 E-04	1.0 E-08	5.5 E-09	3.5 E-09	2.2 E-09	1.7 E-09
Pm-149	2.21 d	0.005	1.2 E-08	5.0 E-04	7.4 E-09	3.7 E-09	2.2 E-09	1.2 E-09	9.9 E-10
Pm-150	2.68 h	0.005	2.8 E-09	5.0 E-04	1.7 E-09	8.7 E-10	5.2 E-10	3.2 E-10	2.6 E-10
Pm-151	1.18 d	0.005	8.0 E-09	5.0 E-04	5.1 E-09	2.6 E-09	1.6 E-09	9.1 E-10	7.3 E-10
Samarium									
Sm-141	0.170 h	0.005	4.5 E-10	5.0 E-04	2.5 E-10	1.3 E-10	7.3 E-11	5.0 E-11	3.9 E-11
Sm-141m	0.377 h	0.005	7.0 E-10	5.0 E-04	4.0 E-10	2.0 E-10	1.2 E-10	8.2 E-11	6.5 E-11
Sm-142	1.21 h	0.005	2.2 E-09	5.0 E-04	1.3 E-09	6.2 E-10	3.6 E-10	2.4 E-10	1.9 E-10
Sm-145	340 d	0.005	2.4 E-09	5.0 E-04	1.4 E-09	7.3 E-10	4.5 E-10	2.7 E-10	2.1 E-10

Sm-146	1.03 E+08 a	0.005	1.5 E-06	5.0 E-04	1.5 E-07	1.0 E-07	7.0 E-08	5.8 E-08	5.4 E-08
Sm-147	1.06 E+11 a	0.005	1.4 E-06	5.0 E-04	1.4 E-07	9.2 E-08	6.4 E-08	5.2 E-08	4.9 E-08
Sm-151	90.0 a	0.005	1.5 E-09	5.0 E-04	6.4 E-10	3.3 E-10	2.0 E-10	1.2 E-10	9.8 E-11
Sm-153	1.95 d	0.005	8.4 E-09	5.0 E-04	5.4 E-09	2.7 E-09	1.6 E-09	9.2 E-10	7.4 E-10
Sm-155	0.368 h	0.005	3.6 E-10	5.0 E-04	2.0 E-10	9.7 E-11	5.5 E-11	3.7 E-11	2.9 E-11
Sm-156	9.40 h	0.005	2.8 E-09	5.0 E-04	1.8 E-09	9.0 E-10	5.4 E-10	3.1 E-10	2.5 E-10
Europium									
Eu-145	5.94 d	0.005	5.1 E-09	5.0 E-04	3.7 E-09	2.1 E-09	1.4 E-09	9.4 E-10	7.5 E-10
Eu-146	4.61 d	0.005	8.5 E-09	5.0 E-04	6.2 E-09	3.6 E-09	2.4 E-09	1.6 E-09	1.3 E-09
Eu-147	24.0 d	0.005	3.7 E-09	5.0 E-04	2.5 E-09	1.4 E-09	8.9 E-10	5.6 E-10	4.4 E-10
Eu-148	54.5 d	0.005	8.5 E-09	5.0 E-04	6.0 E-09	3.5 E-09	2.4 E-09	1.6 E-09	1.3 E-09
Eu-149	93.1 d	0.005	9.7 E-10	5.0 E-04	6.3 E-10	3.4 E-10	2.1 E-10	1.3 E-10	1.0 E-10
Eu-150	34.2 a	0.005	1.3 E-08	5.0 E-04	5.7 E-09	3.4 E-09	2.3 E-09	1.5 E-09	1.3 E-09
Eu-150	12.6 h	0.005	4.4 E-09	5.0 E-04	2.8 E-09	1.4 E-09	8.2 E-10	4.7 E-10	3.8 E-10
Eu-152	13.3 a	0.005	1.6 E-08	5.0 E-04	7.4 E-09	4.1 E-09	2.6 E-09	1.7 E-09	1.4 E-09
Eu-152m	9.32 h	0.005	5.7 E-09	5.0 E-04	3.6 E-09	1.8 E-09	1.1 E-09	6.2 E-10	5.0 E-10
Eu-154	8.80 a	0.005	2.5 E-08	5.0 E-04	1.2 E-08	6.5 E-09	4.1 E-09	2.5 E-09	2.0 E-09
Eu-155	4.96 a	0.005	4.3 E-09	5.0 E-04	2.2 E-09	1.1 E-09	6.8 E-10	4.0 E-10	3.2 E-10
Eu-156	15.2 d	0.005	2.2 E-08	5.0 E-04	1.5 E-08	7.5 E-09	4.6 E-09	2.7 E-09	2.2 E-09
Eu-157	15.1 h	0.005	6.7 E-09	5.0 E-04	4.3 E-09	2.2 E-09	1.3 E-09	7.5 E-10	6.0 E-10
Eu-158	0.765 h	0.005	1.1 E-09	5.0 E-04	6.2 E-10	3.1 E-10	1.8 E-10	1.2 E-10	9.4 E-11
Gadolinium									
Gd-145	0.382 h	0.005	4.5 E-10	5.0 E-04	2.6 E-10	1.3 E-10	8.1 E-11	5.6 E-11	4.4 E-11
Gd-146	48.3 d	0.005	9.4 E-09	5.0 E-04	6.0 E-09	3.2 E-09	2.0 E-09	1.2 E-09	9.6 E-10
Gd-147	1.59 d	0.005	4.5 E-09	5.0 E-04	3.2 E-09	1.8 E-09	1.2 E-09	7.7 E-10	6.1 E-10
Gd-148	93.0 a	0.005	1.7 E-06	5.0 E-04	1.6 E-07	1.1 E-07	7.3 E-08	5.9 E-08	5.6 E-08
Gd-149	9.40 d	0.005	4.0 E-09	5.0 E-04	2.7 E-09	1.5 E-09	9.3 E-10	5.7 E-10	4.5 E-10
Gd-151	120 d	0.005	2.1 E-09	5.0 E-04	1.3 E-09	6.8 E-10	4.2 E-10	2.4 E-10	2.0 E-10
Gd-152	1.08 E+14 a	0.005	1.2 E-06	5.0 E-04	1.2 E-07	7.7 E-08	5.3 E-08	4.3 E-08	4.1 E-08
Gd-153	242 d	0.005	2.9 E-09	5.0 E-04	1.8 E-09	9.4 E-10	5.8 E-10	3.4 E-10	2.7 E-10
Gd-159	18.6 h	0.005	5.7 E-09	5.0 E-04	3.6 E-09	1.8 E-09	1.1 E-09	6.2 E-10	4.9 E-10

Terbium									
Tb-147	1.65 h	0.005	1.5 E-09	5.0 E-04	1.0 E-09	5.4 E-10	3.3 E-10	2.0 E-10	1.6 E-10
Tb-149	4.15 h	0.005	2.4 E-09	5.0 E-04	1.5 E-09	8.0 E-10	5.0 E-10	3.1 E-10	2.5 E-10
Tb-150	3.27 h	0.005	2.5 E-09	5.0 E-04	1.6 E-09	8.3 E-10	5.1 E-10	3.2 E-10	2.5 E-10
Tb-151	17.6 h	0.005	2.7 E-09	5.0 E-04	1.9 E-09	1.0 E-09	6.7 E-10	4.2 E-10	3.4 E-10
Tb-153	2.34 d	0.005	2.3 E-09	5.0 E-04	1.5 E-09	8.2 E-10	5.1 E-10	3.1 E-10	2.5 E-10
Tb-154	21.4 h	0.005	4.7 E-09	5.0 E-04	3.4 E-09	1.9 E-09	1.3 E-09	8.1 E-10	6.5 E-10
Tb-155	5.32 d	0.005	1.9 E-09	5.0 E-04	1.3 E-09	6.8 E-10	4.3 E-10	2.6 E-10	2.1 E-10
Tb-156	5.34 d	0.005	9.0 E-09	5.0 E-04	6.3 E-09	3.5 E-09	2.3 E-09	1.5 E-09	1.2 E-09
Tb-156m	1.02 d	0.005	1.5 E-09	5.0 E-04	1.0 E-09	5.6 E-10	3.5 E-10	2.2 E-10	1.7 E-10
Tb-156m	5.00 h	0.005	8.0 E-10	5.0 E-04	5.2 E-10	2.7 E-10	1.7 E-10	1.0 E-10	8.1 E-11
Tb-157	1.50 E+02 a	0.005	4.9 E-10	5.0 E-04	2.2 E-10	1.1 E-10	6.8 E-11	4.1 E-11	3.4 E-11
Tb-158	1.50 E+02 a	0.005	1.3 E-08	5.0 E-04	5.9 E-09	3.3 E-09	2.1 E-09	1.4 E-09	1.1 E-09
Tb-160	72.3 d	0.005	1.6 E-08	5.0 E-04	1.0 E-08	5.4 E-09	3.3 E-09	2.0 E-09	1.6 E-09
Tb-161	6.91 d	0.005	8.3 E-09	5.0 E-04	5.3 E-09	2.7 E-09	1.6 E-09	9.0 E-10	7.2 E-10
Dysprosium									
Dy-155	10.0 h	0.005	9.7 E-10	5.0 E-04	6.8 E-10	3.8 E-10	2.5 E-10	1.6 E-10	1.3 E-10
Dy-157	8.10 h	0.005	4.4 E-10	5.0 E-04	3.1 E-10	1.8 E-10	1.2 E-10	7.7 E-11	6.1 E-11
Dy-159	144 d	0.005	1.0 E-09	5.0 E-04	6.4 E-10	3.4 E-10	2.1 E-10	1.3 E-10	1.0 E-10
Dy-165	2.33 h	0.005	1.3 E-09	5.0 E-04	7.9 E-10	3.9 E-10	2.3 E-10	1.4 E-10	1.1 E-10
Dy-166	3.40 d	0.005	1.9 E-08	5.0 E-04	1.2 E-08	6.0 E-09	3.6 E-09	2.0 E-09	1.6 E-09
Holmium									
Ho-155	0.800 h	0.005	3.8 E-10	5.0 E-04	2.3 E-10	1.2 E-10	7.1 E-11	4.7 E-11	3.7 E-11
Ho-157	0.210 h	0.005	5.8 E-11	5.0 E-04	3.6 E-11	1.9 E-11	1.2 E-11	8.1 E-12	6.5 E-12
Ho-159	0.550 h	0.005	7.1 E-11	5.0 E-04	4.3 E-11	2.3 E-11	1.4 E-11	9.9 E-12	7.9 E-12
Ho-161	2.50 h	0.005	1.4 E-10	5.0 E-04	8.1 E-11	4.2 E-11	2.5 E-11	1.6 E-11	1.3 E-11
Ho-162	0.250 h	0.005	3.5 E-11	5.0 E-04	2.0 E-11	1.0 E-11	6.0 E-12	4.2 E-12	3.3 E-12

Ho-162m	1.13 h	0.005	2.4 E-10	5.0 E-04	1.5 E-10	7.9 E-11	4.9 E-11	3.3 E-11	2.6 E-11
Ho-164	0.483 h	0.005	1.2 E-10	5.0 E-04	6.5 E-11	3.2 E-11	1.8 E-11	1.2 E-11	9.5 E-12
Ho-164m	0.625 h	0.005	2.0 E-10	5.0 E-04	1.1 E-10	5.5 E-11	3.2 E-11	2.1 E-11	1.6 E-11
Ho-166	1.12 d	0.005	1.6 E-08	5.0 E-04	1.0 E-08	5.2 E-09	3.1 E-09	1.7 E-09	1.4 E-09
Ho-166m	1.20 E+03 a	0.005	2.6 E-08	5.0 E-04	9.3 E-09	5.3 E-09	3.5 E-09	2.4 E-09	2.0 E-09
Ho-167	3.10 h	0.005	8.8 E-10	5.0 E-04	5.5 E-10	2.8 E-10	1.7 E-10	1.0 E-10	8.3 E-11
Erbium									
Er-161	3.24 h	0.005	6.5 E-10	5.0 E-04	4.4 E-10	2.4 E-10	1.6 E-10	1.0 E-10	8.0 E-11
Er-165	10.4 h	0.005	1.7 E-10	5.0 E-04	1.1 E-10	6.2 E-11	3.9 E-11	2.4 E-11	1.9 E-11
Er-169	9.30 d	0.005	4.4 E-09	5.0 E-04	2.8 E-09	1.4 E-09	8.2 E-10	4.7 E-10	3.7 E-10
Er-171	7.52 h	0.005	4.0 E-09	5.0 E-04	2.5 E-09	1.3 E-09	7.6 E-10	4.5 E-10	3.6 E-10
Er-172	2.05 d	0.005	1.0 E-08	5.0 E-04	6.8 E-09	3.5 E-09	2.1 E-09	1.3 E-09	1.0 E-09
Thulium									
Tm-162	0.362 h	0.005	2.9 E-10	5.0 E-04	1.7 E-10	8.7 E-11	5.2 E-11	3.6 E-11	2.9 E-11
Tm-166	7.70 h	0.005	2.1 E-09	5.0 E-04	1.5 E-09	8.3 E-10	5.5 E-10	3.5 E-10	2.8 E-10
Tm-167	9.24 d	0.005	6.0 E-09	5.0 E-04	3.9 E-09	2.0 E-09	1.2 E-09	7.0 E-10	5.6 E-10
Tm-170	129 d	0.005	1.6 E-08	5.0 E-04	9.8 E-09	4.9 E-09	2.9 E-09	1.6 E-09	1.3 E-09
Tm-171	1.92 a	0.005	1.5 E-09	5.0 E-04	7.8 E-10	3.9 E-10	2.3 E-10	1.3 E-10	1.1 E-10
Tm-172	2.65 d	0.005	1.9 E-08	5.0 E-04	1.2 E-08	6.1 E-09	3.7 E-09	2.1 E-09	1.7 E-09
Tm-173	8.24 h	0.005	3.3 E-09	5.0 E-04	2.1 E-09	1.1 E-09	6.5 E-10	3.8 E-10	3.1 E-10
Tm-175	0.253 h	0.005	3.1 E-10	5.0 E-04	1.7 E-10	8.6 E-11	5.0 E-11	3.4 E-11	2.7 E-11
Ytterbium									
Yb-162	0.315 h	0.005	2.2 E-10	5.0 E-04	1.3 E-10	6.9 E-11	4.2 E-11	2.9 E-11	2.3 E-11
Yb-166	2.36 d	0.005	7.7 E-09	5.0 E-04	5.4 E-09	2.9 E-09	1.9 E-09	1.2 E-09	9.5 E-10
Yb-167	0.292 h	0.005	7.0 E-11	5.0 E-04	4.1 E-11	2.1 E-11	1.2 E-11	8.4 E-12	6.7 E-12
Yb-169	32.0 d	0.005	7.1 E-09	5.0 E-04	4.6 E-09	2.4 E-09	1.5 E-09	8.8 E-10	7.1 E-10
Yb-175	4.19 d	0.005	5.0 E-09	5.0 E-04	3.2 E-09	1.6 E-09	9.5 E-10	5.4 E-10	4.4 E-10
Yb-177	1.90 h	0.005	1.0 E-09	5.0 E-04	6.8 E-10	3.4 E-10	2.0 E-10	1.1 E-10	8.8 E-11
Yb-178	1.23 h	0.005	1.4 E-09	5.0 E-04	8.4 E-10	4.2 E-10	2.4 E-10	1.5 E-10	1.2 E-10
Lutetium									
Lu-169	1.42 d	0.005	3.5 E-09	5.0 E-04	2.4 E-09	1.4 E-09	8.9 E-10	5.7 E-10	4.6 E-10
Lu-170	2.00 d	0.005	7.4 E-09	5.0 E-04	5.2 E-09	2.9 E-09	1.9 E-09	1.2 E-09	9.9 E-10
Lu-171	8.22 d	0.005	5.9 E-09	5.0 E-04	4.0 E-09	2.2 E-09	1.4 E-09	8.5 E-10	6.7 E-10
Lu-172	6.70 d	0.005	1.0 E-08	5.0 E-04	7.0 E-09	3.9 E-09	2.5 E-09	1.6 E-09	1.3 E-09
Lu-173	1.37 a	0.005	2.7 E-09	5.0 E-04	1.6 E-09	8.6 E-10	5.3 E-10	3.2 E-10	2.6 E-10
Lu-174	3.31 a	0.005	3.2 E-09	5.0 E-04	1.7 E-09	9.1 E-10	5.6 E-10	3.3 E-10	2.7 E-10
Lu-174m	142 d	0.005	6.2 E-09	5.0 E-04	3.8 E-09	1.9 E-09	1.1 E-09	6.6 E-10	5.3 E-10
Lu-176	3.60 E+10 a	0.005	2.4 E-08	5.0 E-04	1.1 E-08	5.7 E-09	3.5 E-09	2.2 E-09	1.8 E-09
Lu-176m	3.68 h	0.005	2.0 E-09	5.0 E-04	1.2 E-09	6.0 E-10	3.5 E-10	2.1 E-10	1.7 E-10
Lu-177	6.71 d	0.005	6.1 E-09	5.0 E-04	3.9 E-09	2.0 E-09	1.2 E-09	6.6 E-10	5.3 E-10
Lu-177m	161 d	0.005	1.7 E-08	5.0 E-04	1.1 E-08	5.8 E-09	3.6 E-09	2.1 E-09	1.7 E-09
Lu-178	0.473 h	0.005	5.9 E-10	5.0 E-04	3.3 E-10	1.6 E-10	9.0 E-11	6.1 E-11	4.7 E-11
Lu-178m	0.378 h	0.005	4.3 E-10	5.0 E-04	2.4 E-10	1.2 E-10	7.1 E-11	4.9 E-11	3.8 E-11
Lu-179	4.59 h	0.005	2.4 E-09	5.0 E-04	1.5 E-09	7.5 E-10	4.4 E-10	2.6 E-10	2.1 E-10
Hafnium									
Hf-170	16.0 h	0.020	3.9 E-09	0.002	2.7 E-09	1.5 E-09	9.5 E-10	6.0 E-10	4.8 E-10
Hf-172	1.87 a	0.020	1.9 E-08	0.002	6.1 E-09	3.3 E-09	2.0 E-09	1.3 E-09	1.0 E-09
Hf-173	24.0 h	0.020	1.9 E-09	0.002	1.3 E-09	7.2 E-10	4.6 E-10	2.8 E-10	2.3 E-10
Hf-175	70.0 d	0.020	3.8 E-09	0.002	2.4 E-09	1.3 E-09	8.4 E-10	5.2 E-10	4.1 E-10
Hf-177m	0.856 h	0.020	7.8 E-10	0.002	4.7 E-10	2.5 E-10	1.5 E-10	1.0 E-10	8.1 E-11
Hf-178m	31.0 a	0.020	7.0 E-08	0.002	1.9 E-08	1.1 E-08	7.8 E-09	5.5 E-09	4.7 E-09
Hf-179m	25.1 d	0.020	1.2 E-08	0.002	7.8 E-09	4.1 E-09	2.6 E-09	1.6 E-09	1.2 E-09
Hf-180m	5.50 h	0.020	1.4 E-09	0.002	9.7 E-10	5.3 E-10	3.3 E-10	2.1 E-10	1.7 E-10
Hf-181	42.4 d	0.020	1.2 E-08	0.002	7.4 E-09	3.8 E-09	2.3 E-09	1.4 E-09	1.1 E-09
Hf-182	9.00 E+06 a	0.020	5.6 E-08	0.002	7.9 E-09	5.4 E-09	4.0 E-09	3.3 E-09	3.0 E-09
Hf-182m	1.02 h	0.020	4.1 E-10	0.002	2.5 E-10	1.3 E-10	7.8 E-11	5.2 E-11	4.2 E-11
Hf-183	1.07 h	0.020	8.1 E-10	0.002	4.8 E-10	2.4 E-10	1.4 E-10	9.3 E-11	7.3 E-11
Hf-184	4.12 h	0.020	5.5 E-09	0.002	3.6 E-09	1.8 E-09	1.1 E-09	6.6 E-10	5.2 E-10

Tantalum									
Ta-172	0.613 h	0.010	5.5 E-10	0.001	3.2 E-10	1.6 E-10	9.8 E-11	6.6 E-11	5.3 E-11
Ta-173	3.65 h	0.010	2.0 E-09	0.001	1.3 E-09	6.5 E-10	3.9 E-10	2.4 E-10	1.9 E-10
Ta-174	1.20 h	0.010	6.2 E-10	0.001	3.7 E-10	1.9 E-10	1.1 E-10	7.2 E-11	5.7 E-11
Ta-175	10.5 h	0.010	1.6 E-09	0.001	1.1 E-09	6.2 E-10	4.0 E-10	2.6 E-10	2.1 E-10
Ta-176	8.08 h	0.010	2.4 E-09	0.001	1.7 E-09	9.2 E-10	6.1 E-10	3.9 E-10	3.1 E-10
Ta-177	2.36 d	0.010	1.0 E-09	0.001	6.9 E-10	3.6 E-10	2.2 E-10	1.3 E-10	1.1 E-10
Ta-178	2.20 h	0.010	6.3 E-10	0.001	4.5 E-10	2.4 E-10	1.5 E-10	9.1 E-11	7.2 E-11
Ta-179	1.82 a	0.010	6.2 E-10	0.001	4.1 E-10	2.2 E-10	1.3 E-10	8.1 E-11	6.5 E-11
Ta-180	1.00 E+13 a	0.010	8.1 E-09	0.001	5.3 E-09	2.8 E-09	1.7 E-09	1.1 E-09	8.4 E-10
Ta-180m	8.10 h	0.010	5.8 E-10	0.001	3.7 E-10	1.9 E-10	1.1 E-10	6.7 E-11	5.4 E-11
Ta-182	115 d	0.010	1.4 E-08	0.001	9.4 E-09	5.0 E-09	3.1 E-09	1.9 E-09	1.5 E-09
Ta-182m	0.264 h	0.010	1.4 E-10	0.001	7.5 E-11	3.7 E-11	2.1 E-11	1.5 E-11	1.2 E-11
Ta-183	5.10 d	0.010	1.4 E-08	0.001	9.3 E-09	4.7 E-09	2.8 E-09	1.6 E-09	1.3 E-09
Ta-184	8.70 h	0.010	6.7 E-09	0.001	4.4 E-09	2.3 E-09	1.4 E-09	8.5 E-10	6.8 E-10
Ta-185	0.816 h	0.010	8.3 E-10	0.001	4.6 E-10	2.3 E-10	1.3 E-10	8.6 E-11	6.8 E-11
Ta-186	0.175 h	0.010	3.8 E-10	0.001	2.1 E-10	1.1 E-10	6.1 E-11	4.2 E-11	3.3 E-11
Tungsten									
W-176	2.30 h	0.600	6.8 E-10	0.300	5.5 E-10	3.0 E-10	2.0 E-10	1.3 E-10	1.0 E-10
W-177	2.25 h	0.600	4.4 E-10	0.300	3.2 E-10	1.7 E-10	1.1 E-10	7.2 E-11	5.8 E-11
W-178	21.7 d	0.600	1.8 E-09	0.300	1.4 E-09	7.3 E-10	4.5 E-10	2.7 E-10	2.2 E-10
W-179	0.625 h	0.600	3.4 E-11	0.300	2.0 E-11	1.0 E-11	6.2 E-12	4.2 E-12	3.3 E-12
W-181	121 d	0.600	6.3 E-10	0.300	4.7 E-10	2.5 E-10	1.6 E-10	9.5 E-11	7.6 E-11
W-185	75.1 d	0.600	4.4 E-09	0.300	3.3 E-09	1.6 E-09	9.7 E-10	5.5 E-10	4.4 E-10
W-187	23.9 h	0.600	5.5 E-09	0.300	4.3 E-09	2.2 E-09	1.3 E-09	7.8 E-10	6.3 E-10
W-188	69.4 d	0.600	2.1 E-08	0.300	1.5 E-08	7.7 E-09	4.6 E-09	2.6 E-09	2.1 E-09
Rhenium									
Re-177	0.233 h	1.000	2.5 E-10	0.800	1.4 E-10	7.2 E-11	4.1 E-11	2.8 E-11	2.2 E-11
Re-178	0.220 h	1.000	2.9 E-10	0.800	1.6 E-10	7.9 E-11	4.6 E-11	3.1 E-11	2.5 E-11
Re-181	20.0 h	1.000	4.2 E-09	0.800	2.8 E-09	1.4 E-09	8.2 E-10	5.4 E-10	4.2 E-10
Re-182	2.67 d	1.000	1.4 E-08	0.800	8.9 E-09	4.7 E-09	2.8 E-09	1.8 E-09	1.4 E-09
Re-182	12.7 h	1.000	2.4 E-09	0.800	1.7 E-09	8.9 E-10	5.2 E-10	3.5 E-10	2.7 E-10
Re-184	38.0 d	1.000	8.9 E-09	0.800	5.6 E-09	3.0 E-09	1.8 E-09	1.3 E-09	1.0 E-09
Re-184m	165 d	1.000	1.7 E-08	0.800	9.8 E-09	4.9 E-09	2.8 E-09	1.9 E-09	1.5 E-09
Re-186	3.78 d	1.000	1.9 E-08	0.800	1.1 E-08	5.5 E-09	3.0 E-09	1.9 E-09	1.5 E-09
Re-186m	2.00 E+05 a	1.000	3.0 E-08	0.800	1.6 E-08	7.6 E-09	4.4 E-09	2.8 E-09	2.2 E-09
Re-187	5.00 E+10 a	1.000	6.8 E-11	0.800	3.8 E-11	1.8 E-11	1.0 E-11	6.6 E-12	5.1 E-12
Re-188	17.0 h	1.000	1.7 E-08	0.800	1.1 E-08	5.4 E-09	2.9 E-09	1.8 E-09	1.4 E-09
Re-188m	0.310 h	1.000	3.8 E-10	0.800	2.3 E-10	1.1 E-10	6.1 E-11	4.0 E-11	3.0 E-11
Re-189	1.01 d	1.000	9.8 E-09	0.800	6.2 E-09	3.0 E-09	1.6 E-09	1.0 E-09	7.8 E-10
Osmium									
Os-180	0.366 h	0.020	1.6 E-10	0.010	9.8 E-11	5.1 E-11	3.2 E-11	2.2 E-11	1.7 E-11
Os-181	1.75 h	0.020	7.6 E-10	0.010	5.0 E-10	2.7 E-10	1.7 E-10	1.1 E-10	8.9 E-11
Os-182	22.0 h	0.020	4.6 E-09	0.010	3.2 E-09	1.7 E-09	1.1 E-09	7.0 E-10	5.6 E-10
Os-185	94.0 d	0.020	3.8 E-09	0.010	2.6 E-09	1.5 E-09	9.8 E-10	6.5 E-10	5.1 E-10
Os-189m	6.00 h	0.020	2.1 E-10	0.010	1.3 E-10	6.5 E-11	3.8 E-11	2.2 E-11	1.8 E-11
Os-191	15.4 d	0.020	6.3 E-09	0.010	4.1 E-09	2.1 E-09	1.2 E-09	7.0 E-10	5.7 E-10
Os-191m	13.0 h	0.020	1.1 E-09	0.010	7.1 E-10	3.5 E-10	2.1 E-10	1.2 E-10	9.6 E-11
Os-193	1.25 d	0.020	9.3 E-09	0.010	6.0 E-09	3.0 E-09	1.8 E-09	1.0 E-09	8.1 E-10
Os-194	6.00 a	0.020	2.9 E-08	0.010	1.7 E-08	8.8 E-09	5.2 E-09	3.0 E-09	2.4 E-09
Iridium									
Ir-182	0.250 h	0.020	5.3 E-10	0.010	3.0 E-10	1.5 E-10	8.9 E-11	6.0 E-11	4.8 E-11
Ir-184	3.02 h	0.020	1.5 E-09	0.010	9.7 E-10	5.2 E-10	3.3 E-10	2.1 E-10	1.7 E-10
Ir-185	14.0 h	0.020	2.4 E-09	0.010	1.6 E-09	8.6 E-10	5.3 E-10	3.3 E-10	2.6 E-10
Ir-186	15.8 h	0.020	3.8 E-09	0.010	2.7 E-09	1.5 E-09	9.6 E-10	6.1 E-10	4.9 E-10
Ir-186	1.75 h	0.020	5.8 E-10	0.010	3.6 E-10	2.1 E-10	1.3 E-10	7.7 E-11	6.1 E-11
Ir-187	10.5 h	0.020	1.1 E-09	0.010	7.3 E-10	3.9 E-10	2.5 E-10	1.5 E-10	1.2 E-10
Ir-188	1.73 d	0.020	4.6 E-09	0.010	3.3 E-09	1.8 E-09	1.2 E-09	7.9 E-10	6.3 E-10

Ir-189	13.3 d	0.020	2.5 E-09	0.010	1.7 E-09	8.6 E-10	5.2 E-10	3.0 E-10	2.4 E-10
Ir-190	12.1 d	0.020	1.0 E-08	0.010	7.1 E-09	3.9 E-09	2.5 E-09	1.6 E-09	1.2 E-09
Ir-190m	3.10 h	0.020	9.4 E-10	0.010	6.4 E-10	3.5 E-10	2.3 E-10	1.5 E-10	1.2 E-10
Ir-190m	1.20 h	0.020	7.9 E-11	0.010	5.0 E-11	2.6 E-11	1.6 E-11	1.0 E-11	8.0 E-12
Ir-192	74.0 d	0.020	1.3 E-08	0.010	8.7 E-09	4.6 E-09	2.8 E-09	1.7 E-09	1.4 E-09
Ir-192m	2.41 E+02 a	0.020	2.8 E-09	0.010	1.4 E-09	8.3 E-10	5.5 E-10	3.7 E-10	3.1 E-10
Ir-193m	11.9 d	0.020	3.2 E-09	0.010	2.0 E-09	1.0 E-09	6.0 E-10	3.4 E-10	2.7 E-10
Ir-194	19.1 h	0.020	1.5 E-08	0.010	9.8 E-09	4.9 E-09	2.9 E-09	1.7 E-09	1.3 E-09
Ir-194m	171 d	0.020	1.7 E-08	0.010	1.1 E-08	6.4 E-09	4.1 E-09	2.6 E-09	2.1 E-09
Ir-195	2.50 h	0.020	1.2 E-09	0.010	7.3 E-10	3.6 E-10	2.1 E-10	1.3 E-10	1.0 E-10
Ir-195m	3.80 h	0.020	2.3 E-09	0.010	1.5 E-09	7.3 E-10	4.3 E-10	2.6 E-10	2.1 E-10
Platinum									
Pt-186	2.00 h	0.020	7.8 E-10	0.010	5.3 E-10	2.9 E-10	1.8 E-10	1.2 E-10	9.3 E-11
Pt-188	10.2 d	0.020	6.7 E-09	0.010	4.5 E-09	2.4 E-09	1.5 E-09	9.5 E-10	7.6 E-10
Pt-189	10.9 h	0.020	1.1 E-09	0.010	7.4 E-10	3.9 E-10	2.5 E-10	1.5 E-10	1.2 E-10
Pt-191	2.80 d	0.020	3.1 E-09	0.010	2.1 E-09	1.1 E-09	6.9 E-10	4.2 E-10	3.4 E-10
Pt-193	50.0 a	0.020	3.7 E-10	0.010	2.4 E-10	1.2 E-10	6.9 E-11	3.9 E-11	3.1 E-11
Pt-193m	4.33 d	0.020	5.2 E-09	0.010	3.4 E-09	1.7 E-09	9.9 E-10	5.6 E-10	4.5 E-10
Pt-195m	4.02 d	0.020	7.1 E-09	0.010	4.6 E-09	2.3 E-09	1.4 E-09	7.9 E-10	6.3 E-10
Pt-197	18.3 h	0.020	4.7 E-09	0.010	3.0 E-09	1.5 E-09	8.8 E-10	5.1 E-10	4.0 E-10
Pt-197m	1.57 h	0.020	1.0 E-09	0.010	6.1 E-10	3.0 E-10	1.8 E-10	1.1 E-10	8.4 E-11
Pt-199	0.513 h	0.020	4.7 E-10	0.010	2.7 E-10	1.3 E-10	7.5 E-11	5.0 E-11	3.9 E-11
Pt-200	12.5 h	0.020	1.4 E-08	0.010	8.8 E-09	4.4 E-09	2.6 E-09	1.5 E-09	1.2 E-09
Gold									
Au-193	17.6 h	0.200	1.2 E-09	0.100	8.8 E-10	4.6 E-10	2.8 E-10	1.7 E-10	1.3 E-10
Au-194	1.65 d	0.200	2.9 E-09	0.100	2.2 E-09	1.2 E-09	8.1 E-10	5.3 E-10	4.2 E-10
Au-195	183 d	0.200	2.4 E-09	0.100	1.7 E-09	8.9 E-10	5.4 E-10	3.2 E-10	2.5 E-10
Au-198	2.69 d	0.200	1.0 E-08	0.100	7.2 E-09	3.7 E-09	2.2 E-09	1.3 E-09	1.0 E-09
Au-198m	2.30 d	0.200	1.2 E-08	0.100	8.5 E-09	4.4 E-09	2.7 E-09	1.6 E-09	1.3 E-09
Au-199	3.14 d	0.200	4.5 E-09	0.100	3.1 E-09	1.6 E-09	9.5 E-10	5.5 E-10	4.4 E-10
Au-200	0.807 h	0.200	8.3 E-10	0.100	4.7 E-10	2.3 E-10	1.3 E-10	8.7 E-11	6.8 E-11
Au-200m	18.7 h	0.200	9.2 E-09	0.100	6.6 E-09	3.5 E-09	2.2 E-09	1.3 E-09	1.1 E-09
Au-201	0.440 h	0.200	3.1 E-10	0.100	1.7 E-10	8.2 E-11	4.6 E-11	3.1 E-11	2.4 E-11
Mercury									
Hg-193	3.50 h	1.000	3.3 E-10	1.000	1.9 E-10	9.8 E-11	5.8 E-11	3.9 E-11	3.1 E-11
(organic)		0.800	4.7 E-10	0.400	4.4 E-10	2.2 E-10	1.4 E-10	8.3 E-11	6.6 E-11
Hg-193	3.50 h	0.040	8.5 E-10	0.020	5.5 E-10	2.8 E-10	1.7 E-10	1.0 E-10	8.2 E-11
(anorganic)									
Hg-193m	11.1 h	1.000	1.1 E-09	1.000	6.8 E-10	3.7 E-10	2.3 E-10	1.5 E-10	1.3 E-10
(organic)		0.800	1.6 E-09	0.400	1.8 E-09	9.5 E-10	6.0 E-10	3.7 E-10	3.0 E-10
Hg-193m	11.1 h	0.040	3.6 E-09	0.020	2.4 E-09	1.3 E-09	8.1 E-10	5.0 E-10	4.0 E-10
(anorganic)									
Hg-194	2.60 E+02 a	1.000	1.3 E-07	1.000	1.2 E-07	8.4 E-08	6.6 E-08	5.5 E-08	5.1 E-08
(organic)		0.800	1.1 E-07	0.400	4.8 E-08	3.5 E-08	2.7 E-08	2.3 E-08	2.1 E-08
Hg-194	2.60 E+02 a	0.040	7.2 E-09	0.020	3.6 E-09	2.6 E-09	1.9 E-09	1.5 E-09	1.4 E-09
(anorganic)									
Hg-195	9.90 h	1.000	3.0 E-10	1.000	2.0 E-10	1.0 E-10	6.4 E-11	4.2 E-11	3.4 E-11
(organic)		0.800	4.6 E-10	0.400	4.8 E-10	2.5 E-10	1.5 E-10	9.3 E-11	7.5 E-11
Hg-195	9.90 h	0.040	9.5 E-10	0.020	6.3 E-10	3.3 E-10	2.0 E-10	1.2 E-10	9.7 E-11
(anorganic)									
Hg-195m	1.73 d	1.000	2.1 E-09	1.000	1.3 E-09	6.8 E-10	4.2 E-10	2.7 E-10	2.2 E-10
(organic)		0.800	2.6 E-09	0.400	2.8 E-09	1.4 E-09	8.7 E-10	5.1 E-10	4.1 E-10
Hg-195m	1.73 d	0.040	5.8 E-09	0.020	3.8 E-09	2.0 E-09	1.2 E-09	7.0 E-10	5.6 E-10
(anorganic)									
Hg-197	2.67 d	1.000	9.7 E-10	1.000	6.2 E-10	3.1 E-10	1.9 E-10	1.2 E-10	9.9 E-11
(organic)		0.800	1.3 E-09	0.400	1.2 E-09	6.1 E-10	3.7 E-10	2.2 E-10	1.7 E-10
Hg-197	2.67 d	0.040	2.5 E-09	0.020	1.6 E-09	8.3 E-10	5.0 E-10	2.9 E-10	2.3 E-10
(anorganic)									
Hg-197m	23.8 h	1.000	1.5 E-09	1.000	9.5 E-10	4.8 E-10	2.9 E-10	1.8 E-10	1.5 E-10

(organic)		0.800	2.2 E-09	0.400	2.5 E-09	1.2 E-09	7.3 E-10	4.2 E-10	3.4 E-10
Hg-197m	23.8 h	0.040	5.2 E-09	0.020	3.4 E-09	1.7 E-09	1.0 E-09	5.9 E-10	4.7 E-10
(anorganic)									
Hg-199m	0.710 h	1.000	3.4 E-10	1.000	1.9 E-10	9.3 E-11	5.3 E-11	3.6 E-11	2.8 E-11
(organic)		0.800	3.6 E-10	0.400	2.1 E-10	1.0 E-10	5.8 E-11	3.9 E-11	3.1 E-11
Hg-199m	0.710 h	0.040	3.7 E-10	0.020	2.1 E-10	1.0 E-10	5.9 E-11	3.9 E-11	3.1 E-11
(anorganic)									
Hg-203	46.6 d	1.000	1.5 E-08	1.000	1.1 E-08	5.7 E-09	3.6 E-09	2.3 E-09	1.9 E-09
(organic)		0.800	1.3 E-08	0.400	6.4 E-09	3.4 E-09	2.1 E-09	1.3 E-09	1.1 E-09
Hg-203	46.6 d	0.040	5.5 E-09	0.020	3.6 E-09	1.8 E-09	1.1 E-09	6.7 E-10	5.4 E-10
(anorganic)									
Thallium									
Tl-194	0.550 h	1.000	6.1 E-11	1.000	3.9 E-11	2.2 E-11	1.4 E-11	1.0 E-11	8.1 E-12
Tl-194m	0.546 h	1.000	3.8 E-10	1.000	2.2 E-10	1.2 E-10	7.0 E-11	4.9 E-11	4.0 E-11
Tl-195	1.16 h	1.000	2.3 E-10	1.000	1.4 E-10	7.5 E-11	4.7 E-11	3.3 E-11	2.7 E-11
Tl-197	2.84 h	1.000	2.1 E-10	1.000	1.3 E-10	6.7 E-11	4.2 E-11	2.8 E-11	2.3 E-11
Tl-198	5.30 h	1.000	4.7 E-10	1.000	3.3 E-10	1.9 E-10	1.2 E-10	8.7 E-11	7.3 E-11
Tl-198m	1.87 h	1.000	4.8 E-10	1.000	3.0 E-10	1.6 E-10	9.7 E-11	6.7 E-11	5.4 E-11
Tl-199	7.42 h	1.000	2.3 E-10	1.000	1.5 E-10	7.7 E-11	4.8 E-11	3.2 E-11	2.6 E-11
Tl-200	1.09 d	1.000	1.3 E-09	1.000	9.1 E-10	5.3 E-10	3.5 E-10	2.4 E-10	2.0 E-10
Tl-201	3.04 d	1.000	8.4 E-10	1.000	5.5 E-10	2.9 E-10	1.8 E-10	1.2 E-10	9.5 E-11
Tl-202	12.2 d	1.000	2.9 E-09	1.000	2.1 E-09	1.2 E-09	7.9 E-10	5.4 E-10	4.5 E-10
Tl-204	3.78 a	1.000	1.3 E-08	1.000	8.5 E-09	4.2 E-09	2.5 E-09	1.5 E-09	1.2 E-09
Lead (*)									
Pb-195m	0.263 h	0.600	2.6 E-10	0.200	1.6 E-10	8.4 E-11	5.2 E-11	3.5 E-11	2.9 E-11
Pb-198	2.40 h	0.600	5.9 E-10	0.200	4.8 E-10	2.7 E-10	1.7 E-10	1.1 E-10	1.0 E-10
Pb-199	1.50 h	0.600	3.5 E-10	0.200	2.6 E-10	1.5 E-10	9.4 E-11	6.3 E-11	5.4 E-11
Pb-200	21.5 h	0.600	2.5 E-09	0.200	2.0 E-09	1.1 E-09	7.0 E-10	4.4 E-10	4.0 E-10
Pb-201	9.40 h	0.600	9.4 E-10	0.200	7.8 E-10	4.3 E-10	2.7 E-10	1.8 E-10	1.6 E-10
Pb-202	3.00 E+05 a	0.600	3.4 E-08	0.200	1.6 E-08	1.3 E-08	1.9 E-08	2.7 E-08	8.8 E-09
Pb-202m	3.62 h	0.600	7.6 E-10	0.200	6.1 E-10	3.5 E-10	2.3 E-10	1.5 E-10	1.3 E-10
Pb-203	2.17 d	0.600	1.6 E-09	0.200	1.3 E-09	6.8 E-10	4.3 E-10	2.7 E-10	2.4 E-10
Pb-205	1.43 E+07 a	0.600	2.1 E-09	0.200	9.9 E-10	6.2 E-10	6.1 E-10	6.5 E-10	2.8 E-10
Pb-209	3.25 h	0.600	5.7 E-10	0.200	3.8 E-10	1.9 E-10	1.1 E-10	6.6 E-11	5.7 E-11
Pb-210	22.3 a	0.600	8.4 E-06	0.200	3.6 E-06	2.2 E-06	1.9 E-06	1.9 E-06	6.9 E-07
Pb-211	0.601 h	0.600	3.1 E-09	0.200	1.4 E-09	7.1 E-10	4.1 E-10	2.7 E-10	1.8 E-10
Pb-212	10.6 h	0.600	1.5 E-07	0.200	6.3 E-08	3.3 E-08	2.0 E-08	1.3 E-08	6.0 E-09
Pb-214	0.447 h	0.600	2.7 E-09	0.200	1.0 E-09	5.2 E-10	3.1 E-10	2.0 E-10	1.4 E-10
Bismuth									
Bi-200	0.606 h	0.100	4.2 E-10	0.050	2.7 E-10	1.5 E-10	9.5 E-11	6.4 E-11	5.1 E-11
Bi-201	1.80 h	0.100	1.0 E-09	0.050	6.7 E-10	3.6 E-10	2.2 E-10	1.4 E-10	1.2 E-10
Bi-202	1.67 h	0.100	6.4 E-10	0.050	4.4 E-10	2.5 E-10	1.6 E-10	1.1 E-10	8.9 E-11
Bi-203	11.8 h	0.100	3.5 E-09	0.050	2.5 E-09	1.4 E-09	9.3 E-10	6.0 E-10	4.8 E-10
Bi-205	15.3 d	0.100	6.1 E-09	0.050	4.5 E-09	2.6 E-09	1.7 E-09	1.1 E-09	9.0 E-10
Bi-206	6.24 d	0.100	1.4 E-08	0.050	1.0 E-08	5.7 E-09	3.7 E-09	2.4 E-09	1.9 E-09
Bi-207	38.0 a	0.100	1.0 E-08	0.050	7.1 E-09	3.9 E-09	2.5 E-09	1.6 E-09	1.3 E-09
Bi-210	5.01 d	0.100	1.5 E-08	0.050	9.7 E-09	4.8 E-09	2.9 E-09	1.6 E-09	1.3 E-09
Bi-210m	3.00 E+06 a	0.100	2.1 E-07	0.050	9.1 E-08	4.7 E-08	3.0 E-08	1.9 E-08	1.5 E-08
Bi-212	1.01 h	0.100	3.2 E-09	0.050	1.8 E-09	8.7 E-10	5.0 E-10	3.3 E-10	2.6 E-10
Bi-213	0.761 h	0.100	2.5 E-09	0.050	1.4 E-09	6.7 E-10	3.9 E-10	2.5 E-10	2.0 E-10
Bi-214	0.332 h	0.100	1.4 E-09	0.050	7.4 E-10	3.6 E-10	2.1 E-10	1.4 E-10	1.1 E-10
Polonium									
Po-203	0.612 h	1.000	2.9 E-10	0.500	2.4 E-10	1.3 E-10	8.5 E-11	5.8 E-11	4.6 E-11
Po-205	1.80 h	1.000	3.5 E-10	0.500	2.8 E-10	1.6 E-10	1.1 E-10	7.2 E-11	5.8 E-11
Po-207	5.83 h	1.000	4.4 E-10	0.500	5.7 E-10	3.2 E-10	2.1 E-10	1.4 E-10	1.1 E-10
Po-210	138 d	1.000	2.6 E-05	0.500	8.8 E-06	4.4 E-06	2.6 E-06	1.6 E-06	1.2 E-06
Astatine									
At-207	1.80 h	1.000	2.5 E-09	1.000	1.6 E-09	8.0 E-10	4.8 E-10	2.9 E-10	2.4 E-10

At-211	7.21 h	1.000	1.2 E-07	1.000	7.8 E-08	3.8 E-08	2.3 E-08	1.3 E-08	1.1 E-08
Francium									
Fr-222	0.240 h	1.000	6.2 E-09	1.000	3.9 E-09	2.0 E-09	1.3 E-09	8.5 E-10	7.2 E-10
Fr-223	0.363 h	1.000	2.6 E-08	1.000	1.7 E-08	8.3 E-09	5.0 E-09	2.9 E-09	2.4 E-09
Radium (*)									
Ra-223	11.4 d	0.600	5.3 E-06	0.200	1.1 E-06	5.7 E-07	4.5 E-07	3.7 E-07	1.0 E-07
Ra-224	3.66 d	0.600	2.7 E-06	0.200	6.6 E-07	3.5 E-07	2.6 E-07	2.0 E-07	6.5 E-08
Ra-225	14.8 d	0.600	7.1 E-06	0.200	1.2 E-06	6.1 E-07	5.0 E-07	4.4 E-07	9.9 E-08
Ra-226	1.60 E+03 a	0.600	4.7 E-06	0.200	9.6 E-07	6.2 E-07	8.0 E-07	1.5 E-06	2.8 E-07
Ra-227	0.703 h	0.600	1.1 E-09	0.200	4.3 E-10	2.5 E-10	1.7 E-10	1.3 E-10	8.1 E-11
Ra-228	5.75 a	0.600	3.0 E-05	0.200	5.7 E-06	3.4 E-06	3.9 E-06	5.3 E-06	6.9 E-07
Actinium									
Ac-224	2.90 h	0.005	1.0 E-08	5.0 E-04	5.2 E-09	2.6 E-09	1.5 E-09	8.8 E-10	7.0 E-10
Ac-225	10.0 d	0.005	4.6 E-07	5.0 E-04	1.8 E-07	9.1 E-08	5.4 E-08	3.0 E-08	2.4 E-08
Ac-226	1.21 d	0.005	1.4 E-07	5.0 E-04	7.6 E-08	3.8 E-08	2.3 E-08	1.3 E-08	1.0 E-08
Ac-227	21.8 a	0.005	3.3 E-05	5.0 E-04	3.1 E-06	2.2 E-06	1.5 E-06	1.2 E-06	1.1 E-06
Ac-228	6.13 h	0.005	7.4 E-09	5.0 E-04	2.8 E-09	1.4 E-09	8.7 E-10	5.3 E-10	4.3 E-10
Thorium									
Th-226	0.515 h	0.005	4.4 E-09	5.0 E-04	2.4 E-09	1.2 E-09	6.7 E-10	4.5 E-10	3.5 E-10
Th-227	18.7 d	0.005	3.0 E-07	5.0 E-04	7.0 E-08	3.6 E-08	2.3 E-08	1.5 E-08	8.8 E-09
Th-228	1.91 a	0.005	3.7 E-06	5.0 E-04	3.7 E-07	2.2 E-07	1.5 E-07	9.4 E-08	7.2 E-08
Th-229	7.34 E+03 a	0.005	1.1 E-05	5.0 E-04	1.0 E-06	7.8 E-07	6.2 E-07	5.3 E-07	4.9 E-07
Th-230	7.70 E+04 a	0.005	4.1 E-06	5.0 E-04	4.1 E-07	3.1 E-07	2.4 E-07	2.2 E-07	2.1 E-07
Th-231	1.06 d	0.005	3.9 E-09	5.0 E-04	2.5 E-09	1.2 E-09	7.4 E-10	4.2 E-10	3.4 E-10
Th-232	1.40 E+10 a	0.005	4.6 E-06	5.0 E-04	4.5 E-07	3.5 E-07	2.9 E-07	2.5 E-07	2.3 E-07
Th-234	24.1 d	0.005	4.0 E-08	5.0 E-04	2.5 E-08	1.3 E-08	7.4 E-09	4.2 E-09	3.4 E-09
Protactinium									
Pa-227	0.638 h	0.005	5.8 E-09	5.0 E-04	3.2 E-09	1.5 E-09	8.7 E-10	5.8 E-10	4.5 E-10
Pa-228	22.0 h	0.005	1.2 E-08	5.0 E-04	4.8 E-09	2.6 E-09	1.6 E-09	9.7 E-10	7.8 E-10
Pa-230	17.4 d	0.005	2.6 E-08	5.0 E-04	5.7 E-09	3.1 E-09	1.9 E-09	1.1 E-09	9.2 E-10
Pa-231	3.27 E+04 a	0.005	1.3 E-05	5.0 E-04	1.3 E-06	1.1 E-06	9.2 E-07	8.0 E-07	7.1 E-07
Pa-232	1.31 d	0.005	6.3 E-09	5.0 E-04	4.2 E-09	2.2 E-09	1.4 E-09	8.9 E-10	7.2 E-10
Pa-233	27.0 d	0.005	9.7 E-09	5.0 E-04	6.2 E-09	3.2 E-09	1.9 E-09	1.1 E-09	8.7 E-10
Pa-234	6.70 h	0.005	5.0 E-09	5.0 E-04	3.2 E-09	1.7 E-09	1.0 E-09	6.4 E-10	5.1 E-10
Uranium									
U-230	20.8 d	0.040	7.9 E-07	0.020	3.0 E-07	1.5 E-07	1.0 E-07	6.6 E-08	5.6 E-08
U-231	4.20 d	0.040	3.1 E-09	0.020	2.0 E-09	1.0 E-09	6.1 E-10	3.5 E-10	2.8 E-10
U-232	72.0 a	0.040	2.5 E-06	0.020	8.2 E-07	5.8 E-07	5.7 E-07	6.4 E-07	3.3 E-07
U-233	1.58 E+05 a	0.040	3.8 E-07	0.020	1.4 E-07	9.2 E-08	7.8 E-08	7.8 E-08	5.1 E-08
U-234	2.44 E+05 a	0.040	3.7 E-07	0.020	1.3 E-07	8.8 E-08	7.4 E-08	7.4 E-08	4.9 E-08
U-235	7.04 E+08 a	0.040	3.5 E-07	0.020	1.3 E-07	8.5 E-08	7.1 E-08	7.0 E-08	4.7 E-08
U-236	2.34 E+07 a	0.040	3.5 E-07	0.020	1.3 E-07	8.4 E-08	7.0 E-08	7.0 E-08	4.7 E-08
U-237	6.75 d	0.040	8.3 E-09	0.020	5.4 E-09	2.8 E-09	1.6 E-09	9.5 E-10	7.6 E-10
U-238	4.47 E+09 a	0.040	3.4 E-07	0.020	1.2 E-07	8.0 E-08	6.8 E-08	6.7 E-08	4.5 E-08
U-239	0.392 h	0.040	3.4 E-10	0.020	1.9 E-10	9.3 E-11	5.4 E-11	3.5 E-11	2.7 E-11
U-240	14.1 h	0.040	1.3 E-08	0.020	8.1 E-09	4.1 E-09	2.4 E-09	1.4 E-09	1.1 E-09
Neptunium									
Np-232	0.245 h	0.005	8.7 E-11	5.0 E-04	5.1 E-11	2.7 E-11	1.7 E-11	1.2 E-11	9.7 E-12
Np-233	0.603 h	0.005	2.1 E-11	5.0 E-04	1.3 E-11	6.6 E-12	4.0 E-12	2.8 E-12	2.2 E-12
Np-234	4.40 d	0.005	6.2 E-09	5.0 E-04	4.4 E-09	2.4 E-09	1.6 E-09	1.0 E-09	8.1 E-10
Np-235	1.08 a	0.005	7.1 E-10	5.0 E-04	4.1 E-10	2.0 E-10	1.2 E-10	6.8 E-11	5.3 E-11
Np-236	1.15 E+05 a	0.005	1.9 E-07	5.0 E-04	2.4 E-08	1.8 E-08	1.8 E-08	1.8 E-08	1.7 E-08
Np-236	22.5 h	0.005	2.5 E-09	5.0 E-04	1.3 E-09	6.6 E-10	4.0 E-10	2.4 E-10	1.9 E-10
Np-237	2.14 E+06 a	0.005	2.0 E-06	5.0 E-04	2.1 E-07	1.4 E-07	1.1 E-07	1.1 E-07	1.1 E-07
Np-238	2.12 d	0.005	9.5 E-09	5.0 E-04	6.2 E-09	3.2 E-09	1.9 E-09	1.1 E-09	9.1 E-10
Np-239	2.36 d	0.005	8.9 E-09	5.0 E-04	5.7 E-09	2.9 E-09	1.7 E-09	1.0 E-09	8.0 E-10

Np-240	1.08 h	0.005	8.7 E-10	5.0 E-04	5.2 E-10	2.6 E-10	1.6 E-10	1.0 E-10	8.2 E-11
Plutonium									
Pu-234	8.80 h	0.005	2.1 E-09	5.0 E-04	1.1 E-09	5.5 E-10	3.3 E-10	2.0 E-10	1.6 E-10
Pu-235	0.422 h	0.005	2.2 E-11	5.0 E-04	1.3 E-11	6.5 E-12	3.9 E-12	2.7 E-12	2.1 E-12
Pu-236	2.85 a	0.005	2.1 E-06	5.0 E-04	2.2 E-07	1.4 E-07	1.0 E-07	8.5 E-08	8.7 E-08
Pu-237	45.3 d	0.005	1.1 E-09	5.0 E-04	6.9 E-10	3.6 E-10	2.2 E-10	1.3 E-10	1.0 E-10
Pu-238	87.7 a	0.005	4.0 E-06	5.0 E-04	4.0 E-07	3.1 E-07	2.4 E-07	2.2 E-07	2.3 E-07
Pu-239	2.41 E+04 a	0.005	4.2 E-06	5.0 E-04	4.2 E-07	3.3 E-07	2.7 E-07	2.4 E-07	2.5 E-07
Pu-240	6.54 E+03 a	0.005	4.2 E-06	5.0 E-04	4.2 E-07	3.3 E-07	2.7 E-07	2.4 E-07	2.5 E-07
Pu-241	14.4 a	0.005	5.6 E-08	5.0 E-04	5.7 E-09	5.5 E-09	5.1 E-09	4.8 E-09	4.8 E-09
Pu-242	3.76 E+05 a	0.005	4.0 E-06	5.0 E-04	4.0 E-07	3.2 E-07	2.6 E-07	2.3 E-07	2.4 E-07
Pu-243	4.95 h	0.005	1.0 E-09	5.0 E-04	6.2 E-10	3.1 E-10	1.8 E-10	1.1 E-10	8.5 E-11
Pu-244	8.26 E+07 a	0.005	4.0 E-06	5.0 E-04	4.1 E-07	3.2 E-07	2.6 E-07	2.3 E-07	2.4 E-07
Pu-245	10.5 h	0.005	8.0 E-09	5.0 E-04	5.1 E-09	2.6 E-09	1.5 E-09	8.9 E-10	7.2 E-10
Pu-246	10.9 d	0.005	3.6 E-08	5.0 E-04	2.3 E-08	1.2 E-08	7.1 E-09	4.1 E-09	3.3 E-09
Americium									
Am-237	1.22 h	0.005	1.7 E-10	5.0 E-04	1.0 E-10	5.5 E-11	3.3 E-11	2.2 E-11	1.8 E-11
Am-238	1.63 h	0.005	2.5 E-10	5.0 E-04	1.6 E-10	9.1 E-11	5.9 E-11	4.0 E-11	3.2 E-11
Am-239	11.9 h	0.005	2.6 E-09	5.0 E-04	1.7 E-09	8.4 E-10	5.1 E-10	3.0 E-10	2.4 E-10
Am-240	2.12 d	0.005	4.7 E-09	5.0 E-04	3.3 E-09	1.8 E-09	1.2 E-09	7.3 E-10	5.8 E-10
Am-241	4.32 E+02 a	0.005	3.7 E-06	5.0 E-04	3.7 E-07	2.7 E-07	2.2 E-07	2.0 E-07	2.0 E-07
Am-242	16.0 h	0.005	5.0 E-09	5.0 E-04	2.2 E-09	1.1 E-09	6.4 E-10	3.7 E-10	3.0 E-10
Am-242m	1.52 E+02 a	0.005	3.1 E-06	5.0 E-04	3.0 E-07	2.3 E-07	2.0 E-07	1.9 E-07	1.9 E-07
Am-243	7.38 E+03 a	0.005	3.6 E-06	5.0 E-04	3.7 E-07	2.7 E-07	2.2 E-07	2.0 E-07	2.0 E-07
Am-244	10.1 h	0.005	4.9 E-09	5.0 E-04	3.1 E-09	1.6 E-09	9.6 E-10	5.8 E-10	4.6 E-10
Am-244m	0.433 h	0.005	3.7 E-10	5.0 E-04	2.0 E-10	9.6 E-11	5.5 E-11	3.7 E-11	2.9 E-11
Am-245	2.05 h	0.005	6.8 E-10	5.0 E-04	4.5 E-10	2.2 E-10	1.3 E-10	7.9 E-11	6.2 E-11
Am-246	0.650 h	0.005	6.7 E-10	5.0 E-04	3.8 E-10	1.9 E-10	1.1 E-10	7.3 E-11	5.8 E-11
Am-246m	0.417 h	0.005	3.9 E-10	5.0 E-04	2.2 E-10	1.1 E-10	6.4 E-11	4.4 E-11	3.4 E-11
Curium									
Cm-238	2.40 h	0.005	7.8 E-10	5.0 E-04	4.9 E-10	2.6 E-10	1.6 E-10	1.0 E-10	8.0 E-11
Cm-240	27.0 d	0.005	2.2 E-07	5.0 E-04	4.8 E-08	2.5 E-08	1.5 E-08	9.2 E-09	7.6 E-09
Cm-241	32.8 d	0.005	1.1 E-08	5.0 E-04	5.7 E-09	3.0 E-09	1.9 E-09	1.1 E-09	9.1 E-10
Cm-242	163 d	0.005	5.9 E-07	5.0 E-04	7.6 E-08	3.9 E-08	2.4 E-08	1.5 E-08	1.2 E-08
Cm-243	28.5 a	0.005	3.2 E-06	5.0 E-04	3.3 E-07	2.2 E-07	1.6 E-07	1.4 E-07	1.5 E-07
Cm-244	18.1 a	0.005	2.9 E-06	5.0 E-04	2.9 E-07	1.9 E-07	1.4 E-07	1.2 E-07	1.2 E-07
Cm-245	8.50 E+03 a	0.005	3.7 E-06	5.0 E-04	3.7 E-07	2.8 E-07	2.3 E-07	2.1 E-07	2.1 E-07
Cm-246	4.73 E+03 a	0.005	3.7 E-06	5.0 E-04	3.7 E-07	2.8 E-07	2.2 E-07	2.1 E-07	2.1 E-07
Cm-247	1.56 E+07 a	0.005	3.4 E-06	5.0 E-04	3.5 E-07	2.6 E-07	2.1 E-07	1.9 E-07	1.9 E-07
Cm-248	3.39 E+05 a	0.005	1.4 E-05	5.0 E-04	1.4 E-06	1.0 E-06	8.4 E-07	7.7 E-07	7.7 E-07
Cm-249	1.07 h	0.005	3.9 E-10	5.0 E-04	2.2 E-10	1.1 E-10	6.1 E-11	4.0 E-11	3.1 E-11
Cm-250	6.90 E+03 a	0.005	7.8 E-05	5.0 E-04	8.2 E-06	6.0 E-06	4.9 E-06	4.4 E-06	4.4 E-06
Berkelium									
Bk-245	4.94 d	0.005	6.1 E-09	5.0 E-04	3.9 E-09	2.0 E-09	1.2 E-09	7.2 E-10	5.7 E-10
Bk-246	1.83 d	0.005	3.7 E-09	5.0 E-04	2.6 E-09	1.4 E-09	9.4 E-10	6.0 E-10	4.8 E-10
Bk-247	1.38 E+03 a	0.005	8.9 E-06	5.0 E-04	8.6 E-07	6.3 E-07	4.6 E-07	3.8 E-07	3.5 E-07
Bk-249	320 d	0.005	2.2 E-08	5.0 E-04	2.9 E-09	1.9 E-09	1.4 E-09	1.1 E-09	9.7 E-10
Bk-250	3.22 h	0.005	1.5 E-09	5.0 E-04	8.5 E-10	4.4 E-10	2.7 E-10	1.7 E-10	1.4 E-10
Californium									
Cf-244	0.323 h	0.005	9.8 E-10	5.0 E-04	4.8 E-10	2.4 E-10	1.3 E-10	8.9 E-11	7.0 E-11
Cf-246	1.49 d	0.005	5.0 E-08	5.0 E-04	2.4 E-08	1.2 E-08	7.3 E-09	4.1 E-09	3.3 E-09
Cf-248	334 d	0.005	1.5 E-06	5.0 E-04	1.6 E-07	9.9 E-08	6.0 E-08	3.3 E-08	2.8 E-08
Cf-249	3.50 E+02 a	0.005	9.0 E-06	5.0 E-04	8.7 E-07	6.4 E-07	4.7 E-07	3.8 E-07	3.5 E-07
Cf-250	13.1 a	0.005	5.7 E-06	5.0 E-04	5.5 E-07	3.7 E-07	2.3 E-07	1.7 E-07	1.6 E-07
Cf-251	8.98 E+02 a	0.005	9.1 E-06	5.0 E-04	8.8 E-07	6.5 E-07	4.7 E-07	3.9 E-07	3.6 E-07
Cf-252	2.64 a	0.005	5.0 E-06	5.0 E-04	5.1 E-07	3.2 E-07	1.9 E-07	1.0 E-07	9.0 E-08
Cf-253	17.8 d	0.005	1.0 E-07	5.0 E-04	1.1 E-08	6.0 E-09	3.7 E-09	1.8 E-09	1.4 E-09
Cf-254	60.5 d	0.005	1.1 E-05	5.0 E-04	2.6 E-06	1.4 E-06	8.4 E-07	5.0 E-07	4.0 E-07

Einsteinium									
Es-250	2.10 h	0.005	2.3 E-10	5.0 E-04	9.9 E-11	5.7 E-11	3.7 E-11	2.6 E-11	2.1 E-11
Es-251	1.38 d	0.005	1.9 E-09	5.0 E-04	1.2 E-09	6.1 E-10	3.7 E-10	2.2 E-10	1.7 E-10
Es-253	20.5 d	0.005	1.7 E-07	5.0 E-04	4.5 E-08	2.3 E-08	1.4 E-08	7.6 E-09	6.1 E-09
Es-254	276 d	0.005	1.4 E-06	5.0 E-04	1.6 E-07	9.8 E-08	6.0 E-08	3.3 E-08	2.8 E-08
Es-254m	1.64 d	0.005	5.7 E-08	5.0 E-04	3.0 E-08	1.5 E-08	9.1 E-09	5.2 E-09	4.2 E-09
Fermium									
Fm-252	22.7 h	0.005	3.8 E-08	5.0 E-04	2.0 E-08	9.9 E-09	5.9 E-09	3.3 E-09	2.7 E-09
Fm-253	3.00 d	0.005	2.5 E-08	5.0 E-04	6.7 E-09	3.4 E-09	2.1 E-09	1.1 E-09	9.1 E-10
Fm-254	3.24 h	0.005	5.6 E-09	5.0 E-04	3.2 E-09	1.6 E-09	9.3 E-10	5.6 E-10	4.4 E-10
Fm-255	20.1 h	0.005	3.3 E-08	5.0 E-04	1.9 E-08	9.5 E-09	5.6 E-09	3.2 E-09	2.5 E-09
Fm-257	101 d	0.005	9.8 E-07	5.0 E-04	1.1 E-07	6.5 E-08	4.0 E-08	1.9 E-08	1.5 E-08
Mendelevium									
Md-257	5.20 h	0.005	3.1 E-09	5.0 E-04	8.8 E-10	4.5 E-10	2.7 E-10	1.5 E-10	1.2 E-10
Md-258	55.0 d	0.005	6.3 E-07	5.0 E-04	8.9 E-08	5.0 E-08	3.0 E-08	1.6 E-08	1.3 E-08

Note (*): The values of f_1 for the groupe of age from 1 year old to 15 years old for the nuclides noted with "*" are as follows:
for Calcium is 0,4;
for Iron is 0,2;
for Cobalt is 0,3;
for Strontium is 0,4;
for Barium is 0,3;
for Lead is 0,4;
for Radium is 0,3.

TABLE 4-B

Committed effective dose per unit of incorporation by inhalation (Sv Bq^{-1}) for individuals from population

Nucleus	Half Life	Type	Age g ≤1 a		f_1 for g>1 a	Age 1-2 a	Age 2-7 a	Age 7-12 a	Age 12-17 a	Age >17 a
			f_1	h(g)		h(g)	h(g)	h(g)	h(g)	h(g)
Hydrogen										
H_3O^+	12.3 a	F	1.000	2.6 E-11	1.000	2.0 E-11	1.1 E-11	8.2 E-12	5.9 E-12	6.2 E-12
		M	0.200	3.4 E-10	0.100	2.7 E-10	1.4 E-10	8.2 E-11	5.3 E-11	4.5 E-11
		S	0.020	1.2 E-09	0.010	1.0 E-09	6.3 E-10	3.8 E-10	2.8 E-10	2.6 E-10
Beryllium										
Be-7	53.3 d	M	0.020	2.5 E-10	0.005	2.1 E-10	1.2 E-10	8.3 E-11	6.2 E-11	5.0 E-11
		S	0.020	2.8 E-10	0.005	2.4 E-10	1.4 E-10	9.6 E-11	6.8 E-11	5.5 E-11
Be-10	1.60 E+06 a	M	0.020	4.1 E-08	0.005	3.4 E-08	2.0 E-08	1.3 E-08	1.1 E-08	9.6 E-09
		S	0.020	9.9 E-08	0.005	9.1 E-08	6.1 E-08	4.2 E-08	3.7 E-08	3.5 E-08
Carbon										
C-11	0.340 h	F	1.000	1.0 E-10	1.000	7.0 E-11	3.2 E-11	2.1 E-11	1.3 E-11	1.1 E-11
		M	0.200	1.5 E-10	0.100	1.1 E-10	4.9 E-11	3.2 E-11	2.1 E-11	1.8 E-11
		S	0.020	1.6 E-10	0.010	1.1 E-10	5.1 E-11	3.3 E-11	2.2 E-11	1.8 E-11
C-14	5.73 E+03 a	F	1.000	6.1 E-10	1.000	6.7 E-10	3.6 E-10	2.9 E-10	1.9 E-10	2.0 E-10
		M	0.200	8.3 E-09	0.100	6.6 E-09	4.0 E-09	2.8 E-09	2.5 E-09	2.0 E-09
		S	0.020	1.9 E-08	0.010	1.7 E-08	1.1 E-08	7.4 E-09	6.4 E-09	5.8 E-09
Fluorine										
F-18	1.83 h	F	1.000	2.6 E-10	1.000	1.9 E-10	9.1 E-11	5.6 E-11	3.4 E-11	2.8 E-11
		M	1.000	4.1 E-10	1.000	2.9 E-10	1.5 E-10	9.7 E-11	6.9 E-11	5.6 E-11
		S	1.000	4.2 E-10	1.000	3.1 E-10	1.5 E-10	1.0 E-10	7.3 E-11	5.9 E-11
Sodium										
Na-22	2.60 a	F	1.000	9.7 E-09	1.000	7.3 E-09	3.8 E-09	2.4 E-09	1.5 E-09	1.3 E-09
Na-24	15.0 h	F	1.000	2.3 E-09	1.000	1.8 E-09	9.3 E-10	5.7 E-10	3.4 E-10	2.7 E-10
Magnesium										
Mg-28	20.9 h	F	1.000	5.3 E-09	0.500	4.7 E-09	2.2 E-09	1.3 E-09	7.3 E-10	6.0 E-10
		M	1.000	7.3 E-09	0.500	7.2 E-09	3.5 E-09	2.3 E-09	1.5 E-09	1.2 E-09
Aluminum										
Al-26	7.16 E+05 a	F	0.020	8.1 E-08	0.010	6.2 E-08	3.2 E-08	2.0 E-08	1.3 E-08	1.1 E-08
		M	0.020	8.8 E-08	0.010	7.4 E-08	4.4 E-08	2.9 E-08	2.2 E-08	2.0 E-08
Silicon										
Si-31	2.62 h	F	0.020	3.6 E-10	0.010	2.3 E-10	9.5 E-11	5.9 E-11	3.2 E-11	2.7 E-11
		M	0.020	6.9 E-10	0.010	4.4 E-10	2.0 E-10	1.3 E-10	8.9 E-11	7.4 E-11
		S	0.020	7.2 E-10	0.010	4.7 E-10	2.2 E-10	1.4 E-10	9.5 E-11	7.9 E-11
Si-32	4.50 E+02 a	F	0.020	3.0 E-08	0.010	2.3 E-08	1.1 E-08	6.4 E-09	3.8 E-09	3.2 E-09
		M	0.020	7.1 E-08	0.010	6.0 E-08	3.6 E-08	2.4 E-08	1.9 E-08	1.7 E-08
		S	0.020	2.8 E-07	0.010	2.7 E-07	1.9 E-07	1.3 E-07	1.1 E-07	1.1 E-07
Phosphorus										
P-32	14.3 d	F	1.000	1.2 E-08	0.800	7.5 E-09	3.2 E-09	1.8 E-09	9.8 E-10	7.7 E-10
		M	1.000	2.2 E-08	0.800	1.5 E-08	8.0 E-09	5.3 E-09	4.0 E-09	3.4 E-09
P-33	25.4 d	F	1.000	1.2 E-09	0.800	7.8 E-10	3.0 E-10	2.0 E-10	1.1 E-10	9.2 E-11
		M	1.000	6.1 E-09	0.800	4.6 E-09	2.8 E-09	2.1 E-09	1.9 E-09	1.5 E-09
Sulfur										
S-35 (anorganic)	87.4 d	F	1.000	5.5 E-10	0.800	3.9 E-10	1.8 E-10	1.1 E-10	6.0 E-11	5.1 E-11
		M	0.200	5.9 E-09	0.100	4.5 E-09	2.8 E-09	2.0 E-09	1.8 E-09	1.4 E-09
		S	0.020	7.7 E-09	0.010	6.0 E-09	3.6 E-09	2.6 E-09	2.3 E-09	1.9 E-09
Chlorine										
Cl-36	3.01 E+05 a	F	1.000	3.9 E-09	1.000	2.6 E-09	1.1 E-09	7.1 E-10	3.9 E-10	3.3 E-10
		M	1.000	3.1 E-08	1.000	2.6 E-08	1.5 E-08	1.0 E-08	8.8 E-09	7.3 E-09
Cl-38	0.620 h	F	1.000	2.9 E-10	1.000	1.9 E-10	8.4 E-11	5.1 E-11	3.0 E-11	2.5 E-11
		M	1.000	4.7 E-10	1.000	3.0 E-10	1.4 E-10	8.5 E-11	5.4 E-11	4.5 E-11

Cl-39	0.927 h	F	1.000	2.7 E-10	1.000	1.8 E-10	8.4 E-11	5.1 E-11	3.1 E-11	2.5 E-11
		M	1.000	4.3 E-10	1.000	2.8 E-10	1.3 E-10	8.5 E-11	5.6 E-11	4.6 E-11
Potassium										
K-40	1.28 E+09 a	F	1.000	2.4 E-08	1.000	1.7 E-08	7.5 E-09	4.5 E-09	2.5 E-09	2.1 E-09
K-42	12.4 h	F	1.000	1.6 E-09	1.000	1.0 E-09	4.4 E-10	2.6 E-10	1.5 E-10	1.2 E-10
K-43	22.6 h	F	1.000	1.3 E-09	1.000	9.7 E-10	4.7 E-10	2.9 E-10	1.7 E-10	1.4 E-10
K-44	0.369 h	F	1.000	2.2 E-10	1.000	1.4 E-10	6.5 E-11	4.0 E-11	2.4 E-11	2.0 E-11
K-45	0.333 h	F	1.000	1.5 E-10	1.000	1.0 E-10	4.8 E-11	3.0 E-11	1.8 E-11	1.5 E-11
Calcium (*)										
Ca-41	1.40 E+05 a	F	0.600	6.7 E-10	0.300	3.8 E-10	2.6 E-10	3.3 E-10	3.3 E-10	1.7 E-10
		M	0.200	4.2 E-10	0.100	2.6 E-10	1.7 E-10	1.7 E-10	1.6 E-10	9.5 E-11
		S	0.020	6.7 E-10	0.010	6.0 E-10	3.8 E-10	2.4 E-10	1.9 E-10	1.8 E-10
Ca-45	163 d	F	0.600	5.7 E-09	0.300	3.0 E-09	1.4 E-09	1.0 E-09	7.6 E-10	4.6 E-10
		M	0.200	1.2 E-08	0.100	8.8 E-09	5.3 E-09	3.9 E-09	3.5 E-09	2.7 E-09
		S	0.020	1.5 E-08	0.010	1.2 E-08	7.2 E-09	5.1 E-09	4.6 E-09	3.7 E-09
Ca-47	4.53 d	F	0.600	4.9 E-09	0.300	3.6 E-09	1.7 E-09	1.1 E-09	6.1 E-10	5.5 E-10
		M	0.200	1.0 E-08	0.100	7.7 E-09	4.2 E-09	2.9 E-09	2.4 E-09	1.9 E-09
		S	0.020	1.2 E-08	0.010	8.5 E-09	4.6 E-09	3.3 E-09	2.6 E-09	2.1 E-09
Scandium										
Sc-43	3.89 h	S	0.001	9.3 E-10	1.0 E-04	6.7 E-10	3.3 E-10	2.2 E-10	1.4 E-10	1.1 E-10
Sc-44	3.93 h	S	0.001	1.6 E-09	1.0 E-04	1.2 E-09	5.6 E-10	3.6 E-10	2.3 E-10	1.8 E-10
Sc-44m	2.44 d	S	0.001	1.1 E-08	1.0 E-04	8.4 E-09	4.2 E-09	2.8 E-09	1.7 E-09	1.4 E-09
Sc-46	83.8 d	S	0.001	2.8 E-08	1.0 E-04	2.3 E-08	1.4 E-08	9.8 E-09	8.4 E-09	6.8 E-09
Sc-47	3.35 d	S	0.001	4.0 E-09	1.0 E-04	2.8 E-09	1.5 E-09	1.1 E-09	9.2 E-10	7.3 E-10
Sc-48	1.82 d	S	0.001	7.8 E-09	1.0 E-04	5.9 E-09	3.1 E-09	2.0 E-09	1.4 E-09	1.1 E-09
Sc-49	0.956 h	S	0.001	3.9 E-10	1.0 E-04	2.4 E-10	1.1 E-10	7.1 E-11	4.7 E-11	4.0 E-11
Titanium										
Ti-44	47.3 a	F	0.020	3.1 E-07	0.010	2.6 E-07	1.5 E-07	9.6 E-08	6.6 E-08	6.1 E-08
		M	0.020	1.7 E-07	0.010	1.5 E-07	9.2 E-08	5.9 E-08	4.6 E-08	4.2 E-08
		S	0.020	3.2 E-07	0.010	3.1 E-07	2.1 E-07	1.5 E-07	1.3 E-07	1.2 E-07
Ti-45	3.08 h	F	0.020	4.4 E-10	0.010	3.2 E-10	1.5 E-10	9.1 E-11	5.1 E-11	4.2 E-11
		M	0.020	7.4 E-10	0.010	5.2 E-10	2.5 E-10	1.6 E-10	1.1 E-10	8.8 E-11
		S	0.020	7.7 E-10	0.010	5.5 E-10	2.7 E-10	1.7 E-10	1.1 E-10	9.3 E-11
Vanadium										
V-47	0.543 h	F	0.020	1.8 E-10	0.010	1.2 E-10	5.6 E-11	3.5 E-11	2.1 E-11	1.7 E-11
		M	0.020	2.8 E-10	0.010	1.9 E-10	8.6 E-11	5.5 E-11	3.5 E-11	2.9 E-11
V-48	16.2 d	F	0.020	8.4 E-09	0.010	6.4 E-09	3.3 E-09	2.1 E-09	1.3 E-09	1.1 E-09
		M	0.020	1.4 E-08	0.010	1.1 E-08	6.3 E-09	4.3 E-09	2.9 E-09	2.4 E-09
V-49	330 d	F	0.020	2.0 E-10	0.010	1.6 E-10	7.7 E-11	4.3 E-11	2.5 E-11	2.1 E-11
		M	0.020	2.8 E-10	0.010	2.1 E-10	1.1 E-10	6.3 E-11	4.0 E-11	3.4 E-11

Chromium										
Cr-48	23.0 h	F	0.200	7.6 E-10	0.100	6.0 E-10	3.1 E-10	2.0 E-10	1.2 E-10	9.9 E-11
		M	0.200	1.1 E-09	0.100	9.1 E-10	5.1 E-10	3.4 E-10	2.5 E-10	2.0 E-10
		S	0.200	1.2 E-09	0.100	9.8 E-10	5.5 E-10	3.7 E-10	2.8 E-10	2.2 E-10
Cr-49	0.702 h	F	0.200	1.9 E-10	0.100	1.3 E-10	6.0 E-11	3.7 E-11	2.2 E-11	1.9 E-11
		M	0.200	3.0 E-10	0.100	2.0 E-10	9.5 E-11	6.1 E-11	4.0 E-11	3.3 E-11
		S	0.200	3.1 E-10	0.100	2.1 E-10	9.9 E-11	6.4 E-11	4.2 E-11	3.5 E-11
Cr-51	27.7 d	F	0.200	1.7 E-10	0.100	1.3 E-10	6.3 E-11	4.0 E-11	2.4 E-11	2.0 E-11
		M	0.200	2.6 E-10	0.100	1.9 E-10	1.0 E-10	6.4 E-11	3.9 E-11	3.2 E-11
		S	0.200	2.6 E-10	0.100	2.1 E-10	1.0 E-10	6.6 E-11	4.5 E-11	3.7 E-11
Manganese										
Mn-51	0.770 h	F	0.200	2.5 E-10	0.100	1.7 E-10	7.5 E-11	4.6 E-11	2.7 E-11	2.3 E-11
		M	0.200	4.0 E-10	0.100	2.7 E-10	1.2 E-10	7.8 E-11	5.0 E-11	4.1 E-11
Mn-52	5.59 d	F	0.200	7.0 E-09	0.100	5.5 E-09	2.9 E-09	1.8 E-09	1.1 E-09	9.4 E-10
		M	0.200	8.6 E-09	0.100	6.8 E-09	3.7 E-09	2.4 E-09	1.7 E-09	1.4 E-09
Mn-52m	0.352 h	F	0.200	1.9 E-10	0.100	1.3 E-10	6.1 E-11	3.8 E-11	2.2 E-11	1.9 E-11
		M	0.200	2.8 E-10	0.100	1.9 E-10	8.7 E-11	5.5 E-11	3.4 E-11	2.9 E-11
Mn-53	3.70 E+06 a	F	0.200	3.2 E-10	0.100	2.2 E-10	1.1 E-10	6.0 E-11	3.4 E-11	2.9 E-11
		M	0.200	4.6 E-10	0.100	3.4 E-10	1.7 E-10	1.0 E-10	6.4 E-11	5.4 E-11
Mn-54	312 d	F	0.200	5.2 E-09	0.100	4.1 E-09	2.2 E-09	1.5 E-09	9.9 E-10	8.5 E-10

		M	0.200	7.5 E-09	0.100	6.2 E-09	3.8 E-09	2.4 E-09	1.9 E-09	1.5 E-09
Mn-56	2.58 h	F	0.200	6.9 E-10	0.100	4.9 E-10	2.3 E-10	1.4 E-10	7.8 E-11	6.4 E-11
		M	0.200	1.1 E-09	0.100	7.8 E-10	3.7 E-10	2.4 E-10	1.5 E-10	1.2 E-10
Iron (*)										
Fe-52	8.28 h	F	0.600	5.2 E-09	0.100	3.6 E-09	1.5 E-09	8.9 E-10	4.9 E-10	3.9 E-10
		M	0.200	5.8 E-09	0.100	4.1 E-09	1.9 E-09	1.2 E-09	7.4 E-10	6.0 E-10
		S	0.020	6.0 E-09	0.010	4.2 E-09	2.0 E-09	1.3 E-09	7.7 E-10	6.3 E-10
Fe-55	2.70 a	F	0.600	4.2 E-09	0.100	3.2 E-09	2.2 E-09	1.4 E-09	9.4 E-10	7.7 E-10
		M	0.200	1.9 E-09	0.100	1.4 E-09	9.9 E-10	6.2 E-10	4.4 E-10	3.8 E-10
		S	0.020	1.0 E-09	0.010	8.5 E-10	5.0 E-10	2.9 E-10	2.0 E-10	1.8 E-10
Fe-59	44.5 d	F	0.600	2.1 E-08	0.100	1.3 E-08	7.1 E-09	4.2 E-09	2.6 E-09	2.2 E-09
		M	0.200	1.8 E-08	0.100	1.3 E-08	7.9 E-09	5.5 E-09	4.6 E-09	3.7 E-09
		S	0.020	1.7 E-08	0.010	1.3 E-08	8.1 E-09	5.8 E-09	5.1 E-09	4.0 E-09
Fe-60	1.00 E+05 a	F	0.600	4.4 E-07	0.100	3.9 E-07	3.5 E-07	3.2 E-07	2.9 E-07	2.8 E-07
		M	0.200	2.0 E-07	0.100	1.7 E-07	1.6 E-07	1.4 E-07	1.4 E-07	1.4 E-07
		S	0.020	9.3 E-08	0.010	8.8 E-08	6.7 E-08	5.2 E-08	4.9 E-08	4.9 E-08
Cobalt (*)										
Co-55	17.5 h	F	0.600	2.2 E-09	0.100	1.8 E-09	9.0 E-10	5.5 E-10	3.1 E-10	2.7 E-10
		M	0.200	4.1 E-09	0.100	3.1 E-09	1.5 E-09	9.8 E-10	6.1 E-10	5.0 E-10
		S	0.020	4.6 E-09	0.010	3.3 E-09	1.6 E-09	1.1 E-09	6.6 E-10	5.3 E-10
Co-56	78.7 d	F	0.600	1.4 E-08	0.100	1.0 E-08	5.5 E-09	3.5 E-09	2.2 E-09	1.8 E-09
		M	0.200	2.5 E-08	0.100	2.1 E-08	1.1 E-08	7.4 E-09	5.8 E-09	4.8 E-09
		S	0.020	2.9 E-08	0.010	2.5 E-08	1.5 E-08	1.0 E-08	8.0 E-09	6.7 E-09
Co-57	271 d	F	0.600	1.5 E-09	0.100	1.1 E-09	5.6 E-10	3.7 E-10	2.3 E-10	1.9 E-10
		M	0.200	2.8 E-09	0.100	2.2 E-09	1.3 E-09	8.5 E-10	6.7 E-10	5.5 E-10
		S	0.020	4.4 E-09	0.010	3.7 E-09	2.3 E-09	1.5 E-09	1.2 E-09	1.0 E-09
Co-58	70.8 d	F	0.600	4.0 E-09	0.100	3.0 E-09	1.6 E-09	1.0 E-09	6.4 E-10	5.3 E-10
		M	0.200	7.3 E-09	0.100	6.5 E-09	3.5 E-09	2.4 E-09	2.0 E-09	1.6 E-09
		S	0.020	9.0 E-09	0.010	7.5 E-09	4.5 E-09	3.1 E-09	2.6 E-09	2.1 E-09
Co-58m	9.15 h	F	0.600	4.8 E-11	0.100	3.6 E-11	1.7 E-11	1.1 E-11	5.9 E-12	5.2 E-12
		M	0.200	1.1 E-10	0.100	7.6 E-11	3.8 E-11	2.4 E-11	1.6 E-11	1.3 E-11
		S	0.020	1.3 E-10	0.010	9.0 E-11	4.5 E-11	3.0 E-11	2.0 E-11	1.7 E-11
Co-60	5.27 a	F	0.600	3.0 E-08	0.100	2.3 E-08	1.4 E-08	8.9 E-09	6.1 E-09	5.2 E-09
		M	0.200	4.2 E-08	0.100	3.4 E-08	2.1 E-08	1.5 E-08	1.2 E-08	1.0 E-08
		S	0.020	9.2 E-08	0.010	8.6 E-08	5.9 E-08	4.0 E-08	3.4 E-08	3.1 E-08
Co-60m	0.174 h	F	0.600	4.4 E-12	0.100	2.8 E-12	1.5 E-12	1.0 E-12	8.3 E-13	6.9 E-13
		M	0.200	7.1 E-12	0.100	4.7 E-12	2.7 E-12	1.8 E-12	1.5 E-12	1.2 E-12
		S	0.020	7.6 E-12	0.010	5.1 E-12	2.9 E-12	2.0 E-12	1.7 E-12	1.4 E-12
Co-61	1.65 h	F	0.600	2.1 E-10	0.100	1.4 E-10	6.0 E-11	3.8 E-11	2.2 E-11	1.9 E-11
		M	0.200	4.0 E-10	0.100	2.7 E-10	1.2 E-10	8.2 E-11	5.7 E-11	4.7 E-11
		S	0.020	4.3 E-10	0.010	2.8 E-10	1.3 E-10	8.8 E-11	6.1 E-11	5.1 E-11
Co-62m	0.232 h	F	0.600	1.4 E-10	0.100	9.5 E-11	4.5 E-11	2.8 E-11	1.7 E-11	1.4 E-11
		M	0.200	1.9 E-10	0.100	1.3 E-10	6.1 E-11	3.8 E-11	2.4 E-11	2.0 E-11
		S	0.020	2.0 E-10	0.010	1.3 E-10	6.3 E-11	4.0 E-11	2.5 E-11	2.1 E-11
Nickel										
Ni-56	6.10 d	F	0.100	3.3 E-09	0.050	2.8 E-09	1.5 E-09	9.3 E-10	5.8 E-10	4.9 E-10
		M	0.100	4.9 E-09	0.050	4.1 E-09	2.3 E-09	1.5 E-09	1.1 E-09	8.7 E-10
		S	0.020	5.5 E-09	0.010	4.6 E-09	2.7 E-09	1.8 E-09	1.3 E-09	1.0 E-09
Ni-57	1.50 d	F	0.100	2.2 E-09	0.050	1.8 E-09	8.9 E-10	5.5 E-10	3.1 E-10	2.5 E-10
		M	0.100	3.6 E-09	0.050	2.8 E-09	1.5 E-09	9.5 E-10	6.2 E-10	5.0 E-10
		S	0.020	3.9 E-09	0.010	3.0 E-09	1.5 E-09	1.0 E-09	6.6 E-10	5.3 E-10
Ni-59	7.50 E+04 a	F	0.100	9.6 E-10	0.050	8.1 E-10	4.5 E-10	2.8 E-10	1.9 E-10	1.8 E-10
		M	0.100	7.9 E-10	0.050	6.2 E-10	3.4 E-10	2.1 E-10	1.4 E-10	1.3 E-10
		S	0.020	1.7 E-09	0.010	1.5 E-09	9.5 E-10	5.9 E-10	4.6 E-10	4.4 E-10
Ni-63	96.0 a	F	0.100	2.3 E-09	0.050	2.0 E-09	1.1 E-09	6.7 E-10	4.6 E-10	4.4 E-10
		M	0.100	2.5 E-09	0.050	1.9 E-09	1.1 E-09	7.0 E-10	5.3 E-10	4.8 E-10
		S	0.020	4.8 E-09	0.010	4.3 E-09	2.7 E-09	1.7 E-09	1.3 E-09	1.3 E-09
Ni-65	2.52 h	F	0.100	4.4 E-10	0.050	3.0 E-10	1.4 E-10	8.5 E-11	4.9 E-11	4.1 E-11
		M	0.100	7.7 E-10	0.050	5.2 E-10	2.4 E-10	1.6 E-10	1.0 E-10	8.5 E-11
		S	0.020	8.1 E-10	0.010	5.5 E-10	2.6 E-10	1.7 E-10	1.1 E-10	9.0 E-11
Ni-66	2.27 d	F	0.100	5.7 E-09	0.050	3.8 E-09	1.6 E-09	1.0 E-09	5.1 E-10	4.2 E-10
		M	0.100	1.3 E-08	0.050	9.4 E-09	4.5 E-09	2.9 E-09	2.0 E-09	1.6 E-09
		S	0.020	1.5 E-08	0.010	1.0 E-08	5.0 E-09	3.2 E-09	2.2 E-09	1.8 E-09

Copper										
Cu-60	0.387 h	F	1.000	2.1 E-10	0.500	1.6 E-10	7.5 E-11	4.6 E-11	2.8 E-11	2.3 E-11
		M	1.000	3.0 E-10	0.500	2.2 E-10	1.0 E-10	6.5 E-11	4.0 E-11	3.3 E-11
		S	1.000	3.1 E-10	0.500	2.2 E-10	1.1 E-10	6.7 E-11	4.2 E-11	3.4 E-11
Cu-61	3.41 h	F	1.000	3.1 E-10	0.500	2.7 E-10	1.3 E-10	7.9 E-11	4.5 E-11	3.7 E-11
		M	1.000	4.9 E-10	0.500	4.4 E-10	2.1 E-10	1.4 E-10	9.1 E-11	7.4 E-11
		S	1.000	5.1 E-10	0.500	4.5 E-10	2.2 E-10	1.4 E-10	9.6 E-11	7.8 E-11
Cu-64	12.7 h	F	1.000	2.8 E-10	0.500	2.7 E-10	1.2 E-10	7.6 E-11	4.2 E-11	3.5 E-11
		M	1.000	5.5 E-10	0.500	5.4 E-10	2.7 E-10	1.9 E-10	1.4 E-10	1.1 E-10
		S	1.000	5.8 E-10	0.500	5.7 E-10	2.9 E-10	2.0 E-10	1.3 E-10	1.2 E-10
Cu-67	2.58 d	F	1.000	9.5 E-10	0.500	8.0 E-10	3.5 E-10	2.2 E-10	1.2 E-10	1.0 E-10
		M	1.000	2.3 E-09	0.500	2.0 E-09	1.1 E-09	8.1 E-10	6.9 E-10	5.5 E-10
		S	1.000	2.5 E-09	0.500	2.1 E-09	1.2 E-09	8.9 E-10	7.7 E-10	6.1 E-10
Zinc										
Zn-62	9.26 h	F	1.000	1.7 E-09	0.500	1.7 E-09	7.7 E-10	4.6 E-10	2.5 E-10	2.0 E-10
		M	0.200	4.5 E-09	0.100	3.5 E-09	1.6 E-09	1.0 E-09	6.0 E-10	5.0 E-10
		S	0.020	5.1 E-09	0.010	3.4 E-09	1.8 E-09	1.1 E-09	6.6 E-10	5.5 E-10
Zn-63	0.635 h	F	1.000	2.1 E-10	0.500	1.4 E-10	6.5 E-11	4.0 E-11	2.4 E-11	2.0 E-11
		M	0.200	3.4 E-10	0.100	2.3 E-10	1.0 E-10	6.6 E-11	4.2 E-11	3.5 E-11
		S	0.020	3.6 E-10	0.010	2.4 E-10	1.1 E-10	6.9 E-11	4.4 E-11	3.7 E-11
Zn-65	244 d	F	1.000	1.5 E-08	0.500	1.0 E-08	5.7 E-09	3.8 E-09	2.5 E-09	2.2 E-09
		M	0.200	8.5 E-09	0.100	6.5 E-09	3.7 E-09	2.4 E-09	1.9 E-09	1.6 E-09
		S	0.020	7.6 E-09	0.010	6.7 E-09	4.4 E-09	2.9 E-09	2.4 E-09	2.0 E-09
Zn-69	0.950 h	F	1.000	1.1 E-10	0.500	7.4 E-11	3.2 E-11	2.1 E-11	1.2 E-11	1.1 E-11
		M	0.200	2.2 E-10	0.100	1.4 E-10	6.5 E-11	4.4 E-11	3.1 E-11	2.6 E-11
		S	0.020	2.3 E-10	0.010	1.5 E-10	6.9 E-11	4.7 E-11	3.4 E-11	2.8 E-11
Zn-69m	13.8 h	F	1.000	6.6 E-10	0.500	6.7 E-10	3.0 E-10	1.8 E-10	9.9 E-11	8.2 E-11
		M	0.200	2.1 E-09	0.100	1.5 E-09	7.5 E-10	5.0 E-10	3.0 E-10	2.4 E-10
		S	0.020	2.2 E-09	0.010	1.7 E-09	8.2 E-10	5.4 E-10	3.3 E-10	2.7 E-10
Zn-71m	3.92 h	F	1.000	6.2 E-10	0.500	5.5 E-10	2.6 E-10	1.6 E-10	9.1 E-11	7.4 E-11
		M	0.200	1.3 E-09	0.100	9.4 E-10	4.6 E-10	2.9 E-10	1.9 E-10	1.5 E-10
		S	0.020	1.4 E-09	0.010	1.0 E-09	4.9 E-10	3.1 E-10	2.0 E-10	1.6 E-10
Zn-72	1.94 d	F	1.000	4.3 E-09	0.500	3.5 E-09	1.7 E-09	1.0 E-09	5.9 E-10	4.9 E-10
		M	0.200	8.8 E-09	0.100	6.5 E-09	3.4 E-09	2.3 E-09	1.5 E-09	1.2 E-09
		S	0.020	9.7 E-09	0.010	7.0 E-09	3.6 E-09	2.4 E-09	1.6 E-09	1.3 E-09
Gallium										
Ga-65	0.253 h	F	0.010	1.1 E-10	0.001	7.3 E-11	3.4 E-11	2.1 E-11	1.3 E-11	1.1 E-11
		M	0.010	1.6 E-10	0.001	1.1 E-10	4.8 E-11	3.1 E-11	2.0 E-11	1.7 E-11
Ga-66	9.40 h	F	0.010	2.8 E-09	0.001	2.0 E-09	9.2 E-10	5.7 E-10	3.0 E-10	2.5 E-10
		M	0.010	4.5 E-09	0.001	3.1 E-09	1.5 E-09	9.2 E-10	5.3 E-10	4.4 E-10
Ga-67	3.26 d	F	0.010	6.4 E-10	0.001	4.6 E-10	2.2 E-10	1.4 E-10	7.7 E-11	6.4 E-11
		M	0.010	1.4 E-09	0.001	1.0 E-09	5.0 E-10	3.6 E-10	3.0 E-10	2.4 E-10
Ga-68	1.13 h	F	0.010	2.9 E-10	0.001	1.9 E-10	8.8 E-11	5.4 E-11	3.1 E-11	2.6 E-11
		M	0.010	4.6 E-10	0.001	3.1 E-10	1.4 E-10	9.2 E-11	5.9 E-11	4.9 E-11
Ga-70	0.353 h	F	0.010	9.5 E-11	0.001	6.0 E-11	2.6 E-11	1.6 E-11	1.0 E-11	8.8 E-12
		M	0.010	1.5 E-10	0.001	9.6 E-11	4.3 E-11	2.8 E-11	1.8 E-11	1.6 E-11
Ga-72	14.1 h	F	0.010	2.9 E-09	0.001	2.2 E-09	1.0 E-09	6.4 E-10	3.6 E-10	2.9 E-10
		M	0.010	4.5 E-09	0.001	3.3 E-09	1.6 E-09	1.0 E-09	6.5 E-10	5.3 E-10
Ga-73	4.91 h	F	0.010	6.7 E-10	0.001	4.5 E-10	2.0 E-10	1.2 E-10	6.4 E-11	5.4 E-11
		M	0.010	1.2 E-09	0.001	8.4 E-10	4.0 E-10	2.6 E-10	1.7 E-10	1.4 E-10
Germanium										
Ge-66	2.27 h	F	1.000	4.5 E-10	1.000	3.5 E-10	1.8 E-10	1.1 E-10	6.7 E-11	5.4 E-11
		M	1.000	6.4 E-10	1.000	4.8 E-10	2.5 E-10	1.6 E-10	1.1 E-10	9.1 E-11
Ge-67	0.312 h	F	1.000	1.7 E-10	1.000	1.1 E-10	4.9 E-11	3.1 E-11	1.8 E-11	1.5 E-11
		M	1.000	2.5 E-10	1.000	1.6 E-10	7.3 E-11	4.6 E-11	2.9 E-11	2.5 E-11
Ge-68	288 d	F	1.000	5.4 E-09	1.000	3.8 E-09	1.8 E-09	1.1 E-09	6.3 E-10	5.2 E-10
		M	1.000	6.0 E-08	1.000	5.0 E-08	3.0 E-08	2.0 E-08	1.6 E-08	1.4 E-08
Ge-69	1.63 d	F	1.000	1.2 E-09	1.000	9.0 E-10	4.6 E-10	2.8 E-10	1.7 E-10	1.3 E-10
		M	1.000	1.8 E-09	1.000	1.4 E-09	7.4 E-10	4.9 E-10	3.6 E-10	2.9 E-10
Ge-71	11.8 d	F	1.000	6.0 E-11	1.000	4.3 E-11	2.0 E-11	1.1 E-11	6.1 E-12	4.8 E-12
		M	1.000	1.2 E-10	1.000	8.6 E-11	4.1 E-11	2.4 E-11	1.3 E-11	1.1 E-11
Ge-75	1.38 h	F	1.000	1.6 E-10	1.000	1.0 E-10	4.3 E-11	2.8 E-11	1.7 E-11	1.5 E-11

		M	1.000	2.9 E-10	1.000	1.9 E-10	8.9 E-11	6.1 E-11	4.4 E-11	3.6 E-11
Ge-77	11.3 h	F	1.000	1.3 E-09	1.000	9.5 E-10	4.7 E-10	2.9 E-10	1.7 E-10	1.4 E-10
		M	1.000	2.3 E-09	1.000	1.7 E-09	8.8 E-10	6.0 E-10	4.5 E-10	3.7 E-10
Ge-78	1.45 h	F	1.000	4.3 E-10	1.000	2.9 E-10	1.4 E-10	8.9 E-11	5.5 E-11	4.5 E-11
		M	1.000	7.3 E-10	1.000	5.0 E-10	2.5 E-10	1.6 E-10	1.2 E-10	9.5 E-11
Arsenic										
As-69	0.253 h	M	1.000	2.1 E-10	0.500	1.4 E-10	6.3 E-11	4.0 E-11	2.5 E-11	2.1 E-11
As-70	0.876 h	M	1.000	5.7 E-10	0.500	4.3 E-10	2.1 E-10	1.3 E-10	8.3 E-11	6.7 E-11
As-71	2.70 d	M	1.000	2.2 E-09	0.500	1.9 E-09	1.0 E-09	6.8 E-10	5.0 E-10	4.0 E-10
As-72	1.08 d	M	1.000	5.9 E-09	0.500	5.7 E-09	2.7 E-09	1.7 E-09	1.1 E-09	9.0 E-10
As-73	80.3 d	M	1.000	5.4 E-09	0.500	4.0 E-09	2.3 E-09	1.5 E-09	1.2 E-09	1.0 E-09
As-74	17.8 d	M	1.000	1.1 E-08	0.500	8.4 E-09	4.7 E-09	3.3 E-09	2.6 E-09	2.1 E-09
As-76	1.10 d	M	1.000	5.1 E-09	0.500	4.6 E-09	2.2 E-09	1.4 E-09	8.8 E-10	7.4 E-10
As-77	1.62 d	M	1.000	2.2 E-09	0.500	1.7 E-09	8.9 E-10	6.2 E-10	5.0 E-10	3.9 E-10
As-78	1.51 h	M	1.000	8.0 E-10	0.500	5.8 E-10	2.7 E-10	1.7 E-10	1.1 E-10	8.9 E-11
Selenium										
Se-70	0.683 h	F	1.000	3.9 E-10	0.800	3.0 E-10	1.5 E-10	9.0 E-11	5.1 E-11	4.2 E-11
		M	0.200	6.5 E-10	0.100	4.7 E-10	2.3 E-10	1.4 E-10	8.9 E-11	7.3 E-11
		S	0.020	6.8 E-10	0.010	4.8 E-10	2.3 E-10	1.5 E-10	9.4 E-11	7.6 E-11
Se-73	7.15 h	F	1.000	7.7 E-10	0.800	6.5 E-10	3.3 E-10	2.1 E-10	1.0 E-10	8.0 E-11
		M	0.200	1.6 E-09	0.100	1.2 E-09	5.9 E-10	3.8 E-10	2.4 E-10	1.9 E-10
		S	0.020	1.8 E-09	0.010	1.3 E-09	6.3 E-10	4.0 E-10	2.6 E-10	2.1 E-10
Se-73m	0.650 h	F	1.000	9.3 E-11	0.800	7.2 E-11	3.5 E-11	2.3 E-11	1.1 E-11	9.2 E-12
		M	0.200	1.8 E-10	0.100	1.3 E-10	6.1 E-11	3.9 E-11	2.5 E-11	2.0 E-11
		S	0.020	1.9 E-10	0.010	1.3 E-10	6.5 E-11	4.1 E-11	2.6 E-11	2.2 E-11
Se-75	120 d	F	1.000	7.8 E-09	0.800	6.0 E-09	3.4 E-09	2.5 E-09	1.2 E-09	1.0 E-09
		M	0.200	5.4 E-09	0.100	4.5 E-09	2.5 E-09	1.7 E-09	1.3 E-09	1.1 E-09
		S	0.020	5.6 E-09	0.010	4.7 E-09	2.9 E-09	2.0 E-09	1.6 E-09	1.3 E-09
Se-79	6.50 E+04 a	F	1.000	1.6 E-08	0.800	1.3 E-08	7.7 E-09	5.6 E-09	1.5 E-09	1.1 E-09
		M	0.200	1.4 E-08	0.100	1.1 E-08	6.9 E-09	4.9 E-09	3.3 E-09	2.6 E-09
		S	0.020	2.3 E-08	0.010	2.0 E-08	1.3 E-08	8.7 E-09	7.6 E-09	6.8 E-09
Se-81	0.308 h	F	1.000	8.6 E-11	0.800	5.4 E-11	2.3 E-11	1.5 E-11	9.2 E-12	8.0 E-12
		M	0.200	1.3 E-10	0.100	8.5 E-11	3.8 E-11	2.5 E-11	1.6 E-11	1.4 E-11
		S	0.020	1.4 E-10	0.010	8.9 E-11	3.9 E-11	2.6 E-11	1.7 E-11	1.5 E-11
Se-81m	0.954 h	F	1.000	1.8 E-10	0.800	1.2 E-10	5.4 E-11	3.4 E-11	1.9 E-11	1.6 E-11
		M	0.200	3.8 E-10	0.100	2.5 E-10	1.2 E-10	8.0 E-11	5.8 E-11	4.7 E-11
		S	0.020	4.1 E-10	0.010	2.7 E-10	1.3 E-10	8.5 E-11	6.2 E-11	5.1 E-11
Se-83	0.375 h	F	1.000	1.7 E-10	0.800	1.2 E-10	5.8 E-11	3.6 E-11	2.1 E-11	1.8 E-11
		M	0.200	2.7 E-10	0.100	1.9 E-10	9.2 E-11	5.9 E-11	3.9 E-11	3.2 E-11
		S	0.020	2.8 E-10	0.010	2.0 E-10	9.6 E-11	6.2 E-11	4.1 E-11	3.4 E-11
Bromine										
Br-74	0.422 h	F	1.000	2.5 E-10	1.000	1.8 E-10	8.6 E-11	5.3 E-11	3.2 E-11	2.6 E-11
		M	1.000	3.6 E-10	1.000	2.5 E-10	1.2 E-10	7.5 E-11	4.6 E-11	3.8 E-11
Br-74m	0.691 h	F	1.000	4.0 E-10	1.000	2.8 E-10	1.3 E-10	8.1 E-11	4.8 E-11	3.9 E-11
		M	1.000	5.9 E-10	1.000	4.1 E-10	1.9 E-10	1.2 E-10	7.5 E-11	6.2 E-11
Br-75	1.63 h	F	1.000	2.9 E-10	1.000	2.1 E-10	9.7 E-11	5.9 E-11	3.5 E-11	2.9 E-11
		M	1.000	4.5 E-10	1.000	3.1 E-10	1.5 E-10	9.7 E-11	6.5 E-11	5.3 E-11
Br-76	16.2 h	F	1.000	2.2 E-09	1.000	1.7 E-09	8.4 E-10	5.1 E-10	3.0 E-10	2.4 E-10
		M	1.000	3.0 E-09	1.000	2.3 E-09	1.2 E-09	7.5 E-10	5.0 E-10	4.1 E-10
Br-77	2.33 d	F	1.000	5.3 E-10	1.000	4.4 E-10	2.2 E-10	1.3 E-10	7.7 E-11	6.2 E-11
		M	1.000	6.3 E-10	1.000	5.1 E-10	2.7 E-10	1.6 E-10	1.1 E-10	8.4 E-11
Br-80	0.290 h	F	1.000	7.1 E-11	1.000	4.4 E-11	1.8 E-11	1.2 E-11	6.9 E-12	5.9 E-12
		M	1.000	1.1 E-10	1.000	6.5 E-11	2.8 E-11	1.8 E-11	1.1 E-11	9.4 E-12
Br-80m	4.42 h	F	1.000	4.3 E-10	1.000	2.8 E-10	1.2 E-10	7.2 E-11	4.0 E-11	3.3 E-11
		M	1.000	6.8 E-10	1.000	4.5 E-10	2.1 E-10	1.4 E-10	9.3 E-11	7.6 E-11
Br-82	1.47 d	F	1.000	2.7 E-09	1.000	2.2 E-09	1.2 E-09	7.0 E-10	4.2 E-10	3.5 E-10
		M	1.000	3.8 E-09	1.000	3.0 E-09	1.7 E-09	1.1 E-09	7.9 E-10	6.3 E-10
Br-83	2.39 h	F	1.000	1.7 E-10	1.000	1.1 E-10	4.7 E-11	3.0 E-11	1.8 E-11	1.6 E-11
		M	1.000	3.5 E-10	1.000	2.3 E-10	1.1 E-10	7.7 E-11	5.9 E-11	4.8 E-11
Br-84	0.530 h	F	1.000	2.4 E-10	1.000	1.6 E-10	7.1 E-11	4.4 E-11	2.6 E-11	2.2 E-11
		M	1.000	3.7 E-10	1.000	2.4 E-10	1.1 E-10	6.9 E-11	4.4 E-11	3.7 E-11

Rubidium

Rb-79	0.382 h	F	1.000	1.6 E-10	1.000	1.1 E-10	5.0 E-11	3.2 E-11	1.9 E-11	1.6 E-11
Rb-81	4.58 h	F	1.000	3.2 E-10	1.000	2.5 E-10	1.2 E-10	7.1 E-11	4.2 E-11	3.4 E-11
Rb-81m	0.533 h	F	1.000	6.2 E-11	1.000	4.6 E-11	2.2 E-11	1.4 E-11	8.5 E-12	7.0 E-12
Rb-82m	6.20 h	F	1.000	8.6 E-10	1.000	7.3 E-10	3.9 E-10	2.3 E-10	1.4 E-10	1.1 E-10
Rb-83	86.2 d	F	1.000	4.9 E-09	1.000	3.8 E-09	2.0 E-09	1.3 E-09	7.9 E-10	6.9 E-10
Rb-84	32.8 d	F	1.000	8.6 E-09	1.000	6.4 E-09	3.1 E-09	2.0 E-09	1.2 E-09	1.0 E-09
Rb-86	18.7 d	F	1.000	1.2 E-08	1.000	7.7 E-09	3.4 E-09	2.0 E-09	1.1 E-09	9.3 E-10
Rb-87	4.70 E+10 a	F	1.000	6.0 E-09	1.000	4.1 E-09	1.8 E-09	1.1 E-09	6.0 E-10	5.0 E-10
Rb-88	0.297 h	F	1.000	1.9 E-10	1.000	1.2 E-10	5.2 E-11	3.2 E-11	1.9 E-11	1.6 E-11
Rb-89	0.253 h	F	1.000	1.4 E-10	1.000	9.3 E-11	4.3 E-11	2.7 E-11	1.6 E-11	1.4 E-11
Strontium(*)										
Sr-80	1.67 h	F	0.600	7.8 E-10	0.300	5.4 E-10	2.4 E-10	1.4 E-10	7.9 E-11	7.1 E-11
		M	0.200	1.4 E-09	0.100	9.0 E-10	4.1 E-10	2.5 E-10	1.5 E-10	1.3 E-10
		S	0.020	1.5 E-09	0.010	9.4 E-10	4.3 E-10	2.7 E-10	1.6 E-10	1.4 E-10
Sr-81	0.425 h	F	0.600	2.1 E-10	0.300	1.5 E-10	6.7 E-11	4.1 E-11	2.4 E-11	2.1 E-11
		M	0.200	3.3 E-10	0.100	2.2 E-10	1.0 E-10	6.6 E-11	4.2 E-11	3.5 E-11
		S	0.020	3.4 E-10	0.010	2.3 E-10	1.1 E-10	6.9 E-11	4.4 E-11	3.7 E-11
Sr-82	25.0 d	F	0.600	2.8 E-08	0.300	1.5 E-08	6.6 E-09	4.6 E-09	3.2 E-09	2.1 E-09
		M	0.200	5.5 E-08	0.100	4.0 E-08	2.1 E-08	1.4 E-08	1.0 E-08	8.9 E-09
		S	0.020	6.1 E-08	0.010	4.6 E-08	2.5 E-08	1.7 E-08	1.2 E-08	1.1 E-08
Sr-83	1.35 d	F	0.600	1.4 E-09	0.300	1.1 E-09	5.5 E-10	3.4 E-10	2.0 E-10	1.6 E-10
		M	0.200	2.5 E-09	0.100	1.9 E-09	9.5 E-10	6.0 E-10	3.9 E-10	3.1 E-10
		S	0.020	2.8 E-09	0.010	2.0 E-09	1.0 E-09	6.5 E-10	4.2 E-10	3.4 E-10
Sr-85	64.8 d	F	0.600	4.4 E-09	0.300	2.3 E-09	1.1 E-09	9.6 E-10	8.3 E-10	3.8 E-10
		M	0.200	4.3 E-09	0.100	3.1 E-09	1.8 E-09	1.2 E-09	8.8 E-10	6.4 E-10
		S	0.020	4.4 E-09	0.010	3.7 E-09	2.2 E-09	1.3 E-09	1.0 E-09	8.1 E-10
Sr-85m	1.16 h	F	0.600	2.4 E-11	0.300	1.9 E-11	9.6 E-12	6.0 E-12	3.7 E-12	2.9 E-12
		M	0.200	3.1 E-11	0.100	2.5 E-11	1.3 E-11	8.0 E-12	5.1 E-12	4.1 E-12
		S	0.020	3.2 E-11	0.010	2.6 E-11	1.3 E-11	8.3 E-12	5.4 E-12	4.3 E-12
Sr-87m	2.80 h	F	0.600	9.7 E-11	0.300	7.8 E-11	3.8 E-11	2.3 E-11	1.3 E-11	1.1 E-11
		M	0.200	1.6 E-10	0.100	1.2 E-10	5.9 E-11	3.8 E-11	2.5 E-11	2.0 E-11
		S	0.020	1.7 E-10	0.010	1.2 E-10	6.2 E-11	4.0 E-11	2.6 E-11	2.1 E-11
Sr-89	50.5 d	F	0.600	1.5 E-08	0.300	7.3 E-09	3.2 E-09	2.3 E-09	1.7 E-09	1.0 E-09
		M	0.200	3.3 E-08	0.100	2.4 E-08	1.3 E-08	9.1 E-09	7.3 E-09	6.1 E-09
		S	0.020	3.9 E-08	0.010	3.0 E-08	1.7 E-08	1.2 E-08	9.3 E-09	7.9 E-09
Sr-90	29.1 a	F	0.600	1.3 E-07	0.300	5.2 E-08	3.1 E-08	4.1 E-08	5.3 E-08	2.4 E-08
		M	0.200	1.5 E-07	0.100	1.1 E-07	6.5 E-08	5.1 E-08	5.0 E-08	3.6 E-08
		S	0.020	4.2 E-07	0.010	4.0 E-07	2.7 E-07	1.8 E-07	1.6 E-07	1.6 E-07
Sr-91	9.50 h	F	0.600	1.4 E-09	0.300	1.1 E-09	5.2 E-10	3.1 E-10	1.7 E-10	1.6 E-10
		M	0.200	3.1 E-09	0.100	2.2 E-09	1.1 E-09	6.9 E-10	4.4 E-10	3.7 E-10
		S	0.020	3.5 E-09	0.010	2.5 E-09	1.2 E-09	7.7 E-10	4.9 E-10	4.1 E-10
Sr-92	2.71 h	F	0.600	9.0 E-10	0.300	7.1 E-10	3.3 E-10	2.0 E-10	1.0 E-10	9.8 E-11
		M	0.200	1.9 E-09	0.100	1.4 E-09	6.5 E-10	4.1 E-10	2.5 E-10	2.1 E-10
		S	0.020	2.2 E-09	0.010	1.5 E-09	7.0 E-10	4.5 E-10	2.7 E-10	2.3 E-10
Yttrium										
Y-86	14.7 h	M	0.001	3.7 E-09	1.0 E-04	2.9 E-09	1.5 E-09	9.3 E-10	5.6 E-10	4.5 E-10
		S	0.001	3.8 E-09	1.0 E-04	3.0 E-09	1.5 E-09	9.6 E-10	5.8 E-10	4.7 E-10
Y-86m	0.800 h	M	0.001	2.2 E-10	1.0 E-04	1.7 E-10	8.7 E-11	5.6 E-11	3.4 E-11	2.7 E-11
		S	0.001	2.3 E-10	1.0 E-04	1.8 E-10	9.0 E-11	5.7 E-11	3.5 E-11	2.8 E-11
Y-87	3.35 d	M	0.001	2.7 E-09	1.0 E-04	2.1 E-09	1.1 E-09	7.0 E-10	4.7 E-10	3.7 E-10
		S	0.001	2.8 E-09	1.0 E-04	2.2 E-09	1.1 E-09	7.3 E-10	5.0 E-10	3.9 E-10
Y-88	107 d	M	0.001	1.9 E-08	1.0 E-04	1.6 E-08	1.0 E-08	6.7 E-09	4.9 E-09	4.1 E-09
		S	0.001	2.0 E-08	1.0 E-04	1.7 E-08	9.8 E-09	6.6 E-09	5.4 E-09	4.4 E-09
Y-90	2.67 d	M	0.001	1.3 E-08	1.0 E-04	8.4 E-09	4.0 E-09	2.6 E-09	1.7 E-09	1.4 E-09
		S	0.001	1.3 E-08	1.0 E-04	8.8 E-09	4.2 E-09	2.7 E-09	1.8 E-09	1.5 E-09
Y-90m	3.19 h	M	0.001	7.2 E-10	1.0 E-04	5.7 E-10	2.8 E-10	1.8 E-10	1.1 E-10	9.5 E-11
		S	0.001	7.5 E-10	1.0 E-04	6.0 E-10	2.9 E-10	1.9 E-10	1.2 E-10	1.0 E-10
Y-91	58.5 d	M	0.001	3.9 E-08	1.0 E-04	3.0 E-08	1.6 E-08	1.1 E-08	8.4 E-09	7.1 E-09
		S	0.001	4.3 E-08	1.0 E-04	3.4 E-08	1.9 E-08	1.3 E-08	1.0 E-08	8.9 E-09
Y-91m	0.828 h	M	0.001	7.0 E-11	1.0 E-04	5.5 E-11	2.9 E-11	1.8 E-11	1.2 E-11	1.0 E-11
		S	0.001	7.4 E-11	1.0 E-04	5.9 E-11	3.1 E-11	2.0 E-11	1.4 E-11	1.1 E-11

Y-92	3.54 h	M	0.001	1.8 E-09	1.0 E-04	1.2 E-09	5.3 E-10	3.3 E-10	2.0 E-10	1.7 E-10
		S	0.001	1.9 E-09	1.0 E-04	1.2 E-09	5.5 E-10	3.5 E-10	2.1 E-10	1.8 E-10
Y-93	10.1 h	M	0.001	4.4 E-09	1.0 E-04	2.9 E-09	1.3 E-09	8.1 E-10	4.7 E-10	4.0 E-10
		S	0.001	4.6 E-09	1.0 E-04	3.0 E-09	1.4 E-09	8.5 E-10	5.0 E-10	4.2 E-10
Y-94	0.318 h	M	0.001	2.8 E-10	1.0 E-04	1.8 E-10	8.1 E-11	5.0 E-11	3.1 E-11	2.7 E-11
		S	0.001	2.9 E-10	1.0 E-04	1.9 E-10	8.4 E-11	5.2 E-11	3.3 E-11	2.8 E-11
Y-95	0.178 h	M	0.001	1.5 E-10	1.0 E-04	9.8 E-11	4.4 E-11	2.8 E-11	1.8 E-11	1.5 E-11
		S	0.001	1.6 E-10	1.0 E-04	1.0 E-10	4.5 E-11	2.9 E-11	1.8 E-11	1.6 E-11
Zirconium										
Zr-86	16.5 h	F	0.020	2.4 E-09	0.002	1.9 E-09	9.5 E-10	5.9 E-10	3.4 E-10	2.7 E-10
		M	0.020	3.4 E-09	0.002	2.6 E-09	1.3 E-09	8.4 E-10	5.2 E-10	4.2 E-10
		S	0.020	3.5 E-09	0.002	2.7 E-09	1.4 E-09	8.7 E-10	5.4 E-10	4.3 E-10
Zr-88	83.4 d	F	0.020	6.9 E-09	0.002	8.3 E-09	5.6 E-09	4.7 E-09	3.6 E-09	3.5 E-09
		M	0.020	8.5 E-09	0.002	7.8 E-09	5.1 E-09	3.6 E-09	3.0 E-09	2.6 E-09
		S	0.020	1.3 E-08	0.002	1.2 E-08	7.7 E-09	5.2 E-09	4.3 E-09	3.6 E-09
Zr-89	3.27 d	F	0.020	2.6 E-09	0.002	2.0 E-09	9.9 E-10	6.1 E-10	3.6 E-10	2.9 E-10
		M	0.020	3.7 E-09	0.002	2.8 E-09	1.5 E-09	9.6 E-10	6.5 E-10	5.2 E-10
		S	0.020	3.9 E-09	0.002	2.9 E-09	1.5 E-09	1.0 E-09	6.8 E-10	5.5 E-10
Zr-93	1.53 E+06 a	F	0.020	3.5 E-09	0.002	4.8 E-09	5.3 E-09	9.7 E-09	1.8 E-08	2.5 E-08
		M	0.020	3.3 E-09	0.002	3.1 E-09	2.8 E-09	4.1 E-09	7.5 E-09	1.0 E-08
		S	0.020	7.0 E-09	0.002	6.4 E-09	4.5 E-09	3.3 E-09	3.3 E-09	3.3 E-09
Zr-95	64.0 d	F	0.020	1.2 E-08	0.002	1.1 E-08	6.4 E-09	4.2 E-09	2.8 E-09	2.5 E-09
		M	0.020	2.0 E-08	0.002	1.6 E-08	9.7 E-09	6.8 E-09	5.9 E-09	4.8 E-09
		S	0.020	2.4 E-08	0.002	1.9 E-08	1.2 E-08	8.3 E-09	7.3 E-09	5.9 E-09
Zr-97	16.9 h	F	0.020	5.0 E-09	0.002	3.4 E-09	1.5 E-09	9.1 E-10	4.8 E-10	3.9 E-10
		M	0.020	7.8 E-09	0.002	5.3 E-09	2.8 E-09	1.8 E-09	1.1 E-09	9.2 E-10
		S	0.020	8.2 E-09	0.002	5.6 E-09	2.9 E-09	1.9 E-09	1.2 E-09	8.9 E-10
Niobium										
Nb-88	0.238 h	F	0.020	1.8 E-10	0.010	1.3 E-10	6.3 E-11	3.9 E-11	2.4 E-11	1.9 E-11
		M	0.020	2.5 E-10	0.010	1.8 E-10	8.5 E-11	5.3 E-11	3.3 E-11	2.7 E-11
		S	0.020	2.6 E-10	0.010	1.8 E-10	8.7 E-11	5.5 E-11	3.5 E-11	2.8 E-11
Nb-89	2.03 h	F	0.020	7.0 E-10	0.010	4.8 E-10	2.2 E-10	1.3 E-10	7.4 E-11	6.1 E-11
		M	0.020	1.1 E-09	0.010	7.6 E-10	3.6 E-10	2.2 E-10	1.4 E-10	1.1 E-10
		S	0.020	1.2 E-09	0.010	7.9 E-10	3.7 E-10	2.3 E-10	1.5 E-10	1.2 E-10
Nb-89	1.10 h	F	0.020	4.0 E-10	0.010	2.9 E-10	1.4 E-10	8.3 E-11	4.8 E-11	3.9 E-11
		M	0.020	6.2 E-10	0.010	4.3 E-10	2.1 E-10	1.3 E-10	8.2 E-11	6.8 E-11
		S	0.020	6.4 E-10	0.010	4.4 E-10	2.1 E-10	1.4 E-10	8.6 E-11	7.1 E-11
Nb-90	14.6 h	F	0.020	3.5 E-09	0.010	2.7 E-09	1.3 E-09	8.2 E-10	4.7 E-10	3.8 E-10
		M	0.020	5.1 E-09	0.010	3.9 E-09	1.9 E-09	1.3 E-09	7.8 E-10	6.3 E-10
		S	0.020	5.3 E-09	0.010	4.0 E-09	2.0 E-09	1.3 E-09	8.1 E-10	6.6 E-10
Nb-93m	13.6 a	F	0.020	1.8 E-09	0.010	1.4 E-09	7.0 E-10	4.4 E-10	2.7 E-10	2.2 E-10
		M	0.020	3.1 E-09	0.010	2.4 E-09	1.3 E-09	8.2 E-10	5.9 E-10	5.1 E-10
		S	0.020	7.4 E-09	0.010	6.5 E-09	4.0 E-09	2.5 E-09	1.9 E-09	1.8 E-09
Nb-94	2.03 E+04 a	F	0.020	3.1 E-08	0.010	2.7 E-08	1.5 E-08	1.0 E-08	6.7 E-09	5.8 E-09
		M	0.020	4.3 E-08	0.010	3.7 E-08	2.3 E-08	1.6 E-08	1.3 E-08	1.1 E-08
		S	0.020	1.2 E-07	0.010	1.2 E-07	8.3 E-08	5.8 E-08	5.2 E-08	4.9 E-08
Nb-95	35.1 d	F	0.020	4.1 E-09	0.010	3.1 E-09	1.6 E-09	1.2 E-09	7.5 E-10	5.7 E-10
		M	0.020	6.8 E-09	0.010	5.2 E-09	3.1 E-09	2.2 E-09	1.9 E-09	1.5 E-09
		S	0.020	7.7 E-09	0.010	5.9 E-09	3.6 E-09	2.5 E-09	2.2 E-09	1.8 E-09
Nb-95m	3.61 d	F	0.020	2.3 E-09	0.010	1.6 E-09	7.0 E-10	4.2 E-10	2.4 E-10	2.0 E-10
		M	0.020	4.3 E-09	0.010	3.1 E-09	1.7 E-09	1.2 E-09	1.0 E-09	7.9 E-10
		S	0.020	4.6 E-09	0.010	3.4 E-09	1.9 E-09	1.3 E-09	1.1 E-09	8.8 E-10
Nb-96	23.3 h	F	0.020	3.1 E-09	0.010	2.4 E-09	1.2 E-09	7.3 E-10	4.2 E-10	3.4 E-10
		M	0.020	4.7 E-09	0.010	3.6 E-09	1.8 E-09	1.2 E-09	7.8 E-10	6.3 E-10
		S	0.020	4.9 E-09	0.010	3.7 E-09	1.9 E-09	1.2 E-09	8.3 E-10	6.6 E-10
Nb-97	1.20 h	F	0.020	2.2 E-10	0.010	1.5 E-10	6.8 E-11	4.2 E-11	2.5 E-11	2.1 E-11
		M	0.020	3.7 E-10	0.010	2.5 E-10	1.2 E-10	7.7 E-11	5.2 E-11	4.3 E-11
		S	0.020	3.8 E-10	0.010	2.6 E-10	1.2 E-10	8.1 E-11	5.5 E-11	4.5 E-11
Nb-98	0.858 h	F	0.020	3.4 E-10	0.010	2.4 E-10	1.1 E-10	6.9 E-11	4.1 E-11	3.3 E-11
		M	0.020	5.2 E-10	0.010	3.6 E-10	1.7 E-10	1.1 E-10	6.8 E-11	5.6 E-11
		S	0.020	5.3 E-10	0.010	3.7 E-10	1.8 E-10	1.1 E-10	7.1 E-11	5.8 E-11
Molybdenum										

Mo-90	5.67 h	F	1.000	1.2 E-09	0.800	1.1 E-09	5.3 E-10	3.2 E-10	1.9 E-10	1.5 E-10
		M	0.200	2.6 E-09	0.100	2.0 E-09	9.9 E-10	6.5 E-10	4.2 E-10	3.4 E-10
		S	0.020	2.8 E-09	0.010	2.1 E-09	1.1 E-09	6.9 E-10	4.5 E-10	3.6 E-10
Mo-93	3.50 E+03 a	F	1.000	3.1 E-09	0.800	2.6 E-09	1.7 E-09	1.3 E-09	1.1 E-09	1.0 E-09
		M	0.200	2.2 E-09	0.100	1.8 E-09	1.1 E-09	7.9 E-10	6.6 E-10	5.9 E-10
		S	0.020	6.0 E-09	0.010	5.8 E-09	4.0 E-09	2.8 E-09	2.4 E-09	2.3 E-09
Mo-93m	6.85 h	F	1.000	7.3 E-10	0.800	6.4 E-10	3.3 E-10	2.0 E-10	1.2 E-10	9.6 E-11
		M	0.200	1.2 E-09	0.100	9.7 E-10	5.0 E-10	3.2 E-10	2.0 E-10	1.6 E-10
		S	0.020	1.3 E-09	0.010	1.0 E-09	5.2 E-10	3.4 E-10	2.1 E-10	1.7 E-10
Mo-99	2.75 d	F	1.000	2.3 E-09	0.800	1.7 E-09	7.7 E-10	4.7 E-10	2.6 E-10	2.2 E-10
		M	0.200	6.0 E-09	0.100	4.4 E-09	2.2 E-09	1.5 E-09	1.1 E-09	8.9 E-10
		S	0.020	6.9 E-09	0.010	4.8 E-09	2.4 E-09	1.7 E-09	1.2 E-09	9.9 E-10
Mo-101	0.244 h	F	1.000	1.4 E-10	0.800	9.7 E-11	4.4 E-11	2.8 E-11	1.7 E-11	1.4 E-11
		M	0.200	2.2 E-10	0.100	1.5 E-10	7.0 E-11	4.5 E-11	3.0 E-11	2.5 E-11
		S	0.020	2.3 E-10	0.010	1.6 E-10	7.2 E-11	4.7 E-11	3.1 E-11	2.6 E-11
Technetium										
Tc-93	2.75 h	F	1.000	2.4 E-10	0.800	2.1 E-10	1.1 E-10	6.7 E-11	4.0 E-11	3.2 E-11
		M	0.200	2.7 E-10	0.100	2.3 E-10	1.2 E-10	7.5 E-11	4.4 E-11	3.5 E-11
		S	0.020	2.8 E-10	0.010	2.3 E-10	1.2 E-10	7.6 E-11	4.5 E-11	3.5 E-11
Tc-93m	0.725 h	F	1.000	1.2 E-10	0.800	9.8 E-11	4.9 E-11	2.9 E-11	1.8 E-11	1.4 E-11
		M	0.200	1.4 E-10	0.100	1.1 E-10	5.4 E-11	3.4 E-11	2.1 E-11	1.7 E-11
		S	0.020	1.4 E-10	0.010	1.1 E-10	5.4 E-11	3.4 E-11	2.1 E-11	1.7 E-11
Tc-94	4.88 h	F	1.000	8.9 E-10	0.800	7.5 E-10	3.9 E-10	2.3 E-10	1.4 E-10	1.1 E-10
		M	0.200	9.8 E-10	0.100	8.1 E-10	4.2 E-10	2.6 E-10	1.6 E-10	1.2 E-10
		S	0.020	9.9 E-10	0.010	8.2 E-10	4.3 E-10	2.7 E-10	1.6 E-10	1.3 E-10
Tc-94m	0.867 h	F	1.000	4.8 E-10	0.800	3.4 E-10	1.6 E-10	8.6 E-11	5.2 E-11	4.1 E-11
		M	0.200	4.4 E-10	0.100	3.0 E-10	1.4 E-10	8.8 E-11	5.5 E-11	4.5 E-11
		S	0.020	4.3 E-10	0.010	3.0 E-10	1.4 E-10	8.8 E-11	5.6 E-11	4.6 E-11

Tc-95	20.0 h	F	1.000	7.5 E-10	0.800	6.3 E-10	3.3 E-10	2.0 E-10	1.2 E-10	9.6 E-11
		M	0.200	8.3 E-10	0.100	6.9 E-10	3.6 E-10	2.2 E-10	1.3 E-10	1.0 E-10
		S	0.020	8.5 E-10	0.010	7.0 E-10	3.6 E-10	2.3 E-10	1.4 E-10	1.1 E-10
Tc-95m	61.0 d	F	1.000	2.4 E-09	0.800	1.8 E-09	9.3 E-10	5.7 E-10	3.6 E-10	2.9 E-10
		M	0.200	4.9 E-09	0.100	4.0 E-09	2.3 E-09	1.5 E-09	1.1 E-09	8.8 E-10
		S	0.020	6.0 E-09	0.010	5.0 E-09	2.7 E-09	1.8 E-09	1.5 E-09	1.2 E-09
Tc-96	4.28 d	F	1.000	4.2 E-09	0.800	3.4 E-09	1.8 E-09	1.1 E-09	7.0 E-10	5.7 E-10
		M	0.200	4.7 E-09	0.100	3.9 E-09	2.1 E-09	1.3 E-09	8.6 E-10	6.8 E-10
		S	0.020	4.8 E-09	0.010	3.9 E-09	2.1 E-09	1.4 E-09	8.9 E-10	7.0 E-10
Tc-96m	0.858 h	F	1.000	5.3 E-11	0.800	4.1 E-11	2.1 E-11	1.3 E-11	7.7 E-12	6.2 E-12
		M	0.200	5.6 E-11	0.100	4.4 E-11	2.3 E-11	1.4 E-11	9.3 E-12	7.4 E-12
		S	0.020	5.7 E-11	0.010	4.4 E-11	2.3 E-11	1.5 E-11	9.5 E-12	7.5 E-12
Tc-97	2.60 E+06 a	F	1.000	5.2 E-10	0.800	3.7 E-10	1.7 E-10	9.4 E-11	5.6 E-11	4.3 E-11
		M	0.200	1.2 E-09	0.100	1.0 E-09	5.7 E-10	3.6 E-10	2.8 E-10	2.2 E-10
		S	0.020	5.0 E-09	0.010	4.8 E-09	3.3 E-09	2.2 E-09	1.9 E-09	1.8 E-09
Tc-97m	87.0 d	F	1.000	3.4 E-09	0.800	2.3 E-09	9.8 E-10	5.6 E-10	3.0 E-10	2.7 E-10
		M	0.200	1.3 E-08	0.100	1.0 E-08	6.1 E-09	4.4 E-09	4.1 E-09	3.2 E-09
		S	0.020	1.6 E-08	0.010	1.3 E-08	7.8 E-09	5.7 E-09	5.2 E-09	4.1 E-09
Tc-98	4.20 E+06 a	F	1.000	1.0 E-08	0.800	6.8 E-09	3.2 E-09	1.9 E-09	1.2 E-09	9.7 E-10
		M	0.200	3.5 E-08	0.100	2.9 E-08	1.7 E-08	1.2 E-08	1.0 E-08	8.3 E-09
		S	0.020	1.1 E-07	0.010	1.1 E-07	7.6 E-08	5.4 E-08	4.8 E-08	4.5 E-08
Tc-99	2.13 E+05 a	F	1.000	4.0 E-09	0.800	2.5 E-09	1.0 E-09	5.9 E-10	3.6 E-10	2.9 E-10
		M	0.200	1.7 E-08	0.100	1.3 E-08	8.0 E-09	5.7 E-09	5.0 E-09	4.0 E-09
		S	0.020	4.1 E-08	0.010	3.7 E-08	2.4 E-08	1.7 E-08	1.5 E-08	1.3 E-08
Tc-99m	6.02 h	F	1.000	1.2 E-10	0.800	8.7 E-11	4.1 E-11	2.4 E-11	1.5 E-11	1.2 E-11
		M	0.200	1.3 E-10	0.100	9.9 E-11	5.1 E-11	3.4 E-11	2.4 E-11	1.9 E-11
		S	0.020	1.3 E-10	0.010	1.0 E-10	5.2 E-11	3.5 E-11	2.5 E-11	2.0 E-11
Tc-101	0.237 h	F	1.000	8.5 E-11	0.800	5.6 E-11	2.5 E-11	1.6 E-11	9.7 E-12	8.2 E-12
		M	0.200	1.1 E-10	0.100	7.1 E-11	3.2 E-11	2.1 E-11	1.4 E-11	1.2 E-11
		S	0.020	1.1 E-10	0.010	7.3 E-11	3.3 E-11	2.2 E-11	1.4 E-11	1.2 E-11
Tc-104	0.303 h	F	1.000	2.7 E-10	0.800	1.8 E-10	8.0 E-11	4.6 E-11	2.8 E-11	2.3 E-11
		M	0.200	2.9 E-10	0.100	1.9 E-10	8.6 E-11	5.4 E-11	3.3 E-11	2.8 E-11
		S	0.020	2.9 E-10	0.010	1.9 E-10	8.7 E-11	5.4 E-11	3.4 E-11	2.9 E-11

Ruthenium										
Ru-94	0.863 h	F	0.100	2.5 E-10	0.050	1.9 E-10	9.0 E-11	5.4 E-11	3.1 E-11	2.5 E-11
		M	0.100	3.8 E-10	0.050	2.8 E-10	1.3 E-10	8.4 E-11	5.2 E-11	4.2 E-11
		S	0.020	4.0 E-10	0.010	2.9 E-10	1.4 E-10	8.7 E-11	5.4 E-11	4.4 E-11
Ru-97	2.90 d	F	0.100	5.5 E-10	0.050	4.4 E-10	2.2 E-10	1.3 E-10	7.7 E-11	6.2 E-11
		M	0.100	7.7 E-10	0.050	6.1 E-10	3.1 E-10	2.0 E-10	1.3 E-10	1.0 E-10
		S	0.020	8.1 E-10	0.010	6.3 E-10	3.3 E-10	2.1 E-10	1.4 E-10	1.1 E-10
Ru-103	39.3 d	F	0.100	4.2 E-09	0.050	3.0 E-09	1.5 E-09	9.3 E-10	5.6 E-10	4.8 E-10
		M	0.100	1.1 E-08	0.050	8.4 E-09	5.0 E-09	3.5 E-09	3.0 E-09	2.4 E-09
		S	0.020	1.3 E-08	0.010	1.0 E-08	6.0 E-09	4.2 E-09	3.7 E-09	3.0 E-09
Ru-105	4.44 h	F	0.100	7.1 E-10	0.050	5.1 E-10	2.3 E-10	1.4 E-10	7.9 E-11	6.5 E-11
		M	0.100	1.3 E-09	0.050	9.2 E-10	4.5 E-10	3.0 E-10	2.0 E-10	1.7 E-10
		S	0.020	1.4 E-09	0.010	9.8 E-10	4.8 E-10	3.2 E-10	2.2 E-10	1.8 E-10
Ru-106	1.01 a	F	0.100	7.2 E-08	0.050	5.4 E-08	2.6 E-08	1.6 E-08	9.2 E-09	7.9 E-09
		M	0.100	1.4 E-07	0.050	1.1 E-07	6.4 E-08	4.1 E-08	3.1 E-08	2.8 E-08
		S	0.020	2.6 E-07	0.010	2.3 E-07	1.4 E-07	9.1 E-08	7.1 E-08	6.6 E-08

Rhodium										
Rh-99	16.0 d	F	0.100	2.6 E-09	0.050	2.0 E-09	9.9 E-10	6.2 E-10	3.8 E-10	3.2 E-10
		M	0.100	4.5 E-09	0.050	3.5 E-09	2.0 E-09	1.3 E-09	9.6 E-10	7.7 E-10
		S	0.100	4.9 E-09	0.050	3.8 E-09	2.2 E-09	1.3 E-09	1.1 E-09	8.7 E-10
Rh-99m	4.70 h	F	0.100	2.4 E-10	0.050	2.0 E-10	1.0 E-10	6.1 E-11	3.5 E-11	2.8 E-11
		M	0.100	3.1 E-10	0.050	2.5 E-10	1.3 E-10	8.0 E-11	4.9 E-11	3.9 E-11
		S	0.100	3.2 E-10	0.050	2.6 E-10	1.3 E-10	8.2 E-11	5.1 E-11	4.0 E-11
Rh-100	20.8 h	F	0.100	2.1 E-09	0.050	1.8 E-09	9.1 E-10	5.6 E-10	3.3 E-10	2.6 E-10
		M	0.100	2.7 E-09	0.050	2.2 E-09	1.1 E-09	7.1 E-10	4.3 E-10	3.4 E-10
		S	0.100	2.8 E-09	0.050	2.2 E-09	1.2 E-09	7.3 E-10	4.4 E-10	3.5 E-10
Rh-101	3.20 a	F	0.100	7.4 E-09	0.050	6.1 E-09	3.5 E-09	2.3 E-09	1.5 E-09	1.4 E-09
		M	0.100	9.8 E-09	0.050	8.0 E-09	4.9 E-09	3.4 E-09	2.8 E-09	2.3 E-09
		S	0.100	1.9 E-08	0.050	1.7 E-08	1.1 E-08	7.4 E-09	6.2 E-09	5.4 E-09
Rh-101m	4.34 d	F	0.100	8.4 E-10	0.050	6.6 E-10	3.3 E-10	2.0 E-10	1.2 E-10	9.7 E-11
		M	0.100	1.3 E-09	0.050	9.8 E-10	5.2 E-10	3.5 E-10	2.5 E-10	1.9 E-10
		S	0.100	1.3 E-09	0.050	1.0 E-09	5.5 E-10	3.7 E-10	2.7 E-10	2.1 E-10
Rh-102	2.90 a	F	0.100	3.3 E-08	0.050	2.8 E-08	1.7 E-08	1.1 E-08	7.9 E-09	7.3 E-09
		M	0.100	3.0 E-08	0.050	2.5 E-08	1.5 E-08	1.0 E-08	7.9 E-09	6.9 E-09
		S	0.100	5.4 E-08	0.050	5.0 E-08	3.5 E-08	2.4 E-08	2.0 E-08	1.7 E-08
Rh-102m	207 d	F	0.100	1.2 E-08	0.050	8.7 E-09	4.4 E-09	2.7 E-09	1.7 E-09	1.5 E-09
		M	0.100	2.0 E-08	0.050	1.6 E-08	9.0 E-09	6.0 E-09	4.7 E-09	4.0 E-09
		S	0.100	3.0 E-08	0.050	2.5 E-08	1.5 E-08	1.0 E-08	8.2 E-09	7.1 E-09
Rh-103m	0.935 h	F	0.100	8.6 E-12	0.050	5.9 E-12	2.7 E-12	1.6 E-12	1.0 E-12	8.6 E-13
		M	0.100	1.9 E-11	0.050	1.2 E-11	6.3 E-12	4.0 E-12	3.0 E-12	2.5 E-12
		S	0.100	2.0 E-11	0.050	1.3 E-11	6.7 E-12	4.3 E-12	3.2 E-12	2.7 E-12
Rh-105	1.47 d	F	0.100	1.0 E-09	0.050	6.9 E-10	3.0 E-10	1.8 E-10	9.6 E-11	8.2 E-11
		M	0.100	2.2 E-09	0.050	1.6 E-09	7.4 E-10	5.2 E-10	4.1 E-10	3.2 E-10
		S	0.100	2.4 E-09	0.050	1.7 E-09	8.0 E-10	5.6 E-10	4.5 E-10	3.5 E-10
Rh-106m	2.20 h	F	0.100	5.7 E-10	0.050	4.5 E-10	2.2 E-10	1.4 E-10	8.0 E-11	6.5 E-11
		M	0.100	8.2 E-10	0.050	6.3 E-10	3.2 E-10	2.0 E-10	1.3 E-10	1.1 E-10
		S	0.100	8.5 E-10	0.050	6.5 E-10	3.3 E-10	2.1 E-10	1.4 E-10	1.1 E-10
Rh-107	0.362 h	F	0.100	8.9 E-11	0.050	5.9 E-11	2.6 E-11	1.7 E-11	1.0 E-11	9.0 E-12
		M	0.100	1.4 E-10	0.050	9.3 E-11	4.2 E-11	2.8 E-11	1.9 E-11	1.6 E-11
		S	0.100	1.5 E-10	0.050	9.7 E-11	4.4 E-11	2.9 E-11	1.9 E-11	1.7 E-11
Palladium										
Pd-100	3.63 d	F	0.050	3.9 E-09	0.005	3.0 E-09	1.5 E-09	9.7 E-10	5.8 E-10	4.7 E-10
		M	0.050	5.2 E-09	0.005	4.0 E-09	2.2 E-09	1.4 E-09	9.9 E-10	8.0 E-10
		S	0.050	5.3 E-09	0.005	4.1 E-09	2.2 E-09	1.5 E-09	1.0 E-09	8.5 E-10
Pd-101	8.27 h	F	0.050	3.6 E-10	0.005	2.9 E-10	1.4 E-10	8.6 E-11	4.9 E-11	3.9 E-11
		M	0.050	4.8 E-10	0.005	3.8 E-10	1.9 E-10	1.2 E-10	7.5 E-11	5.9 E-11
		S	0.050	5.0 E-10	0.005	3.9 E-10	2.0 E-10	1.2 E-10	7.8 E-11	6.2 E-11
Pd-103	17.0 d	F	0.050	9.7 E-10	0.005	6.5 E-10	3.0 E-10	1.9 E-10	1.1 E-10	8.9 E-11
		M	0.050	2.3 E-09	0.005	1.6 E-09	9.0 E-10	5.9 E-10	4.5 E-10	3.8 E-10
		S	0.050	2.5 E-09	0.005	1.8 E-09	1.0 E-09	6.8 E-10	5.3 E-10	4.5 E-10

Pd-107	6.50 E+06 a	F	0.050	2.6 E-10	0.005	1.8 E-10	8.2 E-11	5.2 E-11	3.1 E-11	2.5 E-11
		M	0.050	6.5 E-10	0.005	5.0 E-10	2.6 E-10	1.5 E-10	1.0 E-10	8.5 E-11
		S	0.050	2.2 E-09	0.005	2.0 E-09	1.3 E-09	7.8 E-10	6.2 E-10	5.9 E-10
Pd-109	13.4 h	F	0.050	1.5 E-09	0.005	9.9 E-10	4.2 E-10	2.6 E-10	1.4 E-10	1.2 E-10
		M	0.050	2.6 E-09	0.005	1.8 E-09	8.8 E-10	5.9 E-10	4.3 E-10	3.4 E-10
		S	0.050	2.7 E-09	0.005	1.9 E-09	9.3 E-10	6.3 E-10	4.6 E-10	3.7 E-10

Silver										
Ag-102	0.215 h	F	0.100	1.2 E-10	0.050	8.6 E-11	4.2 E-11	2.6 E-11	1.5 E-11	1.3 E-11
		M	0.100	1.6 E-10	0.050	1.1 E-10	5.5 E-11	3.4 E-11	2.1 E-11	1.7 E-11
		S	0.020	1.6 E-10	0.010	1.2 E-10	5.6 E-11	3.5 E-11	2.2 E-11	1.8 E-11
Ag-103	1.09 h	F	0.100	1.4 E-10	0.050	1.0 E-10	4.9 E-11	3.0 E-11	1.8 E-11	1.4 E-11
		M	0.100	2.2 E-10	0.050	1.6 E-10	7.6 E-11	4.8 E-11	3.2 E-11	2.6 E-11
		S	0.020	2.3 E-10	0.010	1.6 E-10	7.9 E-11	5.1 E-11	3.3 E-11	2.7 E-11
Ag-104	1.15 h	F	0.100	2.3 E-10	0.050	1.9 E-10	9.8 E-11	5.9 E-11	3.5 E-11	2.8 E-11
		M	0.100	2.9 E-10	0.050	2.3 E-10	1.2 E-10	7.4 E-11	4.5 E-11	3.6 E-11
		S	0.020	2.9 E-10	0.010	2.4 E-10	1.2 E-10	7.6 E-11	4.6 E-11	3.7 E-11
Ag-104m	0.558 h	F	0.100	1.6 E-10	0.050	1.1 E-10	5.5 E-11	3.4 E-11	2.0 E-11	1.6 E-11
		M	0.100	2.3 E-10	0.050	1.6 E-10	7.7 E-11	4.8 E-11	3.0 E-11	2.5 E-11
		S	0.020	2.4 E-10	0.010	1.7 E-10	8.0 E-11	5.0 E-11	3.1 E-11	2.6 E-11
Ag-105	41.0 d	F	0.100	3.9 E-09	0.050	3.4 E-09	1.7 E-09	1.0 E-09	6.4 E-10	5.4 E-10
		M	0.100	4.5 E-09	0.050	3.5 E-09	2.0 E-09	1.3 E-09	9.0 E-10	7.3 E-10
		S	0.020	4.5 E-09	0.010	3.6 E-09	2.1 E-09	1.3 E-09	1.0 E-09	8.1 E-10
Ag-106	0.399 h	F	0.100	9.4 E-11	0.050	6.4 E-11	2.9 E-11	1.8 E-11	1.1 E-11	9.1 E-12
		M	0.100	1.4 E-10	0.050	9.5 E-11	4.4 E-11	2.8 E-11	1.8 E-11	1.5 E-11
		S	0.020	1.5 E-10	0.010	9.9 E-11	4.5 E-11	2.9 E-11	1.9 E-11	1.6 E-11
Ag-106m	8.41 d	F	0.100	7.7 E-09	0.050	6.1 E-09	3.2 E-09	2.1 E-09	1.3 E-09	1.1 E-09
		M	0.100	7.2 E-09	0.050	5.8 E-09	3.2 E-09	2.1 E-09	1.4 E-09	1.1 E-09
		S	0.020	7.0 E-09	0.010	5.7 E-09	3.2 E-09	2.1 E-09	1.4 E-09	1.1 E-09
Ag-108m	1.27 E+02 a	F	0.100	3.5 E-08	0.050	2.8 E-08	1.6 E-08	1.0 E-08	6.9 E-09	6.1 E-09
		M	0.100	3.3 E-08	0.050	2.7 E-08	1.7 E-08	1.1 E-08	8.6 E-09	7.4 E-09
		S	0.020	8.9 E-08	0.010	8.7 E-08	6.2 E-08	4.4 E-08	3.9 E-08	3.7 E-08
Ag-110m	250 d	F	0.100	3.5 E-08	0.050	2.8 E-08	1.5 E-08	9.7 E-09	6.3 E-09	5.5 E-09
		M	0.100	3.5 E-08	0.050	2.8 E-08	1.7 E-08	1.2 E-08	9.2 E-09	7.6 E-09
		S	0.020	4.6 E-08	0.010	4.1 E-08	2.6 E-08	1.8 E-08	1.5 E-08	1.2 E-08
Ag-111	7.45 d	F	0.100	4.8 E-09	0.050	3.2 E-09	1.4 E-09	8.8 E-10	4.8 E-10	4.0 E-10
		M	0.100	9.2 E-09	0.050	6.6 E-09	3.5 E-09	2.4 E-09	1.9 E-09	1.5 E-09
		S	0.020	9.9 E-09	0.010	7.1 E-09	3.8 E-09	2.7 E-09	2.1 E-09	1.7 E-09
Ag-112	3.12 h	F	0.100	9.8 E-10	0.050	6.4 E-10	2.8 E-10	1.7 E-10	9.1 E-11	7.6 E-11
		M	0.100	1.7 E-09	0.050	1.1 E-09	5.1 E-10	3.2 E-10	2.0 E-10	1.6 E-10
		S	0.020	1.8 E-09	0.010	1.2 E-09	5.4 E-10	3.4 E-10	2.1 E-10	1.7 E-10
Ag-115	0.333 h	F	0.100	1.6 E-10	0.050	1.0 E-10	4.6 E-11	2.9 E-11	1.7 E-11	1.5 E-11
		M	0.100	2.5 E-10	0.050	1.7 E-10	7.6 E-11	4.9 E-11	3.2 E-11	2.7 E-11
		S	0.020	2.7 E-10	0.010	1.7 E-10	8.0 E-11	5.2 E-11	3.4 E-11	2.9 E-11
Cadmium										
Cd-104	0.961 h	F	0.100	2.0 E-10	0.050	1.7 E-10	8.7 E-11	5.2 E-11	3.1 E-11	2.4 E-11
		M	0.100	2.6 E-10	0.050	2.1 E-10	1.1 E-10	6.9 E-11	4.2 E-11	3.4 E-11
		S	0.100	2.7 E-10	0.050	2.2 E-10	1.1 E-10	7.0 E-11	4.4 E-11	3.5 E-11
Cd-107	6.49 h	F	0.100	2.3 E-10	0.050	1.7 E-10	7.4 E-11	4.6 E-11	2.5 E-11	2.1 E-11
		M	0.100	5.2 E-10	0.050	3.7 E-10	2.0 E-10	1.3 E-10	8.8 E-11	8.3 E-11
		S	0.100	5.5 E-10	0.050	3.9 E-10	2.1 E-10	1.4 E-10	9.7 E-11	7.7 E-11
Cd-109	1.27 a	F	0.100	4.5 E-08	0.050	3.7 E-08	2.1 E-08	1.4 E-08	9.3 E-09	8.1 E-09
		M	0.100	3.0 E-08	0.050	2.3 E-08	1.4 E-08	9.5 E-09	7.8 E-09	6.6 E-09
		S	0.100	2.7 E-08	0.050	2.1 E-08	1.3 E-08	8.9 E-09	7.6 E-09	6.2 E-09
Cd-113	9.30 E+15 a	F	0.100	2.6 E-07	0.050	2.4 E-07	1.7 E-07	1.4 E-07	1.2 E-07	1.2 E-07
		M	0.100	1.2 E-07	0.050	1.0 E-07	7.6 E-08	6.1 E-08	5.7 E-08	5.5 E-08
		S	0.100	7.8 E-08	0.050	5.8 E-08	4.1 E-08	3.0 E-08	2.7 E-08	2.6 E-08

Cd-113m	13.6 a	F	0.100	3.0 E-07	0.050	2.7 E-07	1.8 E-07	1.3 E-07	1.1 E-07	1.1 E-07
		M	0.100	1.4 E-07	0.050	1.2 E-07	8.1 E-08	6.0 E-08	5.3 E-08	5.2 E-08
		S	0.100	1.1 E-07	0.050	8.4 E-08	5.5 E-08	3.9 E-08	3.3 E-08	3.1 E-08

Cd-115	2.23 d	F	0.100	4.0 E-09	0.050	2.6 E-09	1.2 E-09	7.5 E-10	4.3 E-10	3.5 E-10
		M	0.100	6.7 E-09	0.050	4.8 E-09	2.4 E-09	1.7 E-09	1.2 E-09	9.8 E-10
		S	0.100	7.2 E-09	0.050	5.1 E-09	2.6 E-09	1.8 E-09	1.3 E-09	1.1 E-09
Cd-115m	44.6 d	F	0.100	4.6 E-08	0.050	3.2 E-08	1.5 E-08	1.0 E-08	6.4 E-09	5.3 E-09
		M	0.100	4.0 E-08	0.050	2.5 E-08	1.4 E-08	9.4 E-09	7.3 E-09	6.2 E-09
		S	0.100	3.9 E-08	0.050	3.0 E-08	1.7 E-08	1.1 E-08	8.9 E-09	7.7 E-09
Cd-117	2.49 h	F	0.100	7.4 E-10	0.050	5.2 E-10	2.4 E-10	1.5 E-10	8.1 E-11	6.7 E-11
		M	0.100	1.3 E-09	0.050	9.3 E-10	4.5 E-10	2.9 E-10	2.0 E-10	1.6 E-10
		S	0.100	1.4 E-09	0.050	9.8 E-10	4.8 E-10	3.1 E-10	2.1 E-10	1.7 E-10
Cd-117m	3.36 h	F	0.100	8.9 E-10	0.050	6.7 E-10	3.3 E-10	2.0 E-10	1.1 E-10	9.4 E-11
		M	0.100	1.5 E-09	0.050	1.1 E-09	5.5 E-10	3.6 E-10	2.4 E-10	2.0 E-10
		S	0.100	1.5 E-09	0.050	1.1 E-09	5.7 E-10	3.8 E-10	2.6 E-10	2.1 E-10
Indium										
In-109	4.20 h	F	0.040	2.6 E-10	0.020	2.1 E-10	1.0 E-10	6.3 E-11	3.6 E-11	2.9 E-11
		M	0.040	3.3 E-10	0.020	2.6 E-10	1.3 E-10	8.4 E-11	5.3 E-11	4.2 E-11
In-110	4.90 h	F	0.040	8.2 E-10	0.020	7.1 E-10	3.7 E-10	2.3 E-10	1.3 E-10	1.1 E-10
		M	0.040	9.9 E-10	0.020	8.3 E-10	4.4 E-10	2.7 E-10	1.6 E-10	1.3 E-10
In-110	1.15 h	F	0.040	3.0 E-10	0.020	2.1 E-10	9.9 E-11	6.0 E-11	3.5 E-11	2.8 E-11
		M	0.040	4.5 E-10	0.020	3.1 E-10	1.5 E-10	9.2 E-11	5.8 E-11	4.7 E-11
In-111	2.83 d	F	0.040	1.2 E-09	0.020	8.6 E-10	4.2 E-10	2.6 E-10	1.5 E-10	1.3 E-10
		M	0.040	1.5 E-09	0.020	1.2 E-09	6.2 E-10	4.1 E-10	2.9 E-10	2.3 E-10
In-112	0.240 h	F	0.040	4.4 E-11	0.020	3.0 E-11	1.3 E-11	8.7 E-12	5.4 E-12	4.7 E-12
		M	0.040	6.5 E-11	0.020	4.4 E-11	2.0 E-11	1.3 E-11	8.7 E-12	7.4 E-12
In-113m	1.66 h	F	0.040	1.0 E-10	0.020	7.0 E-11	3.2 E-11	2.0 E-11	1.2 E-11	9.7 E-12
		M	0.040	1.6 E-10	0.020	1.1 E-10	5.5 E-11	3.6 E-11	2.4 E-11	2.0 E-11
In-114m	49.5 d	F	0.040	1.2 E-07	0.020	7.7 E-08	3.4 E-08	1.9 E-08	1.1 E-08	9.3 E-09
		M	0.040	4.8 E-08	0.020	3.3 E-08	1.6 E-08	1.0 E-08	7.8 E-09	6.1 E-09
In-115	5.10 E+15 a	F	0.040	8.3 E-07	0.020	7.8 E-07	5.5 E-07	5.0 E-07	4.2 E-07	3.9 E-07
		M	0.040	3.0 E-07	0.020	2.8 E-07	2.1 E-07	1.9 E-07	1.7 E-07	1.6 E-07
In-115m	4.49 h	F	0.040	2.8 E-10	0.020	1.9 E-10	8.4 E-11	5.1 E-11	2.8 E-11	2.4 E-11
		M	0.040	4.7 E-10	0.020	3.3 E-10	1.6 E-10	1.0 E-10	7.2 E-11	5.9 E-11
In-116m	0.902 h	F	0.040	2.5 E-10	0.020	1.9 E-10	9.2 E-11	5.7 E-11	3.4 E-11	2.8 E-11
		M	0.040	3.6 E-10	0.020	2.7 E-10	1.3 E-10	8.5 E-11	5.6 E-11	4.5 E-11
In-117	0.730 h	F	0.040	1.4 E-10	0.020	9.7 E-11	4.5 E-11	2.8 E-11	1.7 E-11	1.5 E-11
		M	0.040	2.3 E-10	0.020	1.6 E-10	7.5 E-11	5.0 E-11	3.5 E-11	2.9 E-11
In-117m	1.94 h	F	0.040	3.4 E-10	0.020	2.3 E-10	1.0 E-10	6.2 E-11	3.5 E-11	2.9 E-11
		M	0.040	6.0 E-10	0.020	4.0 E-10	1.9 E-10	1.3 E-10	8.7 E-11	7.2 E-11
In-119m	0.300 h	F	0.040	1.2 E-10	0.020	7.3 E-11	3.1 E-11	2.0 E-11	1.2 E-11	1.0 E-11
		M	0.040	1.8 E-10	0.020	1.1 E-10	4.9 E-11	3.2 E-11	2.0 E-11	1.7 E-11
Tin										
Sn-110	4.00 h	F	0.040	1.0 E-09	0.020	7.6 E-10	3.6 E-10	2.2 E-10	1.2 E-10	9.9 E-11
		M	0.040	1.5 E-09	0.020	1.1 E-09	5.1 E-10	3.2 E-10	1.9 E-10	1.6 E-10
Sn-111	0.588 h	F	0.040	7.7 E-11	0.020	5.4 E-11	2.6 E-11	1.6 E-11	9.4 E-12	7.8 E-12
		M	0.040	1.1 E-10	0.020	8.0 E-11	3.8 E-11	2.5 E-11	1.6 E-11	1.3 E-11
Sn-113	115 d	F	0.040	5.1 E-09	0.020	3.7 E-09	1.8 E-09	1.1 E-09	6.4 E-10	5.4 E-10
		M	0.040	1.3 E-08	0.020	1.0 E-08	5.8 E-09	4.0 E-09	3.2 E-09	2.7 E-09
Sn-117m	13.6 d	F	0.040	3.3 E-09	0.020	2.2 E-09	1.0 E-09	6.1 E-10	3.4 E-10	2.8 E-10
		M	0.040	1.0 E-08	0.020	7.7 E-09	4.6 E-09	3.4 E-09	3.1 E-09	2.4 E-09

Sn-119m	293 d	F	0.040	3.0 E-09	0.020	2.2 E-09	1.0 E-09	6.0 E-10	3.4 E-10	2.8 E-10
		M	0.040	1.0 E-08	0.020	7.9 E-09	4.7 E-09	3.1 E-09	2.6 E-09	2.2 E-09
Sn-121	1.13 d	F	0.040	7.7 E-10	0.020	5.0 E-10	2.2 E-10	1.3 E-10	7.0 E-11	6.0 E-11
		M	0.040	1.5 E-09	0.020	1.1 E-09	5.1 E-10	3.6 E-10	2.9 E-10	2.3 E-10
Sn-121m	55.0 a	F	0.040	6.9 E-09	0.020	5.4 E-09	2.8 E-09	1.6 E-09	9.4 E-10	8.0 E-10
		M	0.040	1.9 E-08	0.020	1.5 E-08	9.2 E-09	6.4 E-09	5.5 E-09	4.5 E-09
Sn-123	129 d	F	0.040	1.4 E-08	0.020	9.9 E-09	4.5 E-09	2.6 E-09	1.4 E-09	1.2 E-09
		M	0.040	4.0 E-08	0.020	3.1 E-08	1.8 E-08	1.2 E-08	9.5 E-09	8.1 E-09
Sn-123m	0.668 h	F	0.040	1.4 E-10	0.020	8.9 E-11	3.9 E-11	2.5 E-11	1.5 E-11	1.3 E-11
		M	0.040	2.3 E-10	0.020	1.5 E-10	7.0 E-11	4.6 E-11	3.2 E-11	2.7 E-11
Sn-125	9.64 d	F	0.040	1.2 E-08	0.020	8.0 E-09	3.5 E-09	2.0 E-09	1.1 E-09	8.9 E-10
		M	0.040	2.1 E-08	0.020	1.5 E-08	7.6 E-09	5.0 E-09	3.6 E-09	3.1 E-09
Sn-126	1.00 E+05 a	F	0.040	7.3 E-08	0.020	5.9 E-08	3.2 E-08	2.0 E-08	1.3 E-08	1.1 E-08
		M	0.040	1.2 E-07	0.020	1.0 E-07	6.2 E-08	4.1 E-08	3.3 E-08	2.8 E-08

Sn-127	2.10 h	F	0.040	6.6 E-10	0.020	4.7 E-10	2.3 E-10	1.4 E-10	7.9 E-11	6.5 E-11
		M	0.040	1.0 E-09	0.020	7.4 E-10	3.7 E-10	2.4 E-10	1.6 E-10	1.3 E-10
Sn-128	0.985 h	F	0.040	5.1 E-10	0.020	3.6 E-10	1.7 E-10	1.0 E-10	6.1 E-11	5.0 E-11
		M	0.040	8.0 E-10	0.020	5.5 E-10	2.7 E-10	1.7 E-10	1.1 E-10	9.2 E-11
Antimony										
Sb-115	0.530 h	F	0.200	8.1 E-11	0.100	5.9 E-11	2.8 E-11	1.7 E-11	1.0 E-11	8.5 E-12
		M	0.020	1.2 E-10	0.010	8.3 E-11	4.0 E-11	2.5 E-11	1.6 E-11	1.3 E-11
		S	0.020	1.2 E-10	0.010	8.6 E-11	4.1 E-11	2.6 E-11	1.7 E-11	1.4 E-11
Sb-116	0.263 h	F	0.200	8.4 E-11	0.100	6.2 E-11	3.0 E-11	1.9 E-11	1.1 E-11	9.1 E-12
		M	0.020	1.1 E-10	0.010	8.2 E-11	4.0 E-11	2.5 E-11	1.5 E-11	1.3 E-11
		S	0.020	1.2 E-10	0.010	8.5 E-11	4.1 E-11	2.6 E-11	1.6 E-11	1.3 E-11
Sb-116m	1.00 h	F	0.200	2.6 E-10	0.100	2.1 E-10	1.1 E-10	6.6 E-11	4.0 E-11	3.2 E-11
		M	0.020	3.6 E-10	0.010	2.8 E-10	1.5 E-10	9.1 E-11	5.9 E-11	4.7 E-11
		S	0.020	3.7 E-10	0.010	2.9 E-10	1.5 E-10	9.4 E-11	6.1 E-11	4.9 E-11
Sb-117	2.80 h	F	0.200	7.7 E-11	0.100	6.0 E-11	2.9 E-11	1.8 E-11	1.0 E-11	8.5 E-12
		M	0.020	1.2 E-10	0.010	9.1 E-11	4.6 E-11	3.0 E-11	2.0 E-11	1.6 E-11
		S	0.020	1.3 E-10	0.010	9.5 E-11	4.8 E-11	3.1 E-11	2.2 E-11	1.7 E-11
Sb-118m	5.00 h	F	0.200	7.3 E-10	0.100	6.2 E-10	3.3 E-10	2.0 E-10	1.2 E-10	9.3 E-11
		M	0.020	9.3 E-10	0.010	7.6 E-10	4.0 E-10	2.5 E-10	1.5 E-10	1.2 E-10
		S	0.020	9.5 E-10	0.010	7.8 E-10	4.1 E-10	2.5 E-10	1.5 E-10	1.2 E-10
Sb-119	1.59 d	F	0.200	2.7 E-10	0.100	2.0 E-10	9.4 E-11	5.5 E-11	2.9 E-11	2.3 E-11
		M	0.020	4.0 E-10	0.010	2.8 E-10	1.3 E-10	7.9 E-11	4.4 E-11	3.5 E-11
		S	0.020	4.1 E-10	0.010	2.9 E-10	1.4 E-10	8.2 E-11	4.5 E-11	3.6 E-11
Sb-120	5.76 d	F	0.200	4.1 E-09	0.100	3.3 E-09	1.8 E-09	1.1 E-09	6.7 E-10	5.5 E-10
		M	0.020	6.3 E-09	0.010	5.0 E-09	2.8 E-09	1.8 E-09	1.3 E-09	1.0 E-09
		S	0.020	6.6 E-09	0.010	5.3 E-09	2.9 E-09	1.9 E-09	1.4 E-09	1.1 E-09
Sb-120	0.265 h	F	0.200	4.6 E-11	0.100	3.1 E-11	1.4 E-11	8.9 E-12	5.4 E-12	4.6 E-12
		M	0.020	6.6 E-11	0.010	4.4 E-11	2.0 E-11	1.3 E-11	8.3 E-12	7.0 E-12
		S	0.020	6.8 E-11	0.010	4.6 E-11	2.1 E-11	1.4 E-11	8.7 E-12	7.3 E-12
Sb-122	2.70 d	F	0.200	4.2 E-09	0.100	2.8 E-09	1.4 E-09	8.4 E-10	4.4 E-10	3.6 E-10
		M	0.020	8.3 E-09	0.010	5.7 E-09	2.8 E-09	1.8 E-09	1.3 E-09	1.0 E-09
		S	0.020	8.8 E-09	0.010	6.1 E-09	3.0 E-09	2.0 E-09	1.4 E-09	1.1 E-09
Sb-124	60.2 d	F	0.200	1.2 E-08	0.100	8.8 E-09	4.3 E-09	2.6 E-09	1.6 E-09	1.3 E-09
		M	0.020	3.1 E-08	0.010	2.4 E-08	1.4 E-08	9.6 E-09	7.7 E-09	6.4 E-09
		S	0.020	3.9 E-08	0.010	3.1 E-08	1.8 E-08	1.3 E-08	1.0 E-08	8.6 E-09
Sb-124m	0.337 h	F	0.200	2.7 E-11	0.100	1.9 E-11	9.0 E-12	5.6 E-12	3.4 E-12	2.8 E-12
		M	0.020	4.3 E-11	0.010	3.1 E-11	1.5 E-11	9.6 E-12	6.5 E-12	5.4 E-12
		S	0.020	4.6 E-11	0.010	3.3 E-11	1.6 E-11	1.0 E-11	7.2 E-12	5.9 E-12
Sb-125	2.77 a	F	0.200	8.7 E-09	0.100	6.8 E-09	3.7 E-09	2.3 E-09	1.5 E-09	1.4 E-09
		M	0.020	2.0 E-08	0.010	1.6 E-08	1.0 E-08	6.8 E-09	5.8 E-09	4.8 E-09
		S	0.020	4.2 E-08	0.010	3.8 E-08	2.4 E-08	1.6 E-08	1.4 E-08	1.2 E-08
Sb-126	12.4 d	F	0.200	8.8 E-09	0.100	6.6 E-09	3.3 E-09	2.1 E-09	1.2 E-09	1.0 E-09
		M	0.020	1.7 E-08	0.010	1.3 E-08	7.4 E-09	5.1 E-09	3.5 E-09	2.8 E-09
		S	0.020	1.9 E-08	0.010	1.5 E-08	8.2 E-09	5.0 E-09	4.0 E-09	3.2 E-09
Sb-126m	0.317 h	F	0.200	1.2 E-10	0.100	8.2 E-11	3.8 E-11	2.4 E-11	1.5 E-11	1.2 E-11
		M	0.020	1.7 E-10	0.010	1.2 E-10	5.5 E-11	3.5 E-11	2.3 E-11	1.9 E-11
		S	0.020	1.8 E-10	0.010	1.2 E-10	5.7 E-11	3.7 E-11	2.4 E-11	2.0 E-11
Sb-127	3.85 d	F	0.200	5.1 E-09	0.100	3.5 E-09	1.6 E-09	9.7 E-10	5.2 E-10	4.3 E-10
		M	0.020	1.0 E-08	0.010	7.3 E-09	3.9 E-09	2.7 E-09	2.1 E-09	1.7 E-09
		S	0.020	1.1 E-08	0.010	7.9 E-09	4.2 E-09	3.0 E-09	2.3 E-09	1.9 E-09
Sb-128	9.01 h	F	0.200	2.1 E-09	0.100	1.7 E-09	8.3 E-10	5.1 E-10	2.9 E-10	2.3 E-10
		M	0.020	3.3 E-09	0.010	2.5 E-09	1.2 E-09	7.9 E-10	5.0 E-10	4.0 E-10
		S	0.020	3.4 E-09	0.010	2.6 E-09	1.3 E-09	8.3 E-10	5.2 E-10	4.2 E-10
Sb-128	0.173 h	F	0.200	9.8 E-11	0.100	6.9 E-11	3.2 E-11	2.0 E-11	1.2 E-11	1.0 E-11
		M	0.020	1.3 E-10	0.010	9.2 E-11	4.3 E-11	2.7 E-11	1.7 E-11	1.4 E-11
		S	0.020	1.4 E-10	0.010	9.4 E-11	4.4 E-11	2.8 E-11	1.8 E-11	1.5 E-11
Sb-129	4.32 h	F	0.200	1.1 E-09	0.100	8.2 E-10	3.8 E-10	2.3 E-10	1.3 E-10	1.0 E-10
		M	0.020	2.0 E-09	0.010	1.4 E-09	6.8 E-10	4.4 E-10	2.9 E-10	2.3 E-10
		S	0.020	2.1 E-09	0.010	1.5 E-09	7.2 E-10	4.6 E-10	3.0 E-10	2.5 E-10
Sb-130	0.667 h	F	0.200	3.0 E-10	0.100	2.2 E-10	1.1 E-10	6.6 E-11	4.0 E-11	3.3 E-11
		M	0.020	4.5 E-10	0.010	3.2 E-10	1.6 E-10	9.8 E-11	6.3 E-11	5.1 E-11
		S	0.020	4.6 E-10	0.010	3.3 E-10	1.6 E-10	1.0 E-10	6.5 E-11	5.3 E-11
Sb-131	0.383 h	F	0.200	3.5 E-10	0.100	2.8 E-10	1.4 E-10	7.7 E-11	4.6 E-11	3.5 E-11

		M	0.020	3.9 E-10	0.010	2.6 E-10	1.3 E-10	8.0 E-11	5.3 E-11	4.4 E-11
		S	0.020	3.8 E-10	0.010	2.6 E-10	1.2 E-10	7.9 E-11	5.3 E-11	4.4 E-11
Tellurium										
Te-116	2.49 h	F	0.600	5.3 E-10	0.300	4.2 E-10	2.1 E-10	1.3 E-10	7.2 E-11	5.8 E-11
		M	0.200	8.6 E-10	0.100	6.4 E-10	3.2 E-10	2.0 E-10	1.3 E-10	1.0 E-10
		S	0.020	9.1 E-10	0.010	6.7 E-10	3.3 E-10	2.1 E-10	1.4 E-10	1.1 E-10
Te-121	17.0 d	F	0.600	1.7 E-09	0.300	1.4 E-09	7.2 E-10	4.6 E-10	2.9 E-10	2.4 E-10
		M	0.200	2.3 E-09	0.100	1.9 E-09	1.0 E-09	6.8 E-10	4.7 E-10	3.8 E-10
		S	0.020	2.4 E-09	0.010	2.0 E-09	1.1 E-09	7.2 E-10	5.1 E-10	4.1 E-10
Te-121m	154 d	F	0.600	1.4 E-08	0.300	1.0 E-08	5.3 E-09	3.3 E-09	2.1 E-09	1.8 E-09
		M	0.200	1.9 E-08	0.100	1.5 E-08	8.8 E-09	6.1 E-09	5.1 E-09	4.2 E-09
		S	0.020	2.3 E-08	0.010	1.9 E-08	1.2 E-08	8.1 E-09	6.9 E-09	5.7 E-09
Te-123	1.00 E+13 a	F	0.600	1.1 E-08	0.300	9.1 E-09	6.2 E-09	4.8 E-09	4.0 E-09	3.9 E-09
		M	0.200	5.6 E-09	0.100	4.4 E-09	3.0 E-09	2.3 E-09	2.0 E-09	1.9 E-09
		S	0.020	5.3 E-09	0.010	5.0 E-09	3.5 E-09	2.4 E-09	2.1 E-09	2.0 E-09
Te-123m	120 d	F	0.600	9.8 E-09	0.300	6.8 E-09	3.4 E-09	1.9 E-09	1.1 E-09	9.5 E-10
		M	0.200	1.8 E-08	0.100	1.3 E-08	8.0 E-09	5.7 E-09	5.0 E-09	4.0 E-09
		S	0.020	2.0 E-08	0.010	1.6 E-08	9.8 E-09	7.1 E-09	6.3 E-09	5.1 E-09
Te-125m	58.0 d	F	0.600	6.2 E-09	0.300	4.2 E-09	2.0 E-09	1.1 E-09	6.1 E-10	5.1 E-10
		M	0.200	1.5 E-08	0.100	1.1 E-08	6.6 E-09	4.8 E-09	4.3 E-09	3.4 E-09
		S	0.020	1.7 E-08	0.010	1.3 E-08	7.8 E-09	5.8 E-09	5.3 E-09	4.2 E-09
Te-127	9.35 h	F	0.600	4.3 E-10	0.300	3.2 E-10	1.4 E-10	8.5 E-11	4.5 E-11	3.9 E-11
		M	0.200	1.0 E-09	0.100	7.3 E-10	3.6 E-10	2.4 E-10	1.6 E-10	1.3 E-10
		S	0.020	1.2 E-09	0.010	7.9 E-10	3.9 E-10	2.6 E-10	1.7 E-10	1.4 E-10
Te-127m	109 d	F	0.600	2.1 E-08	0.300	1.4 E-08	6.5 E-09	3.5 E-09	2.0 E-09	1.5 E-09
		M	0.200	3.5 E-08	0.100	2.6 E-08	1.5 E-08	1.1 E-08	9.2 E-09	7.4 E-09
		S	0.020	4.1 E-08	0.010	3.3 E-08	2.0 E-08	1.4 E-08	1.2 E-08	9.8 E-09
Te-129	1.16 h	F	0.600	1.8 E-10	0.300	1.2 E-10	5.1 E-11	3.2 E-11	1.9 E-11	1.6 E-11
		M	0.200	3.3 E-10	0.100	2.2 E-10	9.9 E-11	6.5 E-11	4.4 E-11	3.7 E-11
		S	0.020	3.5 E-10	0.010	2.3 E-10	1.0 E-10	6.9 E-11	4.7 E-11	3.9 E-11
Te-129m	33.6 d	F	0.600	2.0 E-08	0.300	1.3 E-08	5.8 E-09	3.1 E-09	1.7 E-09	1.3 E-09
		M	0.200	3.5 E-08	0.100	2.6 E-08	1.4 E-08	9.8 E-09	8.0 E-09	6.6 E-09
		S	0.020	3.8 E-08	0.010	2.9 E-08	1.7 E-08	1.2 E-08	9.6 E-09	7.9 E-09
Te-131	0.417 h	F	0.600	2.3 E-10	0.300	2.0 E-10	9.9 E-11	5.3 E-11	3.3 E-11	2.3 E-11
		M	0.200	2.6 E-10	0.100	1.7 E-10	8.1 E-11	5.2 E-11	3.5 E-11	2.8 E-11
		S	0.020	2.4 E-10	0.010	1.6 E-10	7.4 E-11	4.9 E-11	3.3 E-11	2.8 E-11
Te-131m	1.25 d	F	0.600	8.7 E-09	0.300	7.6 E-09	3.9 E-09	2.0 E-09	1.2 E-09	8.6 E-10
		M	0.200	7.9 E-09	0.100	5.8 E-09	3.0 E-09	1.9 E-09	1.2 E-09	9.4 E-10
		S	0.020	7.0 E-09	0.010	5.1 E-09	2.6 E-09	1.8 E-09	1.1 E-09	9.1 E-10
Te-132	3.26 d	F	0.600	2.2 E-08	0.300	1.8 E-08	8.5 E-09	4.2 E-09	2.6 E-09	1.8 E-09
		M	0.200	1.6 E-08	0.100	1.3 E-08	6.4 E-09	4.0 E-09	2.6 E-09	2.0 E-09
		S	0.020	1.5 E-08	0.010	1.1 E-08	5.8 E-09	3.8 E-09	2.5 E-09	2.0 E-09
Te-133	0.207 h	F	0.600	2.4 E-10	0.300	2.1 E-10	9.6 E-11	4.6 E-11	2.8 E-11	1.9 E-11
		M	0.200	2.0 E-10	0.100	1.3 E-10	6.1 E-11	3.8 E-11	2.4 E-11	2.0 E-11
		S	0.020	1.7 E-10	0.010	1.2 E-10	5.4 E-11	3.5 E-11	2.2 E-11	1.9 E-11
Te-133m	0.923 h	F	0.600	1.0 E-09	0.300	8.9 E-10	4.1 E-10	2.0 E-10	1.2 E-10	8.1 E-11
		M	0.200	8.5 E-10	0.100	5.8 E-10	2.8 E-10	1.7 E-10	1.1 E-10	8.7 E-11
		S	0.020	7.4 E-10	0.010	5.1 E-10	2.5 E-10	1.6 E-10	1.0 E-10	8.4 E-11
Te-134	0.696 h	F	0.600	4.7 E-10	0.300	3.7 E-10	1.8 E-10	1.0 E-10	6.0 E-11	4.7 E-11
		M	0.200	5.5 E-10	0.100	3.9 E-10	1.9 E-10	1.2 E-10	8.1 E-11	6.6 E-11
		S	0.020	5.6 E-10	0.010	4.0 E-10	1.9 E-10	1.3 E-10	8.4 E-11	6.8 E-11
Iodineine										
I-120	1.35 h	F	1.000	1.3 E-09	1.000	1.0 E-09	4.8 E-10	2.3 E-10	1.4 E-10	1.0 E-10
		M	0.200	1.1 E-09	0.100	7.3 E-10	3.4 E-10	2.1 E-10	1.3 E-10	1.0 E-10
		S	0.020	1.0 E-09	0.010	6.9 E-10	3.2 E-10	2.0 E-10	1.2 E-10	1.0 E-10
I-120m	0.883 h	F	1.000	8.6 E-10	1.000	6.9 E-10	3.3 E-10	1.8 E-10	1.1 E-10	8.2 E-11
		M	0.200	8.2 E-10	0.100	5.9 E-10	2.9 E-10	1.8 E-10	1.1 E-10	8.7 E-11
		S	0.020	8.2 E-10	0.010	5.8 E-10	2.8 E-10	1.8 E-10	1.1 E-10	8.8 E-11
I-121	2.12 h	F	1.000	2.3 E-10	1.000	2.1 E-10	1.1 E-10	6.0 E-11	3.8 E-11	2.7 E-11
		M	0.200	2.1 E-10	0.100	1.5 E-10	7.8 E-11	4.9 E-11	3.2 E-11	2.5 E-11
		S	0.020	1.9 E-10	0.010	1.4 E-10	7.0 E-11	4.5 E-11	3.0 E-11	2.4 E-11
I-123	13.2 h	F	1.000	8.7 E-10	1.000	7.9 E-10	3.8 E-10	1.8 E-10	1.1 E-10	7.4 E-11
		M	0.200	5.3 E-10	0.100	3.9 E-10	2.0 E-10	1.2 E-10	8.2 E-11	6.4 E-11

		S	0.020	4.3 E-10	0.010	3.2 E-10	1.7 E-10	1.1 E-10	7.6 E-11	6.0 E-11
I-124	4.18 d	F	1.000	4.7 E-08	1.000	4.5 E-08	2.2 E-08	1.1 E-08	6.7 E-09	4.4 E-09
		M	0.200	1.4 E-08	0.100	9.3 E-09	4.6 E-09	2.5 E-09	1.6 E-09	1.2 E-09
		S	0.020	6.2 E-09	0.010	4.4 E-09	2.2 E-09	1.4 E-09	9.4 E-10	7.7 E-10
I-125	60.1 d	F	1.000	2.0 E-08	1.000	2.3 E-08	1.5 E-08	1.1 E-08	7.2 E-09	5.1 E-09
		M	0.200	6.9 E-09	0.100	5.6 E-09	3.6 E-09	2.6 E-09	1.8 E-09	1.4 E-09
		S	0.020	2.4 E-09	0.010	1.8 E-09	1.0 E-09	6.7 E-10	4.8 E-10	3.8 E-10
I-126	13.0 d	F	1.000	8.1 E-08	1.000	8.3 E-08	4.5 E-08	2.4 E-08	1.5 E-08	9.8 E-09
		M	0.200	2.4 E-08	0.100	1.7 E-08	9.5 E-09	5.5 E-09	3.8 E-09	2.7 E-09
		S	0.020	8.3 E-09	0.010	5.9 E-09	3.3 E-09	2.2 E-09	1.8 E-09	1.4 E-09
I-128	0.416 h	F	1.000	1.5 E-10	1.000	1.1 E-10	4.7 E-11	2.7 E-11	1.6 E-11	1.3 E-11
		M	0.200	1.9 E-10	0.100	1.2 E-10	5.3 E-11	3.4 E-11	2.2 E-11	1.9 E-11
		S	0.020	1.9 E-10	0.010	1.2 E-10	5.4 E-11	3.5 E-11	2.3 E-11	2.0 E-11
I-129	1.57 E+07 a	F	1.000	7.2 E-08	1.000	8.6 E-08	6.1 E-08	6.7 E-08	4.6 E-08	3.6 E-08
		M	0.200	3.6 E-08	0.100	3.3 E-08	2.4 E-08	2.4 E-08	1.9 E-08	1.5 E-08
		S	0.020	2.9 E-08	0.010	2.6 E-08	1.8 E-08	1.3 E-08	1.1 E-08	9.8 E-09
I-130	12.4 h	F	1.000	8.2 E-09	1.000	7.4 E-09	3.5 E-09	1.6 E-09	1.0 E-09	6.7 E-10
		M	0.200	4.3 E-09	0.100	3.1 E-09	1.5 E-09	9.2 E-10	5.8 E-10	4.5 E-10
		S	0.020	3.3 E-09	0.010	2.4 E-09	1.2 E-09	7.9 E-10	5.1 E-10	4.1 E-10
I-131	8.04 d	F	1.000	7.2 E-08	1.000	7.2 E-08	3.7 E-08	1.9 E-08	1.1 E-08	7.4 E-09
		M	0.200	2.2 E-08	0.100	1.5 E-08	8.2 E-09	4.7 E-09	3.4 E-09	2.4 E-09
		S	0.020	8.8 E-09	0.010	6.2 E-09	3.5 E-09	2.4 E-09	2.0 E-09	1.6 E-09
I-132	2.30 h	F	1.000	1.1 E-09	1.000	9.6 E-10	4.5 E-10	2.2 E-10	1.3 E-10	9.4 E-11
		M	0.200	9.9 E-10	0.100	7.3 E-10	3.6 E-10	2.2 E-10	1.4 E-10	1.1 E-10
		S	0.020	9.3 E-10	0.010	6.8 E-10	3.4 E-10	2.1 E-10	1.4 E-10	1.1 E-10
I-132m	1.39 h	F	1.000	9.6 E-10	1.000	8.4 E-10	4.0 E-10	1.9 E-10	1.2 E-10	7.9 E-11
		M	0.200	7.2 E-10	0.100	5.3 E-10	2.6 E-10	1.6 E-10	1.1 E-10	8.7 E-11
		S	0.020	6.6 E-10	0.010	4.8 E-10	2.4 E-10	1.6 E-10	1.1 E-10	8.5 E-11
I-133	20.8 h	F	1.000	1.9 E-08	1.000	1.8 E-08	8.3 E-09	3.8 E-09	2.2 E-09	1.5 E-09
		M	0.200	6.6 E-09	0.100	4.4 E-09	2.1 E-09	1.2 E-09	7.4 E-10	5.5 E-10
		S	0.020	3.8 E-09	0.010	2.9 E-09	1.4 E-09	9.0 E-10	5.3 E-10	4.3 E-10
I-134	0.876 h	F	1.000	4.6 E-10	1.000	3.7 E-10	1.8 E-10	9.7 E-11	5.9 E-11	4.5 E-11
		M	0.200	4.8 E-10	0.100	3.4 E-10	1.7 E-10	1.0 E-10	6.7 E-11	5.4 E-11
		S	0.020	4.8 E-10	0.010	3.4 E-10	1.7 E-10	1.1 E-10	6.8 E-11	5.5 E-11
I-135	6.61 h	F	1.000	4.1 E-09	1.000	3.7 E-09	1.7 E-09	7.9 E-10	4.8 E-10	3.2 E-10
		M	0.200	2.2 E-09	0.100	1.6 E-09	7.8 E-10	4.7 E-10	3.0 E-10	2.4 E-10
		S	0.020	1.8 E-09	0.010	1.3 E-09	6.5 E-10	4.2 E-10	2.7 E-10	2.2 E-10
Caesium										
Cs-125	0.750 h	F	1.000	1.2 E-10	1.000	8.3 E-11	3.9 E-11	2.4 E-11	1.4 E-11	1.2 E-11
		M	0.200	2.0 E-10	0.100	1.4 E-10	6.5 E-11	4.2 E-11	2.7 E-11	2.2 E-11
		S	0.020	2.1 E-10	0.010	1.4 E-10	6.8 E-11	4.4 E-11	2.8 E-11	2.3 E-11
Cs-127	6.25 h	F	1.000	1.6 E-10	1.000	1.3 E-10	6.9 E-11	4.2 E-11	2.5 E-11	2.0 E-11
		M	0.200	2.8 E-10	0.100	2.2 E-10	1.1 E-10	7.3 E-11	4.6 E-11	3.6 E-11
		S	0.020	3.0 E-10	0.010	2.3 E-10	1.2 E-10	7.6 E-11	4.8 E-11	3.8 E-11
Cs-129	1.34 d	F	1.000	3.4 E-10	1.000	2.8 E-10	1.4 E-10	8.7 E-11	5.2 E-11	4.2 E-11
		M	0.200	5.7 E-10	0.100	4.6 E-10	2.4 E-10	1.5 E-10	9.1 E-11	7.3 E-11
		S	0.020	6.3 E-10	0.010	4.9 E-10	2.5 E-10	1.6 E-10	9.7 E-11	7.7 E-11
Cs-130	0.498 h	F	1.000	8.3 E-11	1.000	5.6 E-11	2.5 E-11	1.6 E-11	9.4 E-12	7.8 E-12
		M	0.200	1.3 E-10	0.100	8.7 E-11	4.0 E-11	2.5 E-11	1.6 E-11	1.4 E-11
		S	0.020	1.4 E-10	0.010	9.0 E-11	4.1 E-11	2.6 E-11	1.7 E-11	1.4 E-11
Cs-131	9.69 d	F	1.000	2.4 E-10	1.000	1.7 E-10	8.4 E-11	5.3 E-11	3.2 E-11	2.7 E-11
		M	0.200	3.5 E-10	0.100	2.6 E-10	1.4 E-10	8.5 E-11	5.5 E-11	4.4 E-11
		S	0.020	3.8 E-10	0.010	2.8 E-10	1.4 E-10	9.1 E-11	5.9 E-11	4.7 E-11
Cs-132	6.48 d	F	1.000	1.5 E-09	1.000	1.2 E-09	6.4 E-10	4.1 E-10	2.7 E-10	2.3 E-10
		M	0.200	1.9 E-09	0.100	1.5 E-09	8.4 E-10	5.4 E-10	3.7 E-10	2.9 E-10
		S	0.020	2.0 E-09	0.010	1.6 E-09	8.7 E-10	5.6 E-10	3.8 E-10	3.0 E-10
Cs-134	2.06 a	F	1.000	1.1 E-08	1.000	7.3 E-09	5.2 E-09	5.3 E-09	6.3 E-09	6.6 E-09
		M	0.200	3.2 E-08	0.100	2.6 E-08	1.6 E-08	1.2 E-08	1.1 E-08	9.1 E-09
		S	0.020	7.0 E-08	0.010	6.3 E-08	4.1 E-08	2.8 E-08	2.3 E-08	2.0 E-08
Cs-134m	2.90 h	F	1.000	1.3 E-10	1.000	8.6 E-11	3.8 E-11	2.5 E-11	1.6 E-11	1.4 E-11
		M	0.200	3.3 E-10	0.100	2.3 E-10	1.2 E-10	8.3 E-11	6.6 E-11	5.4 E-11
		S	0.020	3.6 E-10	0.010	2.5 E-10	1.3 E-10	9.2 E-11	7.4 E-11	6.0 E-11
Cs-135	2.30 E+06 a	F	1.000	1.7 E-09	1.000	9.9 E-10	6.2 E-10	6.1 E-10	6.8 E-10	6.9 E-10

		M	0.200	1.2 E-08	0.100	9.3 E-09	5.7 E-09	4.1 E-09	3.8 E-09	3.1 E-09
		S	0.020	2.7 E-08	0.010	2.4 E-08	1.6 E-08	1.1 E-08	9.5 E-09	8.6 E-09
Cs-135m	0.883 h	F	1.000	9.2 E-11	1.000	7.8 E-11	4.1 E-11	2.4 E-11	1.5 E-11	1.2 E-11
		M	0.200	1.2 E-10	0.100	9.9 E-11	5.2 E-11	3.2 E-11	1.9 E-11	1.5 E-11
		S	0.020	1.2 E-10	0.010	1.0 E-10	5.3 E-11	3.3 E-11	2.0 E-11	1.6 E-11
Cs-136	13.1 d	F	1.000	7.3 E-09	1.000	5.2 E-09	2.9 E-09	2.0 E-09	1.4 E-09	1.2 E-09
		M	0.200	1.3 E-08	0.100	1.0 E-08	6.0 E-09	3.7 E-09	3.1 E-09	2.5 E-09
		S	0.020	1.5 E-08	0.010	1.1 E-08	5.7 E-09	4.1 E-09	3.5 E-09	2.8 E-09
Cs-137	30.0 a	F	1.000	8.8 E-09	1.000	5.4 E-09	3.6 E-09	3.7 E-09	4.4 E-09	4.6 E-09
		M	0.200	3.6 E-08	0.100	2.9 E-08	1.8 E-08	1.3 E-08	1.1 E-08	9.7 E-09
		S	0.020	1.1 E-07	0.010	1.0 E-07	7.0 E-08	4.8 E-08	4.2 E-08	3.9 E-08
Cs-138	0.536 h	F	1.000	2.6 E-10	1.000	1.8 E-10	8.1 E-11	5.0 E-11	2.9 E-11	2.4 E-11
		M	0.200	4.0 E-10	0.100	2.7 E-10	1.3 E-10	7.8 E-11	4.9 E-11	4.1 E-11
		S	0.020	4.2 E-10	0.010	2.8 E-10	1.3 E-10	8.2 E-11	5.1 E-11	4.3 E-11
Barium (*)										
Ba-126	1.61 h	F	0.600	6.7 E-10	0.200	5.2 E-10	2.4 E-10	1.4 E-10	6.9 E-11	7.4 E-11
		M	0.200	1.0 E-09	0.100	7.0 E-10	3.2 E-10	2.0 E-10	1.2 E-10	1.0 E-10
		S	0.020	1.1 E-09	0.010	7.2 E-10	3.3 E-10	2.1 E-10	1.3 E-10	1.1 E-10
Ba-128	2.43 d	F	0.600	5.9 E-09	0.200	5.4 E-09	2.5 E-09	1.4 E-09	7.4 E-10	7.6 E-10
		M	0.200	1.1 E-08	0.100	7.8 E-09	3.7 E-09	2.4 E-09	1.5 E-09	1.3 E-09
		S	0.020	1.2 E-08	0.010	8.3 E-09	4.0 E-09	2.6 E-09	1.6 E-09	1.4 E-09
Ba-131	11.8 d	F	0.600	2.1 E-09	0.200	1.4 E-09	7.1 E-10	4.7 E-10	3.1 E-10	2.2 E-10
		M	0.200	3.7 E-09	0.100	3.1 E-09	1.6 E-09	1.1 E-09	9.7 E-10	7.6 E-10
		S	0.020	4.0 E-09	0.010	3.0 E-09	1.8 E-09	1.3 E-09	1.1 E-09	8.7 E-10
Ba-131m	0.243 h	F	0.600	2.7 E-11	0.200	2.1 E-11	1.0 E-11	6.7 E-12	4.7 E-12	4.0 E-12
		M	0.200	4.8 E-11	0.100	3.3 E-11	1.7 E-11	1.2 E-11	9.0 E-12	7.4 E-12
		S	0.020	5.0 E-11	0.010	3.5 E-11	1.8 E-11	1.2 E-11	9.5 E-12	7.8 E-12
Ba-133	10.7 a	F	0.600	1.1 E-08	0.200	4.5 E-09	2.6 E-09	3.7 E-09	6.0 E-09	1.5 E-09
		M	0.200	1.5 E-08	0.100	1.0 E-08	6.4 E-09	5.1 E-09	5.5 E-09	3.1 E-09
		S	0.020	3.2 E-08	0.010	2.9 E-08	2.0 E-08	1.3 E-08	1.1 E-08	1.0 E-08
Ba-133m	1.62 d	F	0.600	1.4 E-09	0.200	1.1 E-09	4.9 E-10	3.1 E-10	1.5 E-10	1.8 E-10
		M	0.200	3.0 E-09	0.100	2.2 E-09	1.0 E-09	6.9 E-10	5.2 E-10	4.2 E-10
		S	0.020	3.1 E-09	0.010	2.4 E-09	1.1 E-09	7.6 E-10	5.8 E-10	4.6 E-10
Ba-135m	1.20 d	F	0.600	1.1 E-09	0.200	1.0 E-09	4.6 E-10	2.5 E-10	1.2 E-10	1.4 E-10
		M	0.200	2.4 E-09	0.100	1.8 E-09	8.9 E-10	5.4 E-10	4.1 E-10	3.3 E-10
		S	0.020	2.7 E-09	0.010	1.9 E-09	8.6 E-10	5.9 E-10	4.5 E-10	3.6 E-10
Ba-139	1.38 h	F	0.600	3.3 E-10	0.200	2.4 E-10	1.1 E-10	6.0 E-11	3.1 E-11	3.4 E-11
		M	0.200	5.4 E-10	0.100	3.5 E-10	1.6 E-10	1.0 E-10	6.6 E-11	5.6 E-11
		S	0.020	5.7 E-10	0.010	3.6 E-10	1.6 E-10	1.1 E-10	7.0 E-11	5.9 E-11
Ba-140	12.7 d	F	0.600	1.4 E-08	0.200	7.8 E-09	3.6 E-09	2.4 E-09	1.6 E-09	1.0 E-09
		M	0.200	2.7 E-08	0.100	2.0 E-08	1.1 E-08	7.6 E-09	6.2 E-09	5.1 E-09
		S	0.020	2.9 E-08	0.010	2.2 E-08	1.2 E-08	8.6 E-09	7.1 E-09	5.8 E-09
Ba-141	0.305 h	F	0.600	1.9 E-10	0.200	1.4 E-10	6.4 E-11	3.8 E-11	2.1 E-11	2.1 E-11
		M	0.200	3.0 E-10	0.100	2.0 E-10	9.3 E-11	5.9 E-11	3.8 E-11	3.2 E-11
		S	0.020	3.2 E-10	0.010	2.1 E-10	9.7 E-11	6.2 E-11	4.0 E-11	3.4 E-11
Ba-142	0.177 h	F	0.600	1.3 E-10	0.200	9.6 E-11	4.5 E-11	2.7 E-11	1.6 E-11	1.5 E-11
		M	0.200	1.8 E-10	0.100	1.3 E-10	6.1 E-11	3.9 E-11	2.5 E-11	2.1 E-11
		S	0.020	1.9 E-10	0.010	1.3 E-10	6.2 E-11	4.0 E-11	2.6 E-11	2.2 E-11
Lanthanum										
La-131	0.983 h	F	0.005	1.2 E-10	5.0 E-04	8.7 E-11	4.2 E-11	2.6 E-11	1.5 E-11	1.3 E-11
		M	0.005	1.8 E-10	5.0 E-04	1.3 E-10	6.4 E-11	4.1 E-11	2.8 E-11	2.3 E-11
La-132	4.80 h	F	0.005	1.0 E-09	5.0 E-04	7.7 E-10	3.7 E-10	2.2 E-10	1.2 E-10	1.0 E-10
		M	0.005	1.5 E-09	5.0 E-04	1.1 E-09	5.4 E-10	3.4 E-10	2.0 E-10	1.6 E-10
La-135	19.5 h	F	0.005	1.0 E-10	5.0 E-04	7.7 E-11	3.8 E-11	2.3 E-11	1.3 E-11	1.0 E-11
		M	0.005	1.3 E-10	5.0 E-04	1.0 E-10	4.9 E-11	3.0 E-11	1.7 E-11	1.4 E-11
La-137	6.00 E+04 a	F	0.005	2.5 E-08	5.0 E-04	2.3 E-08	1.5 E-08	1.1 E-08	8.9 E-09	8.7 E-09
		M	0.005	8.6 E-09	5.0 E-04	8.1 E-09	5.6 E-09	4.0 E-09	3.6 E-09	3.6 E-09
La-138	1.35 E+11 a	F	0.005	3.7 E-07	5.0 E-04	3.5 E-07	2.4 E-07	1.8 E-07	1.6 E-07	1.5 E-07
		M	0.005	1.3 E-07	5.0 E-04	1.2 E-07	9.1 E-08	6.8 E-08	6.4 E-08	6.4 E-08
La-140	1.68 d	F	0.005	5.8 E-09	5.0 E-04	4.2 E-09	2.0 E-09	1.2 E-09	6.9 E-10	5.7 E-10
		M	0.005	8.8 E-09	5.0 E-04	6.3 E-09	3.1 E-09	2.0 E-09	1.3 E-09	1.1 E-09
La-141	3.93 h	F	0.005	8.6 E-10	5.0 E-04	5.5 E-10	2.3 E-10	1.4 E-10	7.5 E-11	6.3 E-11
		M	0.005	1.4 E-09	5.0 E-04	9.3 E-10	4.3 E-10	2.8 E-10	1.8 E-10	1.5 E-10

La-142	1.54 h	F	0.005	5.3 E-10	5.0 E-04	3.8 E-10	1.8 E-10	1.1 E-10	6.3 E-11	5.2 E-11
		M	0.005	8.1 E-10	5.0 E-04	5.7 E-10	2.7 E-10	1.7 E-10	1.1 E-10	8.9 E-11
La-143	0.237 h	F	0.005	1.4 E-10	5.0 E-04	8.6 E-11	3.7 E-11	2.3 E-11	1.4 E-11	1.2 E-11
		M	0.005	2.1 E-10	5.0 E-04	1.3 E-10	6.0 E-11	3.9 E-11	2.5 E-11	2.1 E-11
Cerium										
Ce-134	3.00 d	F	0.005	7.6 E-09	5.0 E-04	5.3 E-09	2.3 E-09	1.4 E-09	7.7 E-10	5.7 E-10
		M	0.005	1.1 E-08	5.0 E-04	7.6 E-09	3.7 E-09	2.4 E-09	1.5 E-09	1.3 E-09
		S	0.005	1.2 E-08	5.0 E-04	8.0 E-09	3.8 E-09	2.5 E-09	1.6 E-09	1.3 E-09
Ce-135	17.6 h	F	0.005	2.3 E-09	5.0 E-04	1.7 E-09	8.5 E-10	5.3 E-10	3.0 E-10	2.4 E-10
		M	0.005	3.6 E-09	5.0 E-04	2.7 E-09	1.4 E-09	8.9 E-10	5.9 E-10	4.8 E-10
		S	0.005	3.7 E-09	5.0 E-04	2.8 E-09	1.4 E-09	9.4 E-10	6.3 E-10	5.0 E-10
Ce-137	9.00 h	F	0.005	7.5 E-11	5.0 E-04	5.6 E-11	2.7 E-11	1.6 E-11	8.7 E-12	7.0 E-12
		M	0.005	1.1 E-10	5.0 E-04	7.6 E-11	3.6 E-11	2.2 E-11	1.2 E-11	9.8 E-12
		S	0.005	1.1 E-10	5.0 E-04	7.8 E-11	3.7 E-11	2.3 E-11	1.3 E-11	1.0 E-11
Ce-137m	1.43 d	F	0.005	1.6 E-09	5.0 E-04	1.1 E-09	4.6 E-10	2.8 E-10	1.5 E-10	1.2 E-10
		M	0.005	3.1 E-09	5.0 E-04	2.2 E-09	1.1 E-09	6.7 E-10	5.1 E-10	4.1 E-10
		S	0.005	3.3 E-09	5.0 E-04	2.3 E-09	1.0 E-09	7.3 E-10	5.6 E-10	4.4 E-10
Ce-139	138 d	F	0.005	1.1 E-08	5.0 E-04	8.5 E-09	4.5 E-09	2.8 E-09	1.8 E-09	1.5 E-09
		M	0.005	7.5 E-09	5.0 E-04	6.1 E-09	3.6 E-09	2.5 E-09	2.1 E-09	1.7 E-09
		S	0.005	7.8 E-09	5.0 E-04	6.3 E-09	3.9 E-09	2.7 E-09	2.4 E-09	1.9 E-09
Ce-141	32.5 d	F	0.005	1.1 E-08	5.0 E-04	7.3 E-09	3.5 E-09	2.0 E-09	1.2 E-09	9.3 E-10
		M	0.005	1.4 E-08	5.0 E-04	1.1 E-08	6.3 E-09	4.6 E-09	4.1 E-09	3.2 E-09
		S	0.005	1.6 E-08	5.0 E-04	1.2 E-08	7.1 E-09	5.3 E-09	4.8 E-09	3.8 E-09
Ce-143	1.38 d	F	0.005	3.6 E-09	5.0 E-04	2.3 E-09	1.0 E-09	6.2 E-10	3.3 E-10	2.7 E-10
		M	0.005	5.6 E-09	5.0 E-04	3.9 E-09	1.9 E-09	1.3 E-09	9.3 E-10	7.5 E-10
		S	0.005	5.9 E-09	5.0 E-04	4.1 E-09	2.1 E-09	1.4 E-09	1.0 E-09	8.3 E-10
Ce-144	284 d	F	0.005	3.6 E-07	5.0 E-04	2.7 E-07	1.4 E-07	7.8 E-08	4.8 E-08	4.0 E-08
		M	0.005	1.9 E-07	5.0 E-04	1.6 E-07	8.8 E-08	5.5 E-08	4.1 E-08	3.6 E-08
		S	0.005	2.1 E-07	5.0 E-04	1.8 E-07	1.1 E-07	7.3 E-08	5.8 E-08	5.3 E-08
Praseodymium										
Pr-136	0.218 h	M	0.005	1.3 E-10	5.0 E-04	8.8 E-11	4.2 E-11	2.6 E-11	1.6 E-11	1.3 E-11
		S	0.005	1.3 E-10	5.0 E-04	9.0 E-11	4.3 E-11	2.7 E-11	1.7 E-11	1.4 E-11
Pr-137	1.28 h	M	0.005	1.8 E-10	5.0 E-04	1.3 E-10	6.1 E-11	3.9 E-11	2.4 E-11	2.0 E-11
		S	0.005	1.9 E-10	5.0 E-04	1.3 E-10	6.4 E-11	4.0 E-11	2.5 E-11	2.1 E-11
Pr-138m	2.10 h	M	0.005	5.9 E-10	5.0 E-04	4.5 E-10	2.3 E-10	1.4 E-10	9.0 E-11	7.2 E-11
		S	0.005	6.0 E-10	5.0 E-04	4.7 E-10	2.4 E-10	1.5 E-10	9.3 E-11	7.4 E-11
Pr-139	4.51 h	M	0.005	1.5 E-10	5.0 E-04	1.1 E-10	5.5 E-11	3.5 E-11	2.3 E-11	1.8 E-11
		S	0.005	1.6 E-10	5.0 E-04	1.2 E-10	5.7 E-11	3.7 E-11	2.4 E-11	2.0 E-11
Pr-142	19.1 h	M	0.005	5.3 E-09	5.0 E-04	3.5 E-09	1.6 E-09	1.0 E-09	6.2 E-10	5.2 E-10
		S	0.005	5.5 E-09	5.0 E-04	3.7 E-09	1.7 E-09	1.1 E-09	6.6 E-10	5.5 E-10
Pr-142m	0.243 h	M	0.005	6.7 E-11	5.0 E-04	4.5 E-11	2.0 E-11	1.3 E-11	7.9 E-12	6.6 E-12
		S	0.005	7.0 E-11	5.0 E-04	4.7 E-11	2.2 E-11	1.4 E-11	8.4 E-12	7.0 E-12
Pr-143	13.6 d	M	0.005	1.2 E-08	5.0 E-04	8.4 E-09	4.6 E-09	3.2 E-09	2.7 E-09	2.2 E-09
		S	0.005	1.3 E-08	5.0 E-04	9.2 E-09	5.1 E-09	3.6 E-09	3.0 E-09	2.4 E-09
Pr-144	0.288 h	M	0.005	1.9 E-10	5.0 E-04	1.2 E-10	5.0 E-11	3.2 E-11	2.1 E-11	1.8 E-11
		S	0.005	1.9 E-10	5.0 E-04	1.2 E-10	5.2 E-11	3.4 E-11	2.1 E-11	1.8 E-11
Pr-145	5.98 h	M	0.005	1.6 E-09	5.0 E-04	1.0 E-09	4.7 E-10	3.0 E-10	1.9 E-10	1.6 E-10
		S	0.005	1.6 E-09	5.0 E-04	1.1 E-09	4.9 E-10	3.2 E-10	2.0 E-10	1.7 E-10
Pr-147	0.227 h	M	0.005	1.5 E-10	5.0 E-04	1.0 E-10	4.8 E-11	3.1 E-11	2.1 E-11	1.8 E-11
		S	0.005	1.6 E-10	5.0 E-04	1.1 E-10	5.0 E-11	3.3 E-11	2.2 E-11	1.8 E-11
Neodymium										
Nd-136	0.844 h	M	0.005	4.6 E-10	5.0 E-04	3.2 E-10	1.6 E-10	9.8 E-11	6.3 E-11	5.1 E-11
		S	0.005	4.8 E-10	5.0 E-04	3.3 E-10	1.6 E-10	1.0 E-10	6.6 E-11	5.4 E-11
Nd-138	5.04 h	M	0.005	2.3 E-09	5.0 E-04	1.7 E-09	7.7 E-10	4.8 E-10	2.8 E-10	2.3 E-10
		S	0.005	2.4 E-09	5.0 E-04	1.8 E-09	8.0 E-10	5.0 E-10	3.0 E-10	2.5 E-10
Nd-139	0.495 h	M	0.005	9.0 E-11	5.0 E-04	6.2 E-11	3.0 E-11	1.9 E-11	1.2 E-11	9.9 E-12
		S	0.005	9.4 E-11	5.0 E-04	6.4 E-11	3.1 E-11	2.0 E-11	1.3 E-11	1.0 E-11
Nd-139m	5.50 h	M	0.005	1.1 E-09	5.0 E-04	8.8 E-10	4.5 E-10	2.9 E-10	1.8 E-10	1.5 E-10
		S	0.005	1.2 E-09	5.0 E-04	9.1 E-10	4.6 E-10	3.0 E-10	1.9 E-10	1.5 E-10
Nd-141	2.49 h	M	0.005	4.1 E-11	5.0 E-04	3.1 E-11	1.5 E-11	9.6 E-12	6.0 E-12	4.8 E-12
		S	0.005	4.3 E-11	5.0 E-04	3.2 E-11	1.6 E-11	1.0 E-11	6.2 E-12	5.0 E-12
Nd-147	11.0 d	M	0.005	1.1 E-08	5.0 E-04	8.0 E-09	4.5 E-09	3.2 E-09	2.6 E-09	2.1 E-09

		S	0.005	1.2 E-08	5.0 E-04	8.6 E-09	4.9 E-09	3.5 E-09	3.0 E-09	2.4 E-09
Nd-149	1.73 h	M	0.005	6.8 E-10	5.0 E-04	4.6 E-10	2.2 E-10	1.5 E-10	1.0 E-10	8.4 E-11
		S	0.005	7.1 E-10	5.0 E-04	4.8 E-10	2.3 E-10	1.5 E-10	1.1 E-10	8.9 E-11
Nd-151	0.207 h	M	0.005	1.5 E-10	5.0 E-04	9.9 E-11	4.6 E-11	3.0 E-11	2.0 E-11	1.7 E-11
		S	0.005	1.5 E-10	5.0 E-04	1.0 E-10	4.8 E-11	3.1 E-11	2.1 E-11	1.7 E-11
Promethium										
Pm-141	0.348 h	M	0.005	1.4 E-10	5.0 E-04	9.4 E-11	4.3 E-11	2.7 E-11	1.7 E-11	1.4 E-11
		S	0.005	1.5 E-10	5.0 E-04	9.7 E-11	4.4 E-11	2.8 E-11	1.8 E-11	1.5 E-11
Pm-143	265 d	M	0.005	6.2 E-09	5.0 E-04	5.4 E-09	3.3 E-09	2.2 E-09	1.7 E-09	1.5 E-09
		S	0.005	5.5 E-09	5.0 E-04	4.8 E-09	3.1 E-09	2.1 E-09	1.7 E-09	1.4 E-09
Pm-144	363 d	M	0.005	3.1 E-08	5.0 E-04	2.8 E-08	1.8 E-08	1.2 E-08	9.3 E-09	8.2 E-09
		S	0.005	2.6 E-08	5.0 E-04	2.4 E-08	1.6 E-08	1.1 E-08	8.9 E-09	7.5 E-09
Pm-145	17.7 a	M	0.005	1.1 E-08	5.0 E-04	9.8 E-09	6.4 E-09	4.3 E-09	3.7 E-09	3.6 E-09
		S	0.005	7.1 E-09	5.0 E-04	6.5 E-09	4.3 E-09	2.9 E-09	2.4 E-09	2.3 E-09
Pm-146	5.53 a	M	0.005	6.4 E-08	5.0 E-04	5.9 E-08	3.9 E-08	2.6 E-08	2.2 E-08	2.1 E-08
		S	0.005	5.3 E-08	5.0 E-04	4.9 E-08	3.3 E-08	2.2 E-08	1.9 E-08	1.7 E-08
Pm-147	2.62 a	M	0.005	2.1 E-08	5.0 E-04	1.8 E-08	1.1 E-08	7.0 E-09	5.7 E-09	5.0 E-09
		S	0.005	1.9 E-08	5.0 E-04	1.6 E-08	1.0 E-08	6.8 E-09	5.8 E-09	4.9 E-09
Pm-148	5.37 d	M	0.005	1.5 E-08	5.0 E-04	1.0 E-08	5.2 E-09	3.4 E-09	2.4 E-09	2.0 E-09
		S	0.005	1.5 E-08	5.0 E-04	1.1 E-08	5.5 E-09	3.7 E-09	2.6 E-09	2.2 E-09
Pm-148m	41.3 d	M	0.005	2.4 E-08	5.0 E-04	1.9 E-08	1.1 E-08	7.7 E-09	6.3 E-09	5.1 E-09
		S	0.005	2.5 E-08	5.0 E-04	2.0 E-08	1.2 E-08	8.3 E-09	7.1 E-09	5.7 E-09
Pm-149	2.21 d	M	0.005	5.0 E-09	5.0 E-04	3.5 E-09	1.7 E-09	1.1 E-09	8.3 E-10	6.7 E-10
		S	0.005	5.3 E-09	5.0 E-04	3.6 E-09	1.8 E-09	1.2 E-09	9.0 E-10	7.3 E-10
Pm-150	2.68 h	M	0.005	1.2 E-09	5.0 E-04	7.9 E-10	3.8 E-10	2.4 E-10	1.5 E-10	1.2 E-10
		S	0.005	1.2 E-09	5.0 E-04	8.2 E-10	3.9 E-10	2.5 E-10	1.6 E-10	1.3 E-10
Pm-151	1.18 d	M	0.005	3.3 E-09	5.0 E-04	2.5 E-09	1.2 E-09	8.3 E-10	5.3 E-10	4.3 E-10
		S	0.005	3.4 E-09	5.0 E-04	2.6 E-09	1.3 E-09	7.9 E-10	5.7 E-10	4.6 E-10
Samarium										
Sm-141	0.170 h	M	0.005	1.5 E-10	5.0 E-04	1.0 E-10	4.7 E-11	2.9 E-11	1.8 E-11	1.5 E-11
Sm-141m	0.377 h	M	0.005	3.0 E-10	5.0 E-04	2.1 E-10	9.7 E-11	6.1 E-11	3.9 E-11	3.2 E-11
Sm-142	1.21 h	M	0.005	7.5 E-10	5.0 E-04	4.8 E-10	2.2 E-10	1.4 E-10	8.5 E-11	7.1 E-11
Sm-145	340 d	M	0.005	8.1 E-09	5.0 E-04	6.8 E-09	4.0 E-09	2.5 E-09	1.9 E-09	1.6 E-09
Sm-146	1.03 E+08 a	M	0.005	2.7 E-05	5.0 E-04	2.6 E-05	1.7 E-05	1.2 E-05	1.1 E-05	1.1 E-05
Sm-147	1.06 E+11 a	M	0.005	2.5 E-05	5.0 E-04	2.3 E-05	1.6 E-05	1.1 E-05	9.6 E-06	9.6 E-06
Sm-151	90.0 a	M	0.005	1.1 E-08	5.0 E-04	1.0 E-08	6.7 E-09	4.5 E-09	4.0 E-09	4.0 E-09
Sm-153	1.95 d	M	0.005	4.2 E-09	5.0 E-04	2.9 E-09	1.5 E-09	1.0 E-09	7.9 E-10	6.3 E-10
Sm-155	0.368 h	M	0.005	1.5 E-10	5.0 E-04	9.9 E-11	4.4 E-11	2.9 E-11	2.0 E-11	1.7 E-11
Sm-156	9.40 h	M	0.005	1.6 E-09	5.0 E-04	1.1 E-09	5.8 E-10	3.5 E-10	2.7 E-10	2.2 E-10
Europium										
Eu-145	5.94 d	M	0.005	3.6 E-09	5.0 E-04	2.9 E-09	1.6 E-09	1.0 E-09	6.8 E-10	5.5 E-10
Eu-146	4.61 d	M	0.005	5.5 E-09	5.0 E-04	4.4 E-09	2.4 E-09	1.5 E-09	1.0 E-09	8.0 E-10
Eu-147	24.0 d	M	0.005	4.9 E-09	5.0 E-04	3.7 E-09	2.2 E-09	1.6 E-09	1.3 E-09	1.1 E-09
Eu-148	54.5 d	M	0.005	1.4 E-08	5.0 E-04	1.2 E-08	6.8 E-09	4.6 E-09	3.2 E-09	2.6 E-09
Eu-149	93.1 d	M	0.005	1.6 E-09	5.0 E-04	1.3 E-09	7.3 E-10	4.7 E-10	3.5 E-10	2.9 E-10
Eu-150	34.2 a	M	0.005	1.1 E-07	5.0 E-04	1.1 E-07	7.8 E-08	5.7 E-08	5.3 E-08	5.3 E-08
Eu-150	12.6 h	M	0.005	1.6 E-09	5.0 E-04	1.1 E-09	5.2 E-10	3.4 E-10	2.3 E-10	1.9 E-10
Eu-152	13.3 a	M	0.005	1.1 E-07	5.0 E-04	1.0 E-07	7.0 E-08	4.9 E-08	4.3 E-08	4.2 E-08
Eu-152m	9.32 h	M	0.005	1.9 E-09	5.0 E-04	1.3 E-09	6.6 E-10	4.2 E-10	2.4 E-10	2.2 E-10
Eu-154	8.80 a	M	0.005	1.6 E-07	5.0 E-04	1.5 E-07	9.7 E-08	6.5 E-08	5.6 E-08	5.3 E-08
Eu-155	4.96 a	M	0.005	2.6 E-08	5.0 E-04	2.3 E-08	1.4 E-08	9.2 E-09	7.6 E-09	6.9 E-09
Eu-156	15.2 d	M	0.005	1.9 E-08	5.0 E-04	1.4 E-08	7.7 E-09	5.3 E-09	4.2 E-09	3.4 E-09
Eu-157	15.1 h	M	0.005	2.5 E-09	5.0 E-04	1.9 E-09	8.9 E-10	5.9 E-10	3.5 E-10	2.8 E-10
Eu-158	0.765 h	M	0.005	4.3 E-10	5.0 E-04	2.9 E-10	1.3 E-10	8.5 E-11	5.6 E-11	4.7 E-11
Gadolinium										
Gd-145	0.382 h	F	0.005	1.3 E-10	5.0 E-04	9.6 E-11	4.7 E-11	2.9 E-11	1.7 E-11	1.4 E-11
		M	0.005	1.8 E-10	5.0 E-04	1.3 E-10	6.2 E-11	3.9 E-11	2.4 E-11	2.0 E-11
Gd-146	48.3 d	F	0.005	2.9 E-08	5.0 E-04	2.3 E-08	1.2 E-08	7.8 E-09	5.1 E-09	4.4 E-09
		M	0.005	2.8 E-08	5.0 E-04	2.2 E-08	1.3 E-08	9.3 E-09	7.9 E-09	6.4 E-09
Gd-147	1.59 d	F	0.005	2.1 E-09	5.0 E-04	1.7 E-09	8.4 E-10	5.3 E-10	3.1 E-10	2.6 E-10
		M	0.005	2.8 E-09	5.0 E-04	2.2 E-09	1.1 E-09	7.5 E-10	5.1 E-10	4.0 E-10
Gd-148	93.0 a	F	0.005	8.3 E-05	5.0 E-04	7.6 E-05	4.7 E-05	3.2 E-05	2.6 E-05	2.6 E-05
		M	0.005	3.2 E-05	5.0 E-04	2.9 E-05	1.9 E-05	1.3 E-05	1.2 E-05	1.1 E-05

Gd-149	9.40 d	F	0.005	2.6 E-09	5.0 E-04	2.0 E-09	8.0 E-10	5.1 E-10	3.1 E-10	2.6 E-10
		M	0.005	3.6 E-09	5.0 E-04	3.0 E-09	1.5 E-09	1.1 E-09	9.2 E-10	7.3 E-10
Gd-151	120 d	F	0.005	6.3 E-09	5.0 E-04	4.9 E-09	2.5 E-09	1.5 E-09	9.2 E-10	7.8 E-10
		M	0.005	4.5 E-09	5.0 E-04	3.5 E-09	2.0 E-09	1.3 E-09	1.0 E-09	8.6 E-10
Gd-152	1.08 E+14 a	F	0.005	5.9 E-05	5.0 E-04	5.4 E-05	3.4 E-05	2.4 E-05	1.9 E-05	1.9 E-05
		M	0.005	2.1 E-05	5.0 E-04	1.9 E-05	1.3 E-05	8.9 E-06	7.9 E-06	8.0 E-06
Gd-153	242 d	F	0.005	1.5 E-08	5.0 E-04	1.2 E-08	6.5 E-09	3.9 E-09	2.4 E-09	2.1 E-09
		M	0.005	9.9 E-09	5.0 E-04	7.9 E-09	4.8 E-09	3.1 E-09	2.5 E-09	2.1 E-09
Gd-159	18.6 h	F	0.005	1.2 E-09	5.0 E-04	8.9 E-10	3.8 E-10	2.3 E-10	1.2 E-10	1.0 E-10
		M	0.005	2.2 E-09	5.0 E-04	1.5 E-09	7.3 E-10	4.9 E-10	3.4 E-10	2.7 E-10
Terbium										
Tb-147	1.65 h	M	0.005	6.7 E-10	5.0 E-04	4.8 E-10	2.3 E-10	1.5 E-10	9.3 E-11	7.6 E-11
Tb-149	4.15 h	M	0.005	2.1 E-08	5.0 E-04	1.5 E-08	9.6 E-09	6.6 E-09	5.8 E-09	4.9 E-09
Tb-150	3.27 h	M	0.005	1.0 E-09	5.0 E-04	7.4 E-10	3.5 E-10	2.2 E-10	1.3 E-10	1.1 E-10
Tb-151	17.6 h	M	0.005	1.6 E-09	5.0 E-04	1.2 E-09	6.3 E-10	4.2 E-10	2.8 E-10	2.3 E-10
Tb-153	2.34 d	M	0.005	1.4 E-09	5.0 E-04	1.0 E-09	5.4 E-10	3.6 E-10	2.3 E-10	1.9 E-10
Tb-154	21.4 h	M	0.005	2.7 E-09	5.0 E-04	2.1 E-09	1.1 E-09	7.1 E-10	4.5 E-10	3.6 E-10
Tb-155	5.32 d	M	0.005	1.4 E-09	5.0 E-04	1.0 E-09	5.6 E-10	3.4 E-10	2.7 E-10	2.2 E-10
Tb-156	5.34 d	M	0.005	7.0 E-09	5.0 E-04	5.4 E-09	3.0 E-09	2.0 E-09	1.5 E-09	1.2 E-09
Tb-156m	1.02 d	M	0.005	1.1 E-09	5.0 E-04	9.4 E-10	4.7 E-10	3.3 E-10	2.7 E-10	2.1 E-10
Tb-156m	5.00 h	M	0.005	6.2 E-10	5.0 E-04	4.5 E-10	2.4 E-10	1.7 E-10	1.2 E-10	9.6 E-11
Tb-157	1.50 E+02 a	M	0.005	3.2 E-09	5.0 E-04	3.0 E-09	2.0 E-09	1.4 E-09	1.2 E-09	1.2 E-09
Tb-158	1.50 E+02 a	M	0.005	1.1 E-07	5.0 E-04	1.0 E-07	7.0 E-08	5.1 E-08	4.7 E-08	4.6 E-08
Tb-160	72.3 d	M	0.005	3.2 E-08	5.0 E-04	2.5 E-08	1.5 E-08	1.0 E-08	8.6 E-09	7.0 E-09
Tb-161	6.91 d	M	0.005	6.6 E-09	5.0 E-04	4.7 E-09	2.6 E-09	1.9 E-09	1.6 E-09	1.3 E-09
Dysprosium										
Dy-155	10.0 h	M	0.005	5.6 E-10	5.0 E-04	4.4 E-10	2.3 E-10	1.5 E-10	9.6 E-11	7.7 E-11
Dy-157	8.10 h	M	0.005	2.4 E-10	5.0 E-04	1.9 E-10	9.9 E-11	6.2 E-11	3.8 E-11	3.0 E-11
Dy-159	144 d	M	0.005	2.1 E-09	5.0 E-04	1.7 E-09	9.6 E-10	6.0 E-10	4.4 E-10	3.7 E-10
Dy-165	2.33 h	M	0.005	5.2 E-10	5.0 E-04	3.4 E-10	1.6 E-10	1.1 E-10	7.2 E-11	6.0 E-11
Dy-166	3.40 d	M	0.005	1.2 E-08	5.0 E-04	8.3 E-09	4.4 E-09	3.0 E-09	2.3 E-09	1.9 E-09
Holmium										
Ho-155	0.800 h	M	0.005	1.7 E-10	5.0 E-04	1.2 E-10	5.8 E-11	3.7 E-11	2.4 E-11	2.0 E-11
Ho-157	0.210 h	M	0.005	3.4 E-11	5.0 E-04	2.5 E-11	1.3 E-11	8.0 E-12	5.1 E-12	4.2 E-12
Ho-159	0.550 h	M	0.005	4.6 E-11	5.0 E-04	3.3 E-11	1.7 E-11	1.1 E-11	7.5 E-12	6.1 E-12
Ho-161	2.50 h	M	0.005	5.7 E-11	5.0 E-04	4.0 E-11	2.0 E-11	1.2 E-11	7.5 E-12	6.0 E-12
Ho-162	0.250 h	M	0.005	2.1 E-11	5.0 E-04	1.5 E-11	7.2 E-12	4.8 E-12	3.4 E-12	2.8 E-12
Ho-162m	1.13 h	M	0.005	1.5 E-10	5.0 E-04	1.1 E-10	5.8 E-11	3.8 E-11	2.6 E-11	2.1 E-11
Ho-164	0.483 h	M	0.005	6.8 E-11	5.0 E-04	4.5 E-11	2.1 E-11	1.4 E-11	9.9 E-12	8.4 E-12
Ho-164m	0.625 h	M	0.005	9.1 E-11	5.0 E-04	5.9 E-11	3.0 E-11	2.0 E-11	1.3 E-11	1.2 E-11
Ho-166	1.12 d	M	0.005	6.0 E-09	5.0 E-04	4.0 E-09	1.9 E-09	1.2 E-09	7.9 E-10	6.5 E-10
Ho-166m	1.20 E+03 a	M	0.005	2.6 E-07	5.0 E-04	2.5 E-07	1.8 E-07	1.3 E-07	1.2 E-07	1.2 E-07
Ho-167	3.10 h	M	0.005	5.2 E-10	5.0 E-04	3.6 E-10	1.8 E-10	1.2 E-10	8.7 E-11	7.1 E-11
Erbium										
Er-161	3.24 h	M	0.005	3.8 E-10	5.0 E-04	2.9 E-10	1.5 E-10	9.5 E-11	6.0 E-11	4.8 E-11
Er-165	10.4 h	M	0.005	7.2 E-11	5.0 E-04	5.3 E-11	2.6 E-11	1.6 E-11	9.6 E-12	7.9 E-12
Er-169	9.30 d	M	0.005	4.7 E-09	5.0 E-04	3.5 E-09	2.0 E-09	1.5 E-09	1.3 E-09	1.0 E-09
Er-171	7.52 h	M	0.005	1.8 E-09	5.0 E-04	1.2 E-09	5.9 E-10	3.9 E-10	2.7 E-10	2.2 E-10
Er-172	2.05 d	M	0.005	6.6 E-09	5.0 E-04	4.7 E-09	2.5 E-09	1.7 E-09	1.4 E-09	1.1 E-09
Thulium										
Tm-162	0.362 h	M	0.005	1.3 E-10	5.0 E-04	9.6 E-11	4.7 E-11	3.0 E-11	1.9 E-11	1.6 E-11
Tm-166	7.70 h	M	0.005	1.3 E-09	5.0 E-04	9.9 E-10	5.2 E-10	3.3 E-10	2.2 E-10	1.7 E-10
Tm-167	9.24 d	M	0.005	5.6 E-09	5.0 E-04	4.1 E-09	2.3 E-09	1.7 E-09	1.4 E-09	1.1 E-09
Tm-170	129 d	M	0.005	3.6 E-08	5.0 E-04	2.8 E-08	1.6 E-08	1.1 E-08	8.5 E-09	7.0 E-09
Tm-171	1.92 a	M	0.005	6.8 E-09	5.0 E-04	5.7 E-09	3.4 E-09	2.0 E-09	1.6 E-09	1.4 E-09
Tm-172	2.65 d	M	0.005	8.4 E-09	5.0 E-04	5.8 E-09	2.9 E-09	1.9 E-09	1.4 E-09	1.1 E-09
Tm-173	8.24 h	M	0.005	1.5 E-09	5.0 E-04	1.0 E-09	5.0 E-10	3.3 E-10	2.2 E-10	1.8 E-10
Tm-175	0.253 h	M	0.005	1.6 E-10	5.0 E-04	1.1 E-10	5.0 E-11	3.3 E-11	2.2 E-11	1.8 E-11
Ytterbium										
Yb-162	0.315 h	M	0.005	1.1 E-10	5.0 E-04	7.9 E-11	3.9 E-11	2.5 E-11	1.6 E-11	1.3 E-11
		S	0.005	1.2 E-10	5.0 E-04	8.2 E-11	4.0 E-11	2.6 E-11	1.7 E-11	1.4 E-11
Yb-166	2.36 d	M	0.005	4.7 E-09	5.0 E-04	3.5 E-09	1.9 E-09	1.3 E-09	9.0 E-10	7.2 E-10
		S	0.005	4.9 E-09	5.0 E-04	3.7 E-09	2.0 E-09	1.3 E-09	9.6 E-10	7.7 E-10

Yb-167	0.292 h	M	0.005	4.4 E-11	5.0 E-04	3.1 E-11	1.6 E-11	1.1 E-11	7.9 E-12	6.5 E-12
		S	0.005	4.6 E-11	5.0 E-04	3.2 E-11	1.7 E-11	1.1 E-11	8.4 E-12	6.9 E-12
Yb-169	32.0 d	M	0.005	1.2 E-08	5.0 E-04	8.7 E-09	5.1 E-09	3.7 E-09	3.2 E-09	2.5 E-09
		S	0.005	1.3 E-08	5.0 E-04	9.8 E-09	5.9 E-09	4.2 E-09	3.7 E-09	3.0 E-09
Yb-175	4.19 d	M	0.005	3.5 E-09	5.0 E-04	2.5 E-09	1.4 E-09	9.8 E-10	8.3 E-10	6.5 E-10
		S	0.005	3.7 E-09	5.0 E-04	2.7 E-09	1.5 E-09	1.1 E-09	9.2 E-10	7.3 E-10
Yb-177	1.90 h	M	0.005	5.0 E-10	5.0 E-04	3.3 E-10	1.6 E-10	1.1 E-10	7.8 E-11	6.4 E-11
		S	0.005	5.3 E-10	5.0 E-04	3.5 E-10	1.7 E-10	1.2 E-10	8.4 E-11	6.9 E-11
Yb-178	1.23 h	M	0.005	5.9 E-10	5.0 E-04	3.9 E-10	1.8 E-10	1.2 E-10	8.5 E-11	7.0 E-11
		S	0.005	6.2 E-10	5.0 E-04	4.1 E-10	1.9 E-10	1.3 E-10	9.1 E-11	7.5 E-11

Lutetium										
Lu-169	1.42 d	M	0.005	2.3 E-09	5.0 E-04	1.8 E-09	9.5 E-10	6.3 E-10	4.4 E-10	3.5 E-10
		S	0.005	2.4 E-09	5.0 E-04	1.9 E-09	1.0 E-09	6.7 E-10	4.8 E-10	3.8 E-10
Lu-170	2.00 d	M	0.005	4.3 E-09	5.0 E-04	3.4 E-09	1.8 E-09	1.2 E-09	7.8 E-10	6.3 E-10
		S	0.005	4.5 E-09	5.0 E-04	3.5 E-09	1.8 E-09	1.2 E-09	8.2 E-10	6.6 E-10
Lu-171	8.22 d	M	0.005	5.0 E-09	5.0 E-04	3.7 E-09	2.1 E-09	1.2 E-09	9.8 E-10	8.0 E-10
		S	0.005	4.7 E-09	5.0 E-04	3.9 E-09	2.0 E-09	1.4 E-09	1.1 E-09	8.8 E-10
Lu-172	6.70 d	M	0.005	8.7 E-09	5.0 E-04	6.7 E-09	3.8 E-09	2.6 E-09	1.8 E-09	1.4 E-09
		S	0.005	9.3 E-09	5.0 E-04	7.1 E-09	4.0 E-09	2.8 E-09	2.0 E-09	1.6 E-09
Lu-173	1.37 a	M	0.005	1.0 E-08	5.0 E-04	8.5 E-09	5.1 E-09	3.2 E-09	2.5 E-09	2.2 E-09
		S	0.005	1.0 E-08	5.0 E-04	8.7 E-09	5.4 E-09	3.6 E-09	2.9 E-09	2.4 E-09
Lu-174	3.31 a	M	0.005	1.7 E-08	5.0 E-04	1.5 E-08	9.1 E-09	5.8 E-09	4.7 E-09	4.2 E-09
		S	0.005	1.6 E-08	5.0 E-04	1.4 E-08	8.9 E-09	5.9 E-09	4.9 E-09	4.2 E-09
Lu-174m	142 d	M	0.005	1.9 E-08	5.0 E-04	1.4 E-08	8.6 E-09	5.4 E-09	4.3 E-09	3.7 E-09
		S	0.005	2.0 E-08	5.0 E-04	1.5 E-08	9.2 E-09	6.1 E-09	5.0 E-09	4.2 E-09
Lu-176	3.60 E+10 a	M	0.005	1.8 E-07	5.0 E-04	1.7 E-07	1.1 E-07	7.8 E-08	7.1 E-08	7.0 E-08
		S	0.005	1.5 E-07	5.0 E-04	1.4 E-07	9.4 E-08	6.5 E-08	5.9 E-08	5.6 E-08
Lu-176m	3.68 h	M	0.005	8.9 E-10	5.0 E-04	5.9 E-10	2.8 E-10	1.9 E-10	1.2 E-10	1.1 E-10
		S	0.005	9.3 E-10	5.0 E-04	6.2 E-10	3.0 E-10	2.0 E-10	1.2 E-10	1.2 E-10
Lu-177	6.71 d	M	0.005	5.3 E-09	5.0 E-04	3.8 E-09	2.2 E-09	1.6 E-09	1.4 E-09	1.1 E-09
		S	0.005	5.7 E-09	5.0 E-04	4.1 E-09	2.4 E-09	1.7 E-09	1.5 E-09	1.2 E-09
Lu-177m	161 d	M	0.005	5.8 E-08	5.0 E-04	4.6 E-08	2.8 E-08	1.9 E-08	1.6 E-08	1.3 E-08
		S	0.005	6.5 E-08	5.0 E-04	5.3 E-08	3.2 E-08	2.3 E-08	2.0 E-08	1.6 E-08
Lu-178	0.473 h	M	0.005	2.3 E-10	5.0 E-04	1.5 E-10	6.6 E-11	4.3 E-11	2.9 E-11	2.4 E-11
		S	0.005	2.4 E-10	5.0 E-04	1.5 E-10	6.9 E-11	4.5 E-11	3.0 E-11	2.6 E-11
Lu-178m	0.378 h	M	0.005	2.6 E-10	5.0 E-04	1.8 E-10	8.3 E-11	5.6 E-11	3.8 E-11	3.2 E-11
		S	0.005	2.7 E-10	5.0 E-04	1.9 E-10	8.7 E-11	5.8 E-11	4.0 E-11	3.3 E-11
Lu-179	4.59 h	M	0.005	9.9 E-10	5.0 E-04	6.5 E-10	3.0 E-10	2.0 E-10	1.2 E-10	1.1 E-10
		S	0.005	1.0 E-09	5.0 E-04	6.8 E-10	3.2 E-10	2.1 E-10	1.3 E-10	1.2 E-10
Hafnium										
Hf-170	16.0 h	F	0.020	1.4 E-09	0.002	1.1 E-09	5.4 E-10	3.4 E-10	2.0 E-10	1.6 E-10
		M	0.020	2.2 E-09	0.002	1.7 E-09	8.7 E-10	5.8 E-10	3.9 E-10	3.2 E-10
Hf-172	1.87 a	F	0.020	1.5 E-07	0.002	1.3 E-07	7.8 E-08	4.9 E-08	3.5 E-08	3.2 E-08
		M	0.020	8.1 E-08	0.002	6.9 E-08	4.3 E-08	2.8 E-08	2.3 E-08	2.0 E-08
Hf-173	24.0 h	F	0.020	6.6 E-10	0.002	5.0 E-10	2.5 E-10	1.5 E-10	8.9 E-11	7.4 E-11
		M	0.020	1.1 E-09	0.002	8.2 E-10	4.3 E-10	2.9 E-10	2.0 E-10	1.6 E-10
Hf-175	70.0 d	F	0.020	5.4 E-09	0.002	4.0 E-09	2.1 E-09	1.3 E-09	8.5 E-10	7.2 E-10
		M	0.020	5.8 E-09	0.002	4.5 E-09	2.6 E-09	1.8 E-09	1.4 E-09	1.2 E-09
Hf-177m	0.856 h	F	0.020	3.9 E-10	0.002	2.8 E-10	1.3 E-10	8.5 E-11	5.2 E-11	4.4 E-11
		M	0.020	6.5 E-10	0.002	4.7 E-10	2.3 E-10	1.5 E-10	1.1 E-10	9.0 E-11
Hf-178m	31.0 a	F	0.020	6.2 E-07	0.002	5.8 E-07	4.0 E-07	3.1 E-07	2.7 E-07	2.6 E-07
		M	0.020	2.6 E-07	0.002	2.4 E-07	1.7 E-07	1.3 E-07	1.2 E-07	1.2 E-07
Hf-179m	25.1 d	F	0.020	9.7 E-09	0.002	6.8 E-09	3.4 E-09	2.1 E-09	1.2 E-09	1.1 E-09
		M	0.020	1.7 E-08	0.002	1.3 E-08	7.6 E-09	5.5 E-09	4.8 E-09	3.8 E-09
Hf-180m	5.50 h	F	0.020	5.4 E-10	0.002	4.1 E-10	2.0 E-10	1.3 E-10	7.2 E-11	5.9 E-11
		M	0.020	9.1 E-10	0.002	6.8 E-10	3.6 E-10	2.4 E-10	1.7 E-10	1.3 E-10
Hf-181	42.4 d	F	0.020	1.3 E-08	0.002	9.6 E-09	4.8 E-09	2.8 E-09	1.7 E-09	1.4 E-09
		M	0.020	2.2 E-08	0.002	1.7 E-08	9.9 E-09	7.1 E-09	6.3 E-09	5.0 E-09
Hf-182	9.00 E+06 a	F	0.020	6.5 E-07	0.002	6.2 E-07	4.4 E-07	3.6 E-07	3.1 E-07	3.1 E-07
		M	0.020	2.4 E-07	0.002	2.3 E-07	1.7 E-07	1.3 E-07	1.3 E-07	1.3 E-07

Hf-182m	1.02 h	F	0.020	1.9 E-10	0.002	1.4 E-10	6.6 E-11	4.2 E-11	2.6 E-11	2.1 E-11
		M	0.020	3.2 E-10	0.002	2.3 E-10	1.2 E-10	7.8 E-11	5.6 E-11	4.6 E-11
Hf-183	1.07 h	F	0.020	2.5 E-10	0.002	1.7 E-10	7.9 E-11	4.9 E-11	2.8 E-11	2.4 E-11
		M	0.020	4.4 E-10	0.002	3.0 E-10	1.5 E-10	9.8 E-11	7.0 E-11	5.7 E-11
Hf-184	4.12 h	F	0.020	1.4 E-09	0.002	9.6 E-10	4.3 E-10	2.7 E-10	1.4 E-10	1.2 E-10
		M	0.020	2.6 E-09	0.002	1.8 E-09	8.9 E-10	5.9 E-10	4.0 E-10	3.3 E-10
Tantalum										
Ta-172	0.613 h	M	0.010	2.8 E-10	0.001	1.9 E-10	9.3 E-11	6.0 E-11	4.0 E-11	3.3 E-11
		S	0.010	2.9 E-10	0.001	2.0 E-10	9.8 E-11	6.3 E-11	4.2 E-11	3.5 E-11
Ta-173	3.65 h	M	0.010	8.8 E-10	0.001	6.2 E-10	3.0 E-10	2.0 E-10	1.3 E-10	1.1 E-10
		S	0.010	9.2 E-10	0.001	6.5 E-10	3.2 E-10	2.1 E-10	1.4 E-10	1.1 E-10
Ta-174	1.20 h	M	0.010	3.2 E-10	0.001	2.2 E-10	1.1 E-10	7.1 E-11	5.0 E-11	4.1 E-11
		S	0.010	3.4 E-10	0.001	2.3 E-10	1.1 E-10	7.5 E-11	5.3 E-11	4.3 E-11
Ta-175	10.5 h	M	0.010	9.1 E-10	0.001	7.0 E-10	3.7 E-10	2.4 E-10	1.5 E-10	1.2 E-10
		S	0.010	9.5 E-10	0.001	7.3 E-10	3.8 E-10	2.5 E-10	1.6 E-10	1.3 E-10
Ta-176	8.08 h	M	0.010	1.4 E-09	0.001	1.1 E-09	5.7 E-10	3.7 E-10	2.4 E-10	1.9 E-10
		S	0.010	1.4 E-09	0.001	1.1 E-09	5.9 E-10	3.8 E-10	2.5 E-10	2.0 E-10
Ta-177	2.36 d	M	0.010	6.5 E-10	0.001	4.7 E-10	2.5 E-10	1.5 E-10	1.2 E-10	9.6 E-11
		S	0.010	6.9 E-10	0.001	5.0 E-10	2.7 E-10	1.7 E-10	1.3 E-10	1.1 E-10
Ta-178	2.20 h	M	0.010	4.4 E-10	0.001	3.3 E-10	1.7 E-10	1.1 E-10	8.0 E-11	6.5 E-11
		S	0.010	4.6 E-10	0.001	3.4 E-10	1.8 E-10	1.2 E-10	8.5 E-11	6.8 E-11
Ta-179	1.82 a	M	0.010	1.2 E-09	0.001	9.6 E-10	5.5 E-10	3.5 E-10	2.6 E-10	2.2 E-10
		S	0.010	2.4 E-09	0.001	2.1 E-09	1.3 E-09	8.3 E-10	6.4 E-10	5.6 E-10
Ta-180	1.00 E+13 a	M	0.010	2.7 E-08	0.001	2.2 E-08	1.3 E-08	9.2 E-09	7.9 E-09	6.4 E-09
		S	0.010	7.0 E-08	0.001	6.5 E-08	4.5 E-08	3.1 E-08	2.8 E-08	2.6 E-08
Ta-180m	8.10 h	M	0.010	3.1 E-10	0.001	2.2 E-10	1.1 E-10	7.4 E-11	4.8 E-11	4.4 E-11
		S	0.010	3.3 E-10	0.001	2.3 E-10	1.2 E-10	7.9 E-11	5.2 E-11	4.2 E-11
Ta-182	115 d	M	0.010	3.2 E-08	0.001	2.6 E-08	1.5 E-08	1.1 E-08	9.5 E-09	7.6 E-09
		S	0.010	4.2 E-08	0.001	3.4 E-08	2.1 E-08	1.5 E-08	1.3 E-08	1.0 E-08
Ta-182m	0.264 h	M	0.010	1.6 E-10	0.001	1.1 E-10	4.9 E-11	3.4 E-11	2.4 E-11	2.0 E-11
		S	0.010	1.6 E-10	0.001	1.1 E-10	5.2 E-11	3.6 E-11	2.5 E-11	2.1 E-11
Ta-183	5.10 d	M	0.010	1.0 E-08	0.001	7.4 E-09	4.1 E-09	2.9 E-09	2.4 E-09	1.9 E-09
		S	0.010	1.1 E-08	0.001	8.0 E-09	4.5 E-09	3.2 E-09	2.7 E-09	2.1 E-09
Ta-184	8.70 h	M	0.010	3.2 E-09	0.001	2.3 E-09	1.1 E-09	7.5 E-10	5.0 E-10	4.1 E-10
		S	0.010	3.4 E-09	0.001	2.4 E-09	1.2 E-09	7.9 E-10	5.4 E-10	4.3 E-10
Ta-185	0.816 h	M	0.010	3.8 E-10	0.001	2.5 E-10	1.2 E-10	7.7 E-11	5.4 E-11	4.5 E-11
		S	0.010	4.0 E-10	0.001	2.6 E-10	1.2 E-10	8.2 E-11	5.7 E-11	4.8 E-11
Ta-186	0.175 h	M	0.010	1.6 E-10	0.001	1.1 E-10	4.8 E-11	3.1 E-11	2.0 E-11	1.7 E-11
		S	0.010	1.6 E-10	0.001	1.1 E-10	5.0 E-11	3.2 E-11	2.1 E-11	1.8 E-11
Tungsten										
W-176	2.30 h	F	0.600	3.3 E-10	0.300	2.7 E-10	1.4 E-10	8.6 E-11	5.0 E-11	4.1 E-11
W-177	2.25 h	F	0.600	2.0 E-10	0.300	1.6 E-10	8.2 E-11	5.1 E-11	3.0 E-11	2.4 E-11
W-178	21.7 d	F	0.600	7.2 E-10	0.300	5.4 E-10	2.5 E-10	1.6 E-10	8.7 E-11	7.2 E-11
W-179	0.625 h	F	0.600	9.3 E-12	0.300	6.8 E-12	3.3 E-12	2.0 E-12	1.2 E-12	9.2 E-13
W-181	121 d	F	0.600	2.5 E-10	0.300	1.9 E-10	9.2 E-11	5.7 E-11	3.2 E-11	2.7 E-11
W-185	75.1 d	F	0.600	1.4 E-09	0.300	1.0 E-09	4.4 E-10	2.7 E-10	1.4 E-10	1.2 E-10
W-187	23.9 h	F	0.600	2.0 E-09	0.300	1.5 E-09	7.0 E-10	4.3 E-10	2.3 E-10	1.9 E-10
W-188	69.4 d	F	0.600	7.1 E-09	0.300	5.0 E-09	2.2 E-09	1.3 E-09	6.8 E-10	5.7 E-10
Rhenium										
Re-177	0.233 h	F	1.000	9.4 E-11	0.800	6.7 E-11	3.2 E-11	1.9 E-11	1.2 E-11	9.7 E-12
		M	1.000	1.1 E-10	0.800	7.9 E-11	3.9 E-11	2.5 E-11	1.7 E-11	1.4 E-11

Re-178	0.220 h	F	1.000	9.9 E-11	0.800	6.8 E-11	3.1 E-11	1.9 E-11	1.2 E-11	1.0 E-11
		M	1.000	1.3 E-10	0.800	8.5 E-11	3.9 E-11	2.6 E-11	1.7 E-11	1.4 E-11
Re-181	20.0 h	F	1.000	2.0 E-09	0.800	1.4 E-09	6.7 E-10	3.8 E-10	2.3 E-10	1.8 E-10
		M	1.000	2.1 E-09	0.800	1.5 E-09	7.4 E-10	4.6 E-10	3.1 E-10	2.5 E-10
Re-182	2.67 d	F	1.000	6.5 E-09	0.800	4.7 E-09	2.2 E-09	1.3 E-09	8.0 E-10	6.4 E-10
		M	1.000	8.7 E-09	0.800	6.3 E-09	3.4 E-09	2.2 E-09	1.5 E-09	1.2 E-09
Re-182	12.7 h	F	1.000	1.3 E-09	0.800	1.0 E-09	4.9 E-10	2.8 E-10	1.7 E-10	1.4 E-10
		M	1.000	1.4 E-09	0.800	1.1 E-09	5.7 E-10	3.6 E-10	2.5 E-10	2.0 E-10
Re-184	38.0 d	F	1.000	4.1 E-09	0.800	2.9 E-09	1.4 E-09	8.6 E-10	5.4 E-10	4.4 E-10

		M	1.000	9.1 E-09	0.800	6.8 E-09	4.0 E-09	2.8 E-09	2.4 E-09	1.9 E-09
Re-184m	165 d	F	1.000	6.6 E-09	0.800	4.6 E-09	2.0 E-09	1.2 E-09	7.3 E-10	5.9 E-10
		M	1.000	2.9 E-08	0.800	2.2 E-08	1.3 E-08	9.3 E-09	8.1 E-09	6.5 E-09
Re-186	3.78 d	F	1.000	7.3 E-09	0.800	4.7 E-09	2.0 E-09	1.1 E-09	6.6 E-10	5.2 E-10
		M	1.000	8.7 E-09	0.800	5.7 E-09	2.8 E-09	1.8 E-09	1.4 E-09	1.1 E-09
Re-186m	2.00 E+05 a	F	1.000	1.2 E-08	0.800	7.0 E-09	2.9 E-09	1.7 E-09	1.0 E-09	8.3 E-10
		M	1.000	5.9 E-08	0.800	4.6 E-08	2.7 E-08	1.8 E-08	1.4 E-08	1.2 E-08
Re-187	5.00 E+10 a	F	1.000	2.6 E-11	0.800	1.6 E-11	6.8 E-12	3.8 E-12	2.3 E-12	1.8 E-12
		M	1.000	5.7 E-11	0.800	4.1 E-11	2.0 E-11	1.2 E-11	7.5 E-12	6.3 E-12
Re-188	17.0 h	F	1.000	6.5 E-09	0.800	4.4 E-09	1.9 E-09	1.0 E-09	6.1 E-10	4.6 E-10
		M	1.000	6.0 E-09	0.800	4.0 E-09	1.8 E-09	1.0 E-09	6.8 E-10	5.4 E-10
Re-188m	0.310 h	F	1.000	1.4 E-10	0.800	9.1 E-11	4.0 E-11	2.1 E-11	1.3 E-11	1.0 E-11
		M	1.000	1.3 E-10	0.800	8.6 E-11	4.0 E-11	2.7 E-11	1.6 E-11	1.3 E-11
Re-189	1.01 d	F	1.000	3.7 E-09	0.800	2.5 E-09	1.1 E-09	5.8 E-10	3.5 E-10	2.7 E-10
		M	1.000	3.9 E-09	0.800	2.6 E-09	1.2 E-09	7.6 E-10	5.5 E-10	4.3 E-10
Osmium										
Os-180	0.366 h	F	0.020	7.1 E-11	0.010	5.3 E-11	2.6 E-11	1.6 E-11	1.0 E-11	8.2 E-12
		M	0.020	1.1 E-10	0.010	7.9 E-11	3.9 E-11	2.5 E-11	1.7 E-11	1.4 E-11
		S	0.020	1.1 E-10	0.010	8.2 E-11	4.1 E-11	2.6 E-11	1.8 E-11	1.5 E-11
Os-181	1.75 h	F	0.020	3.0 E-10	0.010	2.3 E-10	1.1 E-10	7.0 E-11	4.1 E-11	3.3 E-11
		M	0.020	4.5 E-10	0.010	3.4 E-10	1.8 E-10	1.1 E-10	7.6 E-11	6.2 E-11
		S	0.020	4.7 E-10	0.010	3.6 E-10	1.8 E-10	1.2 E-10	8.1 E-11	6.5 E-11
Os-182	22.0 h	F	0.020	1.6 E-09	0.010	1.2 E-09	6.0 E-10	3.7 E-10	2.1 E-10	1.7 E-10
		M	0.020	2.5 E-09	0.010	1.9 E-09	1.0 E-09	6.6 E-10	4.5 E-10	3.6 E-10
		S	0.020	2.6 E-09	0.010	2.0 E-09	1.0 E-09	6.9 E-10	4.8 E-10	3.8 E-10
Os-185	94.0 d	F	0.020	7.2 E-09	0.010	5.8 E-09	3.1 E-09	1.9 E-09	1.2 E-09	1.1 E-09
		M	0.020	6.6 E-09	0.010	5.4 E-09	2.9 E-09	2.0 E-09	1.5 E-09	1.3 E-09
		S	0.020	7.0 E-09	0.010	5.8 E-09	3.6 E-09	2.4 E-09	1.9 E-09	1.6 E-09
Os-189m	6.00 h	F	0.020	3.8 E-11	0.010	2.8 E-11	1.2 E-11	7.0 E-12	3.5 E-12	2.5 E-12
		M	0.020	6.5 E-11	0.010	4.1 E-11	1.8 E-11	1.1 E-11	6.0 E-12	5.0 E-12
		S	0.020	6.8 E-11	0.010	4.3 E-11	1.9 E-11	1.2 E-11	6.3 E-12	5.3 E-12
Os-191	15.4 d	F	0.020	2.8 E-09	0.010	1.9 E-09	8.5 E-10	5.3 E-10	3.0 E-10	2.5 E-10
		M	0.020	8.0 E-09	0.010	5.8 E-09	3.4 E-09	2.4 E-09	2.0 E-09	1.7 E-09
		S	0.020	9.0 E-09	0.010	6.5 E-09	3.9 E-09	2.7 E-09	2.3 E-09	1.9 E-09
Os-191m	13.0 h	F	0.020	3.0 E-10	0.010	2.0 E-10	8.8 E-11	5.4 E-11	2.9 E-11	2.4 E-11
		M	0.020	7.8 E-10	0.010	5.4 E-10	3.1 E-10	2.1 E-10	1.7 E-10	1.4 E-10
		S	0.020	8.5 E-10	0.010	6.0 E-10	3.4 E-10	2.4 E-10	2.0 E-10	1.6 E-10
Os-193	1.25 d	F	0.020	1.9 E-09	0.010	1.2 E-09	5.2 E-10	3.2 E-10	1.8 E-10	1.6 E-10
		M	0.020	3.8 E-09	0.010	2.6 E-09	1.3 E-09	8.4 E-10	5.9 E-10	4.8 E-10
		S	0.020	4.0 E-09	0.010	2.7 E-09	1.3 E-09	9.0 E-10	6.4 E-10	5.2 E-10
Os-194	6.00 a	F	0.020	8.7 E-08	0.010	6.8 E-08	3.4 E-08	2.1 E-08	1.3 E-08	1.1 E-08
		M	0.020	9.9 E-08	0.010	8.3 E-08	4.8 E-08	3.1 E-08	2.4 E-08	2.1 E-08
		S	0.020	2.6 E-07	0.010	2.4 E-07	1.6 E-07	1.1 E-07	8.8 E-08	8.5 E-08
Iridiu										
Ir-182	0.250 h	F	0.020	1.4 E-10	0.010	9.8 E-11	4.5 E-11	2.8 E-11	1.7 E-11	1.4 E-11
		M	0.020	2.1 E-10	0.010	1.4 E-10	6.7 E-11	4.3 E-11	2.8 E-11	2.3 E-11
		S	0.020	2.2 E-10	0.010	1.5 E-10	6.9 E-11	4.4 E-11	2.9 E-11	2.4 E-11
Ir-184	3.02 h	F	0.020	5.7 E-10	0.010	4.4 E-10	2.1 E-10	1.3 E-10	7.6 E-11	6.2 E-11
		M	0.020	8.6 E-10	0.010	6.4 E-10	3.2 E-10	2.1 E-10	1.4 E-10	1.1 E-10
		S	0.020	8.9 E-10	0.010	6.6 E-10	3.4 E-10	2.2 E-10	1.4 E-10	1.2 E-10
Ir-185	14.0 h	F	0.020	8.0 E-10	0.010	6.1 E-10	2.9 E-10	1.8 E-10	1.0 E-10	8.2 E-11
		M	0.020	1.3 E-09	0.010	9.7 E-10	4.9 E-10	3.2 E-10	2.2 E-10	1.8 E-10
		S	0.020	1.4 E-09	0.010	1.0 E-09	5.2 E-10	3.4 E-10	2.3 E-10	1.9 E-10
Ir-186	15.8 h	F	0.020	1.5 E-09	0.010	1.2 E-09	5.9 E-10	3.6 E-10	2.1 E-10	1.7 E-10
		M	0.020	2.2 E-09	0.010	1.7 E-09	8.8 E-10	5.8 E-10	3.8 E-10	3.1 E-10
		S	0.020	2.3 E-09	0.010	1.8 E-09	9.2 E-10	6.0 E-10	4.0 E-10	3.2 E-10
Ir-186	1.75 h	F	0.020	2.1 E-10	0.010	1.6 E-10	7.7 E-11	4.8 E-11	2.8 E-11	2.3 E-11
		M	0.020	3.3 E-10	0.010	2.4 E-10	1.2 E-10	7.7 E-11	5.1 E-11	4.2 E-11
		S	0.020	3.4 E-10	0.010	2.5 E-10	1.2 E-10	8.1 E-11	5.4 E-11	4.4 E-11
Ir-187	10.5 h	F	0.020	3.6 E-10	0.010	2.8 E-10	1.4 E-10	8.2 E-11	4.6 E-11	3.7 E-11
		M	0.020	5.8 E-10	0.010	4.3 E-10	2.2 E-10	1.4 E-10	9.2 E-11	7.4 E-11
		S	0.020	6.0 E-10	0.010	4.5 E-10	2.3 E-10	1.5 E-10	9.7 E-11	7.9 E-11
Ir-188	1.73 d	F	0.020	2.0 E-09	0.010	1.6 E-09	8.0 E-10	5.0 E-10	2.9 E-10	2.4 E-10

		M	0.020	2.7 E-09	0.010	2.1 E-09	1.1 E-09	7.5 E-10	5.0 E-10	4.0 E-10
		S	0.020	2.8 E-09	0.010	2.2 E-09	1.2 E-09	7.8 E-10	5.2 E-10	4.2 E-10
Ir-189	13.3 d	F	0.020	1.2 E-09	0.010	8.2 E-10	3.8 E-10	2.4 E-10	1.3 E-10	1.1 E-10
		M	0.020	2.7 E-09	0.010	1.9 E-09	1.1 E-09	7.7 E-10	6.4 E-10	5.2 E-10
		S	0.020	3.0 E-09	0.010	2.2 E-09	1.3 E-09	8.7 E-10	7.3 E-10	6.0 E-10
Ir-190	12.1 d	F	0.020	6.2 E-09	0.010	4.7 E-09	2.4 E-09	1.5 E-09	9.1 E-10	7.7 E-10
		M	0.020	1.1 E-08	0.010	8.6 E-09	4.4 E-09	3.1 E-09	2.7 E-09	2.1 E-09
		S	0.020	1.1 E-08	0.010	9.4 E-09	4.8 E-09	3.5 E-09	3.0 E-09	2.4 E-09
Ir-190m	3.10 h	F	0.020	4.2 E-10	0.010	3.4 E-10	1.7 E-10	1.0 E-10	6.0 E-11	4.9 E-11
		M	0.020	6.0 E-10	0.010	4.7 E-10	2.4 E-10	1.5 E-10	9.9 E-11	7.9 E-11
		S	0.020	6.2 E-10	0.010	4.8 E-10	2.5 E-10	1.6 E-10	1.0 E-10	8.3 E-11
Ir-190m	1.20 h	F	0.020	3.2 E-11	0.010	2.4 E-11	1.2 E-11	7.2 E-12	4.3 E-12	3.6 E-12
		M	0.020	5.7 E-11	0.010	4.2 E-11	2.0 E-11	1.4 E-11	1.2 E-11	9.3 E-12
		S	0.020	5.5 E-11	0.010	4.5 E-11	2.2 E-11	1.6 E-11	1.3 E-11	1.0 E-11
Ir-192	74.0 d	F	0.020	1.5 E-08	0.010	1.1 E-08	5.7 E-09	3.3 E-09	2.1 E-09	1.8 E-09
		M	0.020	2.3 E-08	0.010	1.8 E-08	1.1 E-08	7.6 E-09	6.4 E-09	5.2 E-09
		S	0.020	2.8 E-08	0.010	2.2 E-08	1.3 E-08	9.5 E-09	8.1 E-09	6.6 E-09
Ir-192m	2.41 E+02 a	F	0.020	2.7 E-08	0.010	2.3 E-08	1.4 E-08	8.2 E-09	5.4 E-09	4.8 E-09
		M	0.020	2.3 E-08	0.010	2.1 E-08	1.3 E-08	8.4 E-09	6.6 E-09	5.8 E-09
		S	0.020	9.2 E-08	0.010	9.1 E-08	6.5 E-08	4.5 E-08	4.0 E-08	3.9 E-08
Ir-193m	11.9 d	F	0.020	1.2 E-09	0.010	8.4 E-10	3.7 E-10	2.2 E-10	1.2 E-10	1.0 E-10
		M	0.020	4.8 E-09	0.010	3.5 E-09	2.1 E-09	1.5 E-09	1.4 E-09	1.1 E-09
		S	0.020	5.4 E-09	0.010	4.0 E-09	2.4 E-09	1.8 E-09	1.6 E-09	1.3 E-09
Ir-194	19.1 h	F	0.020	2.9 E-09	0.010	1.9 E-09	8.1 E-10	4.9 E-10	2.5 E-10	2.1 E-10
		M	0.020	5.3 E-09	0.010	3.5 E-09	1.6 E-09	1.0 E-09	6.3 E-10	5.2 E-10
		S	0.020	5.5 E-09	0.010	3.7 E-09	1.7 E-09	1.1 E-09	6.7 E-10	5.6 E-10
Ir-194m	171 d	F	0.020	3.4 E-08	0.010	2.7 E-08	1.4 E-08	9.5 E-09	6.2 E-09	5.4 E-09
		M	0.020	3.9 E-08	0.010	3.2 E-08	1.9 E-08	1.3 E-08	1.1 E-08	9.0 E-09
		S	0.020	5.0 E-08	0.010	4.2 E-08	2.6 E-08	1.8 E-08	1.5 E-08	1.3 E-08
Ir-195	2.50 h	F	0.020	2.9 E-10	0.010	1.9 E-10	8.1 E-11	5.1 E-11	2.9 E-11	2.4 E-11
		M	0.020	5.4 E-10	0.010	3.6 E-10	1.7 E-10	1.1 E-10	8.1 E-11	6.7 E-11
		S	0.020	5.7 E-10	0.010	3.8 E-10	1.8 E-10	1.2 E-10	8.7 E-11	7.1 E-11
Ir-195m	3.80 h	F	0.020	6.9 E-10	0.010	4.8 E-10	2.1 E-10	1.3 E-10	7.2 E-11	6.0 E-11
		M	0.020	1.2 E-09	0.010	8.6 E-10	4.2 E-10	2.7 E-10	1.9 E-10	1.6 E-10
		S	0.020	1.3 E-09	0.010	9.0 E-10	4.4 E-10	2.9 E-10	2.0 E-10	1.7 E-10
Platinum										
Pt-186	2.00 h	F	0.020	3.0 E-10	0.010	2.4 E-10	1.2 E-10	7.2 E-11	4.1 E-11	3.3 E-11
Pt-188	10.2 d	F	0.020	3.6 E-09	0.010	2.7 E-09	1.3 E-09	8.4 E-10	5.0 E-10	4.2 E-10
Pt-189	10.9 h	F	0.020	3.8 E-10	0.010	2.9 E-10	1.4 E-10	8.4 E-11	4.7 E-11	3.8 E-11
Pt-191	2.80 d	F	0.020	1.1 E-09	0.010	7.9 E-10	3.7 E-10	2.3 E-10	1.3 E-10	1.1 E-10
Pt-193	50.0 a	F	0.020	2.2 E-10	0.010	1.6 E-10	7.2 E-11	4.3 E-11	2.5 E-11	2.1 E-11
Pt-193m	4.33 d	F	0.020	1.6 E-09	0.010	1.0 E-09	4.5 E-10	2.7 E-10	1.4 E-10	1.2 E-10
Pt-195m	4.02 d	F	0.020	2.2 E-09	0.010	1.5 E-09	6.4 E-10	3.9 E-10	2.1 E-10	1.8 E-10
Pt-197	18.3 h	F	0.020	1.1 E-09	0.010	7.3 E-10	3.1 E-10	1.9 E-10	1.0 E-10	8.5 E-11
Pt-197m	1.57 h	F	0.020	2.8 E-10	0.010	1.8 E-10	7.9 E-11	4.9 E-11	2.8 E-11	2.4 E-11
Pt-199	0.513 h	F	0.020	1.3 E-10	0.010	8.3 E-11	3.6 E-11	2.3 E-11	1.4 E-11	1.2 E-11
Pt-200	12.5 h	F	0.020	2.6 E-09	0.010	1.7 E-09	7.2 E-10	5.1 E-10	2.6 E-10	2.2 E-10
Gold										
Au-193	17.6 h	F	0.200	3.7 E-10	0.100	2.8 E-10	1.3 E-10	7.9 E-11	4.3 E-11	3.6 E-11
		M	0.200	7.5 E-10	0.100	5.6 E-10	2.8 E-10	1.9 E-10	1.4 E-10	1.1 E-10
		S	0.200	7.9 E-10	0.100	5.9 E-10	3.0 E-10	2.0 E-10	1.5 E-10	1.2 E-10
Au-194	1.65 d	F	0.200	1.2 E-09	0.100	9.6 E-10	4.9 E-10	3.0 E-10	1.8 E-10	1.4 E-10
		M	0.200	1.7 E-09	0.100	1.4 E-09	7.1 E-10	4.6 E-10	2.9 E-10	2.3 E-10
		S	0.200	1.7 E-09	0.100	1.4 E-09	7.3 E-10	4.7 E-10	3.0 E-10	2.4 E-10
Au-195	183 d	F	0.200	7.2 E-10	0.100	5.3 E-10	2.5 E-10	1.5 E-10	8.1 E-11	6.6 E-11
		M	0.200	5.2 E-09	0.100	4.1 E-09	2.4 E-09	1.6 E-09	1.4 E-09	1.1 E-09
		S	0.200	8.1 E-09	0.100	6.6 E-09	3.9 E-09	2.6 E-09	2.1 E-09	1.7 E-09
Au-198	2.69 d	F	0.200	2.4 E-09	0.100	1.7 E-09	7.6 E-10	4.7 E-10	2.5 E-10	2.1 E-10
		M	0.200	5.0 E-09	0.100	4.1 E-09	1.9 E-09	1.3 E-09	9.7 E-10	7.8 E-10
		S	0.200	5.4 E-09	0.100	4.4 E-09	2.0 E-09	1.4 E-09	1.1 E-09	8.6 E-10
Au-198m	2.30 d	F	0.200	3.3 E-09	0.100	2.4 E-09	1.1 E-09	6.9 E-10	3.7 E-10	3.2 E-10
		M	0.200	8.7 E-09	0.100	6.5 E-09	3.6 E-09	2.6 E-09	2.2 E-09	1.8 E-09
		S	0.200	9.5 E-09	0.100	7.1 E-09	4.0 E-09	2.9 E-09	2.5 E-09	2.0 E-09

Au-199	3.14 d	F	0.200	1.1 E-09	0.100	7.9 E-10	3.5 E-10	2.2 E-10	1.1 E-10	9.8 E-11
		M	0.200	3.4 E-09	0.100	2.5 E-09	1.4 E-09	1.0 E-09	9.0 E-10	7.1 E-10
		S	0.200	3.8 E-09	0.100	2.8 E-09	1.6 E-09	1.2 E-09	1.0 E-09	7.9 E-10
Au-200	0.807 h	F	0.200	1.9 E-10	0.100	1.2 E-10	5.2 E-11	3.2 E-11	1.9 E-11	1.6 E-11
		M	0.200	3.2 E-10	0.100	2.1 E-10	9.3 E-11	6.0 E-11	4.0 E-11	3.3 E-11
		S	0.200	3.4 E-10	0.100	2.1 E-10	9.8 E-11	6.3 E-11	4.2 E-11	3.5 E-11
Au-200m	18.7 h	F	0.200	2.7 E-09	0.100	2.1 E-09	1.0 E-09	6.4 E-10	3.6 E-10	2.9 E-10
		M	0.200	4.8 E-09	0.100	3.7 E-09	1.9 E-09	1.2 E-09	8.4 E-10	6.8 E-10
		S	0.200	5.1 E-09	0.100	3.9 E-09	2.0 E-09	1.3 E-09	8.9 E-10	7.2 E-10
Au-201	0.440 h	F	0.200	9.0 E-11	0.100	5.7 E-11	2.5 E-11	1.6 E-11	1.0 E-11	8.7 E-12
		M	0.200	1.5 E-10	0.100	9.6 E-11	4.3 E-11	2.9 E-11	2.0 E-11	1.7 E-11
		S	0.200	1.5 E-10	0.100	1.0 E-10	4.5 E-11	3.0 E-11	2.1 E-11	1.7 E-11
Mercury										
Hg-193 (organic)	3.50 h	F	0.800	2.2 E-10	0.400	1.8 E-10	8.2 E-11	5.0 E-11	2.9 E-11	2.4 E-11
Hg-193 (anorganic)	3.50 h	F	0.040	2.7 E-10	0.020	2.0 E-10	8.9 E-11	5.5 E-11	3.1 E-11	2.6 E-11
		M	0.040	5.3 E-10	0.020	3.8 E-10	1.9 E-10	1.3 E-10	9.2 E-11	7.5 E-11
Hg-193m (organic)	11.1 h	F	0.800	8.4 E-10	0.400	7.6 E-10	3.7 E-10	2.2 E-10	1.3 E-10	1.0 E-10
Hg-193m (anorganic)	11.1 h	F	0.040	1.1 E-09	0.020	8.5 E-10	4.1 E-10	2.5 E-10	1.4 E-10	1.1 E-10
		M	0.040	1.9 E-09	0.020	1.4 E-09	7.2 E-10	4.7 E-10	3.2 E-10	2.6 E-10
Hg-194 (organic)	2.60 E+02 a	F	0.800	4.9 E-08	0.400	3.7 E-08	2.4 E-08	1.9 E-08	1.5 E-08	1.4 E-08
Hg-194 (anorganic)	2.60 E+02 a	F	0.040	3.2 E-08	0.020	2.9 E-08	2.0 E-08	1.6 E-08	1.4 E-08	1.3 E-08
		M	0.040	2.1 E-08	0.020	1.9 E-08	1.3 E-08	1.0 E-08	8.9 E-09	8.3 E-09
Hg-195 (organic)	9.90 h	F	0.800	2.0 E-10	0.400	1.8 E-10	8.5 E-11	5.1 E-11	2.8 E-11	2.3 E-11
Hg-195 (anorganic)	9.90 h	F	0.040	2.7 E-10	0.020	2.0 E-10	9.5 E-11	5.7 E-11	3.1 E-11	2.5 E-11
		M	0.040	5.3 E-10	0.020	3.9 E-10	2.0 E-10	1.3 E-10	9.0 E-11	7.3 E-11
Hg-195m (organic)	1.73 d	F	0.800	1.1 E-09	0.400	9.7 E-10	4.4 E-10	2.7 E-10	1.4 E-10	1.2 E-10
Hg-195m (anorganic)	1.73 d	F	0.040	1.6 E-09	0.020	1.1 E-09	5.1 E-10	3.1 E-10	1.7 E-10	1.4 E-10
		M	0.040	3.7 E-09	0.020	2.6 E-09	1.4 E-09	8.5 E-10	6.7 E-10	5.3 E-10
Hg-197 (organic)	2.67 d	F	0.800	4.7 E-10	0.400	4.0 E-10	1.8 E-10	1.1 E-10	5.8 E-11	4.7 E-11
Hg-197 (anorganic)	2.67 d	F	0.040	6.8 E-10	0.020	4.7 E-10	2.1 E-10	1.3 E-10	6.8 E-11	5.6 E-11
		M	0.040	1.7 E-09	0.020	1.2 E-09	6.6 E-10	4.6 E-10	3.8 E-10	3.0 E-10
Hg-197m (organic)	23.8 h	F	0.800	9.3 E-10	0.400	7.8 E-10	3.4 E-10	2.1 E-10	1.1 E-10	9.6 E-11
Hg-197m (anorganic)	23.8 h	F	0.040	1.4 E-09	0.020	9.3 E-10	4.0 E-10	2.5 E-10	1.3 E-10	1.1 E-10
		M	0.040	3.5 E-09	0.020	2.5 E-09	1.1 E-09	8.2 E-10	6.7 E-10	5.3 E-10
Hg-199m (organic)	0.710 h	F	0.800	1.4 E-10	0.400	9.6 E-11	4.2 E-11	2.7 E-11	1.7 E-11	1.5 E-11
Hg-199m (anorganic)	0.710 h	F	0.040	1.4 E-10	0.020	9.6 E-11	4.2 E-11	2.7 E-11	1.7 E-11	1.5 E-11
		M	0.040	2.5 E-10	0.020	1.7 E-10	7.9 E-11	5.4 E-11	3.8 E-11	3.2 E-11
Hg-203 (organic)	46.6 d	F	0.800	5.7 E-09	0.400	3.7 E-09	1.7 E-09	1.1 E-09	6.6 E-10	5.6 E-10
Hg-203 (anorganic)	46.6 d	F	0.040	4.2 E-09	0.020	2.9 E-09	1.4 E-09	9.0 E-10	5.5 E-10	4.6 E-10
		M	0.040	1.0 E-08	0.020	7.9 E-09	4.7 E-09	3.4 E-09	3.0 E-09	2.4 E-09
Thallium										
Tl-194	0.550 h	F	1.000	3.6 E-11	1.000	3.0 E-11	1.5 E-11	9.2 E-12	5.5 E-12	4.4 E-12
Tl-194m	0.546 h	F	1.000	1.7 E-10	1.000	1.2 E-10	6.1 E-11	3.8 E-11	2.3 E-11	1.9 E-11
Tl-195	1.16 h	F	1.000	1.3 E-10	1.000	1.0 E-10	5.3 E-11	3.2 E-11	1.9 E-11	1.5 E-11
Tl-197	2.84 h	F	1.000	1.3 E-10	1.000	9.7 E-11	4.7 E-11	2.9 E-11	1.7 E-11	1.4 E-11
Tl-198	5.30 h	F	1.000	4.7 E-10	1.000	4.0 E-10	2.1 E-10	1.3 E-10	7.5 E-11	6.0 E-11
Tl-198m	1.87 h	F	1.000	3.2 E-10	1.000	2.5 E-10	1.2 E-10	7.5 E-11	4.5 E-11	3.7 E-11
Tl-199	7.42 h	F	1.000	1.7 E-10	1.000	1.3 E-10	6.4 E-11	3.9 E-11	2.3 E-11	1.9 E-11
Tl-200	1.09 d	F	1.000	1.0 E-09	1.000	8.7 E-10	4.6 E-10	2.8 E-10	1.6 E-10	1.3 E-10
Tl-201	3.04 d	F	1.000	4.5 E-10	1.000	3.3 E-10	1.5 E-10	9.4 E-11	5.4 E-11	4.4 E-11
Tl-202	12.2 d	F	1.000	1.5 E-09	1.000	1.2 E-09	5.9 E-10	3.8 E-10	2.3 E-10	1.9 E-10
Tl-204	3.78 a	F	1.000	5.0 E-09	1.000	3.3 E-09	1.5 E-09	8.8 E-10	4.7 E-10	3.9 E-10
Lead (*)										
Pb-195m	0.263 h	F	0.600	1.3 E-10	0.200	1.0 E-10	4.9 E-11	3.1 E-11	1.9 E-11	1.6 E-11
		M	0.200	2.0 E-10	0.100	1.5 E-10	7.1 E-11	4.6 E-11	3.1 E-11	2.5 E-11

		S	0.020	2.1 E-10	0.010	1.5 E-10	7.4 E-11	4.8 E-11	3.2 E-11	2.7 E-11
Pb-198	2.40 h	F	0.600	3.4 E-10	0.200	2.9 E-10	1.5 E-10	8.9 E-11	5.2 E-11	4.3 E-11
		M	0.200	5.0 E-10	0.100	4.0 E-10	2.1 E-10	1.3 E-10	8.3 E-11	6.6 E-11
		S	0.020	5.4 E-10	0.010	4.2 E-10	2.2 E-10	1.4 E-10	8.7 E-11	7.0 E-11
Pb-199	1.50 h	F	0.600	1.9 E-10	0.200	1.6 E-10	8.2 E-11	4.9 E-11	2.9 E-11	2.3 E-11
		M	0.200	2.8 E-10	0.100	2.2 E-10	1.1 E-10	7.1 E-11	4.5 E-11	3.6 E-11
		S	0.020	2.9 E-10	0.010	2.3 E-10	1.2 E-10	7.4 E-11	4.7 E-11	3.7 E-11
Pb-200	21.5 h	F	0.600	1.1 E-09	0.200	9.3 E-10	4.6 E-10	2.8 E-10	1.6 E-10	1.4 E-10
		M	0.200	2.2 E-09	0.100	1.7 E-09	8.6 E-10	5.7 E-10	4.1 E-10	3.3 E-10
		S	0.020	2.4 E-09	0.010	1.8 E-09	9.2 E-10	6.2 E-10	4.4 E-10	3.5 E-10
Pb-201	9.40 h	F	0.600	4.8 E-10	0.200	4.1 E-10	2.0 E-10	1.2 E-10	7.1 E-11	6.0 E-11
		M	0.200	8.0 E-10	0.100	6.4 E-10	3.3 E-10	2.1 E-10	1.4 E-10	1.1 E-10
		S	0.020	8.8 E-10	0.010	6.7 E-10	3.5 E-10	2.2 E-10	1.5 E-10	1.2 E-10
Pb-202	3.00 E+05 a	F	0.600	1.9 E-08	0.200	1.3 E-08	8.9 E-09	1.3 E-08	1.8 E-08	1.1 E-08
		M	0.200	1.2 E-08	0.100	8.9 E-09	6.2 E-09	6.7 E-09	8.7 E-09	6.3 E-09
		S	0.020	2.8 E-08	0.010	2.8 E-08	2.0 E-08	1.4 E-08	1.3 E-08	1.2 E-08
Pb-202m	3.62 h	F	0.600	4.7 E-10	0.200	4.0 E-10	2.1 E-10	1.3 E-10	7.5 E-11	6.2 E-11
		M	0.200	6.9 E-10	0.100	5.6 E-10	2.9 E-10	1.9 E-10	1.2 E-10	9.5 E-11
		S	0.020	7.3 E-10	0.010	5.8 E-10	3.0 E-10	1.9 E-10	1.3 E-10	1.0 E-10
Pb-203	2.17 d	F	0.600	7.2 E-10	0.200	5.8 E-10	2.8 E-10	1.7 E-10	9.9 E-11	8.5 E-11
		M	0.200	1.3 E-09	0.100	1.0 E-09	5.4 E-10	3.6 E-10	2.5 E-10	2.0 E-10
		S	0.020	1.5 E-09	0.010	1.1 E-09	5.8 E-10	3.8 E-10	2.8 E-10	2.2 E-10
Pb-205	1.43 E+07 a	F	0.600	1.1 E-09	0.200	6.9 E-10	4.0 E-10	4.1 E-10	4.3 E-10	3.3 E-10
		M	0.200	1.1 E-09	0.100	7.7 E-10	4.3 E-10	3.2 E-10	2.9 E-10	2.5 E-10
		S	0.020	2.9 E-09	0.010	2.7 E-09	1.7 E-09	1.1 E-09	9.2 E-10	8.5 E-10
Pb-209	3.25 h	F	0.600	1.8 E-10	0.200	1.2 E-10	5.3 E-11	3.4 E-11	1.9 E-11	1.7 E-11
		M	0.200	4.0 E-10	0.100	2.7 E-10	1.3 E-10	9.2 E-11	6.9 E-11	5.6 E-11
		S	0.020	4.4 E-10	0.010	2.9 E-10	1.4 E-10	9.9 E-11	7.5 E-11	6.1 E-11
Pb-210	22.3 a	F	0.600	4.7 E-06	0.200	2.9 E-06	1.5 E-06	1.4 E-06	1.3 E-06	9.0 E-07
		M	0.200	5.0 E-06	0.100	3.7 E-06	2.2 E-06	1.5 E-06	1.3 E-06	1.1 E-06
		S	0.020	1.8 E-05	0.010	1.8 E-05	1.1 E-05	7.2 E-06	5.9 E-06	5.6 E-06
Pb-211	0.601 h	F	0.600	2.5 E-08	0.200	1.7 E-08	8.7 E-09	6.1 E-09	4.6 E-09	3.9 E-09
		M	0.200	6.2 E-08	0.100	4.5 E-08	2.5 E-08	1.9 E-08	1.4 E-08	1.1 E-08
		S	0.020	6.6 E-08	0.010	4.8 E-08	2.7 E-08	2.0 E-08	1.5 E-08	1.2 E-08
Pb-212	10.6 h	F	0.600	1.9 E-07	0.200	1.2 E-07	5.4 E-08	3.5 E-08	2.0 E-08	1.8 E-08
		M	0.200	6.2 E-07	0.100	4.6 E-07	3.0 E-07	2.2 E-07	2.2 E-07	1.7 E-07
		S	0.020	6.7 E-07	0.010	5.0 E-07	3.3 E-07	2.5 E-07	2.4 E-07	1.9 E-07
Pb-214	0.447 h	F	0.600	2.2 E-08	0.200	1.5 E-08	6.9 E-09	4.8 E-09	3.3 E-09	2.8 E-09
		M	0.200	6.4 E-08	0.100	4.6 E-08	2.6 E-08	1.9 E-08	1.4 E-08	1.4 E-08
		S	0.020	6.9 E-08	0.010	5.0 E-08	2.8 E-08	2.1 E-08	1.5 E-08	1.5 E-08
Bismuth										
Bi-200	0.606 h	F	0.100	1.9 E-10	0.050	1.5 E-10	7.4 E-11	4.5 E-11	2.7 E-11	2.2 E-11
		M	0.100	2.5 E-10	0.050	1.9 E-10	9.9 E-11	6.3 E-11	4.1 E-11	3.3 E-11
Bi-201	1.80 h	F	0.100	4.0 E-10	0.050	3.1 E-10	1.5 E-10	9.3 E-11	5.4 E-11	4.4 E-11
		M	0.100	5.5 E-10	0.050	4.1 E-10	2.0 E-10	1.3 E-10	8.3 E-11	6.6 E-11
Bi-202	1.67 h	F	0.100	3.4 E-10	0.050	2.8 E-10	1.5 E-10	9.0 E-11	5.3 E-11	4.3 E-11
		M	0.100	4.2 E-10	0.050	3.4 E-10	1.8 E-10	1.1 E-10	6.9 E-11	5.5 E-11
Bi-203	11.8 h	F	0.100	1.5 E-09	0.050	1.2 E-09	6.4 E-10	4.0 E-10	2.3 E-10	1.9 E-10
		M	0.100	2.0 E-09	0.050	1.6 E-09	8.2 E-10	5.3 E-10	3.3 E-10	2.6 E-10
Bi-205	15.3 d	F	0.100	3.0 E-09	0.050	2.4 E-09	1.3 E-09	8.0 E-10	4.7 E-10	3.8 E-10
		M	0.100	5.5 E-09	0.050	4.4 E-09	2.5 E-09	1.6 E-09	1.2 E-09	9.3 E-10
Bi-206	6.24 d	F	0.100	6.1 E-09	0.050	4.8 E-09	2.5 E-09	1.6 E-09	9.1 E-10	7.4 E-10
		M	0.100	1.0 E-08	0.050	8.0 E-09	4.4 E-09	2.9 E-09	2.1 E-09	1.7 E-09
Bi-207	38.0 a	F	0.100	4.3 E-09	0.050	3.3 E-09	1.7 E-09	1.0 E-09	6.0 E-10	4.9 E-10
		M	0.100	2.3 E-08	0.050	2.0 E-08	1.2 E-08	8.2 E-09	6.5 E-09	5.6 E-09
Bi-210	5.01 d	F	0.100	1.1 E-08	0.050	6.9 E-09	3.2 E-09	2.1 E-09	1.3 E-09	1.1 E-09
		M	0.100	3.9 E-07	0.050	3.0 E-07	1.9 E-07	1.3 E-07	1.1 E-07	9.3 E-08
Bi-210m	3.00 E+06 a	F	0.100	4.1 E-07	0.050	2.6 E-07	1.3 E-07	8.3 E-08	5.6 E-08	4.6 E-08
		M	0.100	1.5 E-05	0.050	1.1 E-05	7.0 E-06	4.8 E-06	4.1 E-06	3.4 E-06
Bi-212	1.01 h	F	0.100	6.5 E-08	0.050	4.5 E-08	2.1 E-08	1.5 E-08	1.0 E-08	9.1 E-09
		M	0.100	1.6 E-07	0.050	1.1 E-07	6.0 E-08	4.4 E-08	3.8 E-08	3.1 E-08

Bi-213	0.761 h	F	0.100	7.7 E-08	0.050	5.3 E-08	2.5 E-08	1.7 E-08	1.2 E-08	1.0 E-08
		M	0.100	1.6 E-07	0.050	1.2 E-07	6.0 E-08	4.4 E-08	3.6 E-08	3.0 E-08
Bi-214	0.332 h	F	0.100	5.0 E-08	0.050	3.5 E-08	1.6 E-08	1.1 E-08	8.2 E-09	7.1 E-09
		M	0.100	8.7 E-08	0.050	6.1 E-08	3.1 E-08	2.2 E-08	1.7 E-08	1.4 E-08
Polonium										
Po-203	0.612 h	F	0.200	1.9 E-10	0.100	1.5 E-10	7.7 E-11	4.7 E-11	2.8 E-11	2.3 E-11
		M	0.200	2.7 E-10	0.100	2.1 E-10	1.1 E-10	6.7 E-11	4.3 E-11	3.5 E-11
		S	0.020	2.8 E-10	0.010	2.2 E-10	1.1 E-10	7.0 E-11	4.5 E-11	3.6 E-11
Po-205	1.80 h	F	0.200	2.6 E-10	0.100	2.1 E-10	1.1 E-10	6.6 E-11	4.1 E-11	3.3 E-11
		M	0.200	4.0 E-10	0.100	3.1 E-10	1.7 E-10	1.1 E-10	8.1 E-11	6.5 E-11
		S	0.020	4.2 E-10	0.010	3.2 E-10	1.8 E-10	1.2 E-10	8.5 E-11	6.9 E-11
Po-207	5.83 h	F	0.200	4.8 E-10	0.100	4.0 E-10	2.1 E-10	1.3 E-10	7.3 E-11	5.8 E-11
		M	0.200	6.2 E-10	0.100	5.1 E-10	2.6 E-10	1.6 E-10	9.9 E-11	7.8 E-11
		S	0.020	6.6 E-10	0.010	5.3 E-10	2.7 E-10	1.7 E-10	1.0 E-10	8.2 E-11
Po-210	138 d	F	0.200	7.4 E-06	0.100	4.8 E-06	2.2 E-06	1.3 E-06	7.7 E-07	6.1 E-07
		M	0.200	1.5 E-05	0.100	1.1 E-05	6.7 E-06	4.6 E-06	4.0 E-06	3.3 E-06
		S	0.020	1.8 E-05	0.010	1.4 E-05	8.6 E-06	5.9 E-06	5.1 E-06	4.3 E-06
Astatine										
At-207	1.80 h	F	1.000	2.4 E-09	1.000	1.7 E-09	8.9 E-10	5.9 E-10	4.0 E-10	3.3 E-10
		M	1.000	9.2 E-09	1.000	6.7 E-09	4.3 E-09	3.1 E-09	2.9 E-09	2.3 E-09
At-211	7.21 h	F	1.000	1.4 E-07	1.000	9.7 E-08	4.3 E-08	2.8 E-08	1.7 E-08	1.6 E-08
		M	1.000	5.2 E-07	1.000	3.7 E-07	1.9 E-07	1.4 E-07	1.3 E-07	1.1 E-07
Francium										
Fr-222	0.240 h	F	1.000	9.1 E-08	1.000	6.3 E-08	3.0 E-08	2.1 E-08	1.6 E-08	1.4 E-08
Fr-223	0.363 h	F	1.000	1.1 E-08	1.000	7.3 E-09	3.2 E-09	1.9 E-09	1.0 E-09	8.9 E-10
Radium (*)										
Ra-223	11.4 d	F	0.600	3.0 E-06	0.200	1.0 E-06	4.9 E-07	4.0 E-07	3.3 E-07	1.2 E-07
		M	0.200	2.8 E-05	0.100	2.1 E-05	1.3 E-05	9.9 E-06	9.4 E-06	7.4 E-06
		S	0.020	3.2 E-05	0.010	2.4 E-05	1.5 E-05	1.1 E-05	1.1 E-05	8.7 E-06
Ra-224	3.66 d	F	0.600	1.5 E-06	0.200	6.0 E-07	2.9 E-07	2.2 E-07	1.7 E-07	7.5 E-08
		M	0.200	1.1 E-05	0.100	8.2 E-06	5.3 E-06	3.9 E-06	3.7 E-06	3.0 E-06
		S	0.020	1.2 E-05	0.010	9.2 E-06	5.9 E-06	4.4 E-06	4.2 E-06	3.4 E-06
Ra-225	14.8 d	F	0.600	4.0 E-06	0.200	1.2 E-06	5.6 E-07	4.6 E-07	3.8 E-07	1.3 E-07
		M	0.200	2.4 E-05	0.100	1.8 E-05	1.1 E-05	8.4 E-06	7.9 E-06	6.3 E-06
		S	0.020	2.8 E-05	0.010	2.2 E-05	1.4 E-05	1.0 E-05	9.8 E-06	7.7 E-06
Ra-226	1.60 E+03 a	F	0.600	2.6 E-06	0.200	9.4 E-07	5.5 E-07	7.2 E-07	1.3 E-06	3.6 E-07
		M	0.200	1.5 E-05	0.100	1.1 E-05	7.0 E-06	4.9 E-06	4.5 E-06	3.5 E-06
		S	0.020	3.4 E-05	0.010	2.9 E-05	1.9 E-05	1.2 E-05	1.0 E-05	9.5 E-06
Ra-227	0.703 h	F	0.600	1.5 E-09	0.200	1.2 E-09	7.8 E-10	6.1 E-10	5.3 E-10	4.6 E-10
		M	0.200	8.0 E-10	0.100	6.7 E-10	4.4 E-10	3.2 E-10	2.9 E-10	2.8 E-10
		S	0.020	1.0 E-09	0.010	8.5 E-10	4.4 E-10	2.9 E-10	2.4 E-10	2.2 E-10
Ra-228	5.75 a	F	0.600	1.7 E-05	0.200	5.7 E-06	3.1 E-06	3.6 E-06	4.6 E-06	9.0 E-07
		M	0.200	1.5 E-05	0.100	1.0 E-05	6.3 E-06	4.6 E-06	4.4 E-06	2.6 E-06
		S	0.020	4.9 E-05	0.010	4.8 E-05	3.2 E-05	2.0 E-05	1.6 E-05	1.6 E-05
Actinium										
Ac-224	2.90 h	F	0.005	1.3 E-07	5.0 E-04	8.9 E-08	4.7 E-08	3.1 E-08	1.4 E-08	1.1 E-08
		M	0.005	4.2 E-07	5.0 E-04	3.2 E-07	2.0 E-07	1.5 E-07	1.4 E-07	1.1 E-07
		S	0.005	4.6 E-07	5.0 E-04	3.5 E-07	2.2 E-07	1.7 E-07	1.6 E-07	1.3 E-07
Ac-225	10.0 d	F	0.005	1.1 E-05	5.0 E-04	7.7 E-06	4.0 E-06	2.6 E-06	1.1 E-06	8.8 E-07
		M	0.005	2.8 E-05	5.0 E-04	2.1 E-05	1.3 E-05	1.0 E-05	9.3 E-06	7.4 E-06
		S	0.005	3.1 E-05	5.0 E-04	2.3 E-05	1.5 E-05	1.1 E-05	1.1 E-05	8.5 E-06
Ac-226	1.21 d	F	0.005	1.5 E-06	5.0 E-04	1.1 E-06	4.0 E-07	2.6 E-07	1.2 E-07	9.6 E-08
		M	0.005	4.3 E-06	5.0 E-04	3.2 E-06	2.1 E-06	1.5 E-06	1.5 E-06	1.2 E-06
		S	0.005	4.7 E-06	5.0 E-04	3.5 E-06	2.3 E-06	1.7 E-06	1.6 E-06	1.3 E-06
Ac-227	21.8 a	F	0.005	1.7 E-03	5.0 E-04	1.6 E-03	1.0 E-03	7.2 E-04	5.6 E-04	5.5 E-04
		M	0.005	5.7 E-04	5.0 E-04	5.5 E-04	3.9 E-04	2.6 E-04	2.3 E-04	2.2 E-04
		S	0.005	2.2 E-04	5.0 E-04	2.0 E-04	1.3 E-04	8.7 E-05	7.6 E-05	7.2 E-05
Ac-228	6.13 h	F	0.005	1.8 E-07	5.0 E-04	1.6 E-07	9.7 E-08	5.7 E-08	2.9 E-08	2.5 E-08
		M	0.005	8.4 E-08	5.0 E-04	7.3 E-08	4.7 E-08	2.9 E-08	2.0 E-08	1.7 E-08
		S	0.005	6.4 E-08	5.0 E-04	5.3 E-08	3.3 E-08	2.2 E-08	1.9 E-08	1.6 E-08
Thorium										

Th-226	0.515 h	F	0.005	1.4 E-07	5.0 E-04	1.0 E-07	4.8 E-08	3.4 E-08	2.5 E-08	2.2 E-08
		M	0.005	3.0 E-07	5.0 E-04	2.1 E-07	1.1 E-07	8.3 E-08	7.0 E-08	5.8 E-08
		S	0.005	3.1 E-07	5.0 E-04	2.2 E-07	1.2 E-07	8.8 E-08	7.5 E-08	6.1 E-08
Th-227	18.7 d	F	0.005	8.4 E-06	5.0 E-04	5.2 E-06	2.6 E-06	1.6 E-06	1.0 E-06	6.7 E-07
		M	0.005	3.2 E-05	5.0 E-04	2.5 E-05	1.6 E-05	1.1 E-05	1.1 E-05	8.5 E-06
		S	0.005	3.9 E-05	5.0 E-04	3.0 E-05	1.9 E-05	1.4 E-05	1.3 E-05	1.0 E-05
Th-228	1.91 a	F	0.005	1.8 E-04	5.0 E-04	1.5 E-04	8.3 E-05	5.2 E-05	3.6 E-05	2.9 E-05
		M	0.005	1.3 E-04	5.0 E-04	1.1 E-04	6.8 E-05	4.6 E-05	3.9 E-05	3.2 E-05
		S	0.005	1.6 E-04	5.0 E-04	1.3 E-04	8.2 E-05	5.5 E-05	4.7 E-05	4.0 E-05
Th-229	7.34 E+03 a	F	0.005	5.4 E-04	5.0 E-04	5.1 E-04	3.6 E-04	2.9 E-04	2.4 E-04	2.4 E-04
		M	0.005	2.3 E-04	5.0 E-04	2.1 E-04	1.6 E-04	1.2 E-04	1.1 E-04	1.1 E-04
		S	0.005	2.1 E-04	5.0 E-04	1.9 E-04	1.3 E-04	8.7 E-05	7.6 E-05	7.1 E-05
Th-230	7.70 E+04 a	F	0.005	2.1 E-04	5.0 E-04	2.0 E-04	1.4 E-04	1.1 E-04	9.9 E-05	1.0 E-04
		M	0.005	7.7 E-05	5.0 E-04	7.4 E-05	5.5 E-05	4.3 E-05	4.2 E-05	4.3 E-05
		S	0.005	4.0 E-05	5.0 E-04	3.5 E-05	2.4 E-05	1.6 E-05	1.5 E-05	1.4 E-05
Th-231	1.06 d	F	0.005	1.1 E-09	5.0 E-04	7.2 E-10	2.6 E-10	1.6 E-10	9.2 E-11	7.8 E-11
		M	0.005	2.2 E-09	5.0 E-04	1.6 E-09	8.0 E-10	4.8 E-10	3.8 E-10	3.1 E-10
		S	0.005	2.4 E-09	5.0 E-04	1.7 E-09	7.6 E-10	5.2 E-10	4.1 E-10	3.3 E-10
Th-232	1.40 E+10 a	F	0.005	2.3 E-04	5.0 E-04	2.2 E-04	1.6 E-04	1.3 E-04	1.2 E-04	1.1 E-04
		M	0.005	8.3 E-05	5.0 E-04	8.1 E-05	6.3 E-05	5.0 E-05	4.7 E-05	4.5 E-05
		S	0.005	5.4 E-05	5.0 E-04	5.0 E-05	3.7 E-05	2.6 E-05	2.5 E-05	2.5 E-05
Th-234	24.1 d	F	0.005	4.0 E-08	5.0 E-04	2.5 E-08	1.1 E-08	6.1 E-09	3.5 E-09	2.5 E-09
		M	0.005	3.9 E-08	5.0 E-04	2.9 E-08	1.5 E-08	1.0 E-08	7.9 E-09	6.6 E-09
		S	0.005	4.1 E-08	5.0 E-04	3.1 E-08	1.7 E-08	1.1 E-08	9.1 E-09	7.7 E-09
Protactiniu m										
Pa-227	0.638 h	M	0.005	3.6 E-07	5.0 E-04	2.6 E-07	1.4 E-07	1.0 E-07	9.0 E-08	7.4 E-08
		S	0.005	3.8 E-07	5.0 E-04	2.8 E-07	1.5 E-07	1.1 E-07	8.1 E-08	8.0 E-08
Pa-228	22.0 h	M	0.005	2.6 E-07	5.0 E-04	2.1 E-07	1.3 E-07	8.8 E-08	7.7 E-08	6.4 E-08
		S	0.005	2.9 E-07	5.0 E-04	2.4 E-07	1.5 E-07	1.0 E-07	9.1 E-08	7.5 E-08
Pa-230	17.4 d	M	0.005	2.4 E-06	5.0 E-04	1.8 E-06	1.1 E-06	8.3 E-07	7.6 E-07	6.1 E-07
		S	0.005	2.9 E-06	5.0 E-04	2.2 E-06	1.4 E-06	1.0 E-06	9.6 E-07	7.6 E-07
Pa-231	3.27 E+04 a	M	0.005	2.2 E-04	5.0 E-04	2.3 E-04	1.9 E-04	1.5 E-04	1.5 E-04	1.4 E-04
		S	0.005	7.4 E-05	5.0 E-04	6.9 E-05	5.2 E-05	3.9 E-05	3.6 E-05	3.4 E-05
Pa-232	1.31 d	M	0.005	1.9 E-08	5.0 E-04	1.8 E-08	1.4 E-08	1.1 E-08	1.0 E-08	1.0 E-08
		S	0.005	1.0 E-08	5.0 E-04	8.7 E-09	5.9 E-09	4.1 E-09	3.7 E-09	3.5 E-09
Pa-233	27.0 d	M	0.005	1.5 E-08	5.0 E-04	1.1 E-08	6.5 E-09	4.7 E-09	4.1 E-09	3.3 E-09
		S	0.005	1.7 E-08	5.0 E-04	1.3 E-08	7.5 E-09	5.5 E-09	4.9 E-09	3.9 E-09
Pa-234	6.70 h	M	0.005	2.8 E-09	5.0 E-04	2.0 E-09	1.0 E-09	6.8 E-10	4.7 E-10	3.8 E-10
		S	0.005	2.9 E-09	5.0 E-04	2.1 E-09	1.1 E-09	7.1 E-10	5.0 E-10	4.0 E-10

Uranium										
U-230	20.8 d	F	0.040	3.2 E-06	0.020	1.5 E-06	7.2 E-07	5.4 E-07	4.1 E-07	3.8 E-07
		M	0.040	4.9 E-05	0.020	3.7 E-05	2.4 E-05	1.8 E-05	1.7 E-05	1.3 E-05
		S	0.020	5.8 E-05	0.002	4.4 E-05	2.8 E-05	2.1 E-05	2.0 E-05	1.6 E-05
U-231	4.20 d	F	0.040	8.9 E-10	0.020	6.2 E-10	3.1 E-10	1.4 E-10	1.0 E-10	6.2 E-11
		M	0.040	2.4 E-09	0.020	1.7 E-09	9.4 E-10	5.5 E-10	4.6 E-10	3.8 E-10
		S	0.020	2.6 E-09	0.002	1.9 E-09	9.0 E-10	6.1 E-10	4.9 E-10	4.0 E-10
U-232	72.0 a	F	0.040	1.6 E-05	0.020	1.0 E-05	6.9 E-06	6.8 E-06	7.5 E-06	4.0 E-06
		M	0.040	3.0 E-05	0.020	2.4 E-05	1.6 E-05	1.1 E-05	1.0 E-05	7.8 E-06
		S	0.020	1.0 E-04	0.002	9.7 E-05	6.6 E-05	4.3 E-05	3.8 E-05	3.7 E-05
U-233	1.58 E+05 a	F	0.040	2.2 E-06	0.020	1.4 E-06	9.4 E-07	8.4 E-07	8.6 E-07	5.8 E-07
		M	0.040	1.5 E-05	0.020	1.1 E-05	7.2 E-06	4.9 E-06	4.3 E-06	3.6 E-06
		S	0.020	3.4 E-05	0.002	3.0 E-05	1.9 E-05	1.2 E-05	1.1 E-05	9.6 E-06
U-234	2.44 E+05 a	F	0.040	2.1 E-06	0.020	1.4 E-06	9.0 E-07	8.0 E-07	8.2 E-07	5.6 E-07
		M	0.040	1.5 E-05	0.020	1.1 E-05	7.0 E-06	4.8 E-06	4.2 E-06	3.5 E-06
		S	0.020	3.3 E-05	0.002	2.9 E-05	1.9 E-05	1.2 E-05	1.0 E-05	9.4 E-06
U-235	7.04 E+08 a	F	0.040	2.0 E-06	0.020	1.3 E-06	8.5 E-07	7.5 E-07	7.7 E-07	5.2 E-07
		M	0.040	1.3 E-05	0.020	1.0 E-05	6.3 E-06	4.3 E-06	3.7 E-06	3.1 E-06
		S	0.020	3.0 E-05	0.002	2.6 E-05	1.7 E-05	1.1 E-05	9.2 E-06	8.5 E-06
U-236	2.34 E+07 a	F	0.040	2.0 E-06	0.020	1.3 E-06	8.5 E-07	7.5 E-07	7.8 E-07	5.3 E-07
		M	0.040	1.4 E-05	0.020	1.0 E-05	6.5 E-06	4.5 E-06	3.9 E-06	3.2 E-06
		S	0.020	3.1 E-05	0.002	2.7 E-05	1.8 E-05	1.1 E-05	9.5 E-06	8.7 E-06

U-237	6.75 d	F	0.040	1.8 E-09	0.020	1.5 E-09	6.6 E-10	4.2 E-10	1.9 E-10	1.8 E-10
		M	0.040	7.8 E-09	0.020	5.7 E-09	3.3 E-09	2.4 E-09	2.1 E-09	1.7 E-09
		S	0.020	8.7 E-09	0.002	6.4 E-09	3.7 E-09	2.7 E-09	2.4 E-09	1.9 E-09
U-238	4.47 E+09 a	F	0.040	1.9 E-06	0.020	1.3 E-06	8.2 E-07	7.3 E-07	7.4 E-07	5.0 E-07
		M	0.040	1.2 E-05	0.020	9.4 E-06	5.9 E-06	4.0 E-06	3.4 E-06	2.9 E-06
		S	0.020	2.9 E-05	0.002	2.5 E-05	1.6 E-05	1.0 E-05	8.7 E-06	8.0 E-06
U-239	0.392 h	F	0.040	1.0 E-10	0.020	6.6 E-11	2.9 E-11	1.9 E-11	1.2 E-11	1.0 E-11
		M	0.040	1.8 E-10	0.020	1.2 E-10	5.6 E-11	3.8 E-11	2.7 E-11	2.2 E-11
		S	0.020	1.9 E-10	0.002	1.2 E-10	5.9 E-11	4.0 E-11	2.9 E-11	2.4 E-11
U-240	14.1 h	F	0.040	2.4 E-09	0.020	1.6 E-09	7.1 E-10	4.5 E-10	2.3 E-10	2.0 E-10
		M	0.040	4.6 E-09	0.020	3.1 E-09	1.7 E-09	1.1 E-09	6.5 E-10	5.3 E-10
		S	0.020	4.9 E-09	0.002	3.3 E-09	1.6 E-09	1.1 E-09	7.0 E-10	5.8 E-10
Neptunium										
Np-232	0.245 h	F	0.005	2.0 E-10	5.0 E-04	1.9 E-10	1.2 E-10	1.1 E-10	1.1 E-10	1.2 E-10
		M	0.005	8.9 E-11	5.0 E-04	8.1 E-11	5.5 E-11	4.5 E-11	4.7 E-11	5.0 E-11
		S	0.005	1.2 E-10	5.0 E-04	9.7 E-11	5.8 E-11	3.9 E-11	2.5 E-11	2.4 E-11
Np-233	0.603 h	F	0.005	1.1 E-11	5.0 E-04	8.7 E-12	4.2 E-12	2.5 E-12	1.4 E-12	1.1 E-12
		M	0.005	1.5 E-11	5.0 E-04	1.1 E-11	5.5 E-12	3.3 E-12	2.1 E-12	1.6 E-12
		S	0.005	1.5 E-11	5.0 E-04	1.2 E-11	5.7 E-12	3.4 E-12	2.1 E-12	1.7 E-12
Np-234	4.40 d	F	0.005	2.9 E-09	5.0 E-04	2.2 E-09	1.1 E-09	7.2 E-10	4.3 E-10	3.5 E-10
		M	0.005	3.8 E-09	5.0 E-04	3.0 E-09	1.6 E-09	1.0 E-09	6.5 E-10	5.3 E-10
		S	0.005	3.9 E-09	5.0 E-04	3.1 E-09	1.6 E-09	1.0 E-09	6.8 E-10	5.5 E-10
Np-235	1.08 a	F	0.005	4.2 E-09	5.0 E-04	3.5 E-09	1.9 E-09	1.1 E-09	7.5 E-10	6.3 E-10
		M	0.005	2.3 E-09	5.0 E-04	1.9 E-09	1.1 E-09	6.8 E-10	5.1 E-10	4.2 E-10
		S	0.005	2.6 E-09	5.0 E-04	2.2 E-09	1.3 E-09	8.3 E-10	6.3 E-10	5.2 E-10
Np-236	1.15E+05 a	F	0.005	8.9 E-06	5.0 E-04	9.1 E-06	7.2 E-06	7.5 E-06	7.9 E-06	8.0 E-06
		M	0.005	3.0 E-06	5.0 E-04	3.1 E-06	2.7 E-06	2.7 E-06	3.1 E-06	3.2 E-06
		S	0.005	1.6 E-06	5.0 E-04	1.6 E-06	1.3 E-06	1.0 E-06	1.0 E-06	1.0 E-06

Np-236	22.5 h	F	0.005	2.8 E-08	5.0 E-04	2.6 E-08	1.5 E-08	1.1 E-08	8.9 E-09	9.0 E-09
		M	0.005	1.6 E-08	5.0 E-04	1.4 E-08	8.9 E-09	6.2 E-09	5.6 E-09	5.3 E-09
		S	0.005	1.6 E-08	5.0 E-04	1.3 E-08	8.5 E-09	5.7 E-09	4.8 E-09	4.2 E-09
Np-237	2.14E+06 a	F	0.005	9.8 E-05	5.0 E-04	9.3 E-05	6.0 E-05	5.0 E-05	4.7 E-05	5.0 E-05
		M	0.005	4.4 E-05	5.0 E-04	4.0 E-05	2.8 E-05	2.2 E-05	2.2 E-05	2.3 E-05
		S	0.005	3.7 E-05	5.0 E-04	3.2 E-05	2.1 E-05	1.4 E-05	1.3 E-05	1.2 E-05
Np-238	2.12 d	F	0.005	9.0 E-09	5.0 E-04	7.9 E-09	4.8 E-09	3.7 E-09	3.3 E-09	3.5 E-09
		M	0.005	7.3 E-09	5.0 E-04	5.8 E-09	3.4 E-09	2.5 E-09	2.2 E-09	2.1 E-09
		S	0.005	8.1 E-09	5.0 E-04	6.2 E-09	3.2 E-09	2.1 E-09	1.7 E-09	1.5 E-09
Np-239	2.36 d	F	0.005	2.6 E-09	5.0 E-04	1.4 E-09	6.3 E-10	3.8 E-10	2.1 E-10	1.7 E-10
		M	0.005	5.9 E-09	5.0 E-04	4.2 E-09	2.0 E-09	1.4 E-09	1.2 E-09	9.3 E-10
		S	0.005	5.6 E-09	5.0 E-04	4.0 E-09	2.2 E-09	1.6 E-09	1.3 E-09	1.0 E-09
Np-240	1.08 h	F	0.005	3.6 E-10	5.0 E-04	2.6 E-10	1.2 E-10	7.7 E-11	4.7 E-11	4.0 E-11
		M	0.005	6.3 E-10	5.0 E-04	4.4 E-10	2.2 E-10	1.4 E-10	1.0 E-10	8.5 E-11
		S	0.005	6.5 E-10	5.0 E-04	4.6 E-10	2.3 E-10	1.5 E-10	1.1 E-10	9.0 E-11
Plutonium										
Pu-234	8.80 h	F	0.005	3.0 E-08	5.0 E-04	2.0 E-08	9.8 E-09	5.7 E-09	3.6 E-09	3.0 E-09
		M	0.005	7.8 E-08	5.0 E-04	5.9 E-08	3.7 E-08	2.8 E-08	2.6 E-08	2.1 E-08
		S	1.0 E-04	8.7 E-08	1.0 E-05	6.6 E-08	4.2 E-08	3.1 E-08	3.0 E-08	2.4 E-08
Pu-235	0.422 h	F	0.005	1.0 E-11	5.0 E-04	7.9 E-12	3.9 E-12	2.2 E-12	1.3 E-12	1.0 E-12
		M	0.005	1.3 E-11	5.0 E-04	1.0 E-11	5.0 E-12	2.9 E-12	1.9 E-12	1.4 E-12
		S	1.0 E-04	1.3 E-11	1.0 E-05	1.0 E-11	5.1 E-12	3.0 E-12	1.9 E-12	1.5 E-12
Pu-236	2.85 a	F	0.005	1.0 E-04	5.0 E-04	9.5 E-05	6.1 E-05	4.4 E-05	3.7 E-05	4.0 E-05
		M	0.005	4.8 E-05	5.0 E-04	4.3 E-05	2.9 E-05	2.1 E-05	1.9 E-05	2.0 E-05
		S	1.0 E-04	3.6 E-05	1.0 E-05	3.1 E-05	2.0 E-05	1.4 E-05	1.2 E-05	1.0 E-05
Pu-237	45.3 d	F	0.005	2.2 E-09	5.0 E-04	1.6 E-09	7.9 E-10	4.8 E-10	2.9 E-10	2.6 E-10
		M	0.005	1.9 E-09	5.0 E-04	1.4 E-09	8.2 E-10	5.4 E-10	4.3 E-10	3.5 E-10
		S	1.0 E-04	2.0 E-09	1.0 E-05	1.5 E-09	8.8 E-10	5.9 E-10	4.8 E-10	3.9 E-10
Pu-238	87.7 a	F	0.005	2.0 E-04	5.0 E-04	1.9 E-04	1.4 E-04	1.1 E-04	1.0 E-04	1.1 E-04

		M	0.005	7.8 E-05	5.0 E-04	7.4 E-05	5.6 E-05	4.4 E-05	4.3 E-05	4.6 E-05
		S	1.0 E-04	4.5 E-05	1.0 E-05	4.0 E-05	2.7 E-05	1.9 E-05	1.7 E-05	1.6 E-05
Pu-239	2.41 E+04 a	F	0.005	2.1 E-04	5.0 E-04	2.0 E-04	1.5 E-04	1.2 E-04	1.1 E-04	1.2 E-04
		M	0.005	8.0 E-05	5.0 E-04	7.7 E-05	6.0 E-05	4.8 E-05	4.7 E-05	5.0 E-05
		S	1.0 E-04	4.3 E-05	1.0 E-05	3.9 E-05	2.7 E-05	1.9 E-05	1.7 E-05	1.6 E-05
Pu-240	6.54 E+03 a	F	0.005	2.1 E-04	5.0 E-04	2.0 E-04	1.5 E-04	1.2 E-04	1.1 E-04	1.2 E-04
		M	0.005	8.0 E-05	5.0 E-04	7.7 E-05	6.0 E-05	4.8 E-05	4.7 E-05	5.0 E-05
		S	1.0 E-04	4.3 E-05	1.0 E-05	3.9 E-05	2.7 E-05	1.9 E-05	1.7 E-05	1.6 E-05
Pu-241	14.4 a	F	0.005	2.8 E-06	5.0 E-04	2.9 E-06	2.6 E-06	2.4 E-06	2.2 E-06	2.3 E-06
		M	0.005	9.1 E-07	5.0 E-04	9.7 E-07	9.2 E-07	8.3 E-07	8.6 E-07	9.0 E-07
		S	1.0 E-04	2.2 E-07	1.0 E-05	2.3 E-07	2.0 E-07	1.7 E-07	1.7 E-07	1.7 E-07
Pu-242	3.76 E+05 a	F	0.005	2.0 E-04	5.0 E-04	1.9 E-04	1.4 E-04	1.2 E-04	1.1 E-04	1.1 E-04
		M	0.005	7.6 E-05	5.0 E-04	7.3 E-05	5.7 E-05	4.5 E-05	4.5 E-05	4.8 E-05
		S	1.0 E-04	4.0 E-05	1.0 E-05	3.6 E-05	2.5 E-05	1.7 E-05	1.6 E-05	1.5 E-05
Pu-243	4.95 h	F	0.005	2.7 E-10	5.0 E-04	1.9 E-10	8.8 E-11	5.7 E-11	3.5 E-11	3.2 E-11
		M	0.005	5.6 E-10	5.0 E-04	3.9 E-10	1.9 E-10	1.3 E-10	8.7 E-11	8.3 E-11
		S	1.0 E-04	6.0 E-10	1.0 E-05	4.1 E-10	2.0 E-10	1.4 E-10	9.2 E-11	8.6 E-11
Pu-244	8.26 E+07 a	F	0.005	2.0 E-04	5.0 E-04	1.9 E-04	1.4 E-04	1.2 E-04	1.1 E-04	1.1 E-04
		M	0.005	7.4 E-05	5.0 E-04	7.2 E-05	5.6 E-05	4.5 E-05	4.4 E-05	4.7 E-05
		S	1.0 E-04	3.9 E-05	1.0 E-05	3.5 E-05	2.4 E-05	1.7 E-05	1.5 E-05	1.5 E-05
Pu-245	10.5 h	F	0.005	1.8 E-09	5.0 E-04	1.3 E-09	5.6 E-10	3.5 E-10	1.9 E-10	1.6 E-10
		M	0.005	3.6 E-09	5.0 E-04	2.5 E-09	1.2 E-09	8.0 E-10	5.0 E-10	4.0 E-10
		S	1.0 E-04	3.8 E-09	1.0 E-05	2.6 E-09	1.3 E-09	8.5 E-10	5.4 E-10	4.3 E-10
Pu-246	10.9 d	F	0.005	2.0 E-08	5.0 E-04	1.4 E-08	7.0 E-09	4.4 E-09	2.8 E-09	2.5 E-09
		M	0.005	3.5 E-08	5.0 E-04	2.6 E-08	1.5 E-08	1.1 E-08	9.1 E-09	7.4 E-09
		S	1.0 E-04	3.8 E-08	1.0 E-05	2.8 E-08	1.6 E-08	1.2 E-08	1.0 E-08	8.0 E-09
Americium										
Am-237	1.22 h	F	0.005	9.8 E-11	5.0 E-04	7.3 E-11	3.5 E-11	2.2 E-11	1.3 E-11	1.1 E-11
		M	0.005	1.7 E-10	5.0 E-04	1.2 E-10	6.2 E-11	4.1 E-11	3.0 E-11	2.5 E-11
		S	0.005	1.7 E-10	5.0 E-04	1.3 E-10	6.5 E-11	4.3 E-11	3.2 E-11	2.6 E-11
Am-238	1.63 h	F	0.005	4.1 E-10	5.0 E-04	3.8 E-10	2.5 E-10	2.0 E-10	1.8 E-10	1.9 E-10
		M	0.005	3.1 E-10	5.0 E-04	2.6 E-10	1.3 E-10	9.6 E-11	8.8 E-11	9.0 E-11
		S	0.005	2.7 E-10	5.0 E-04	2.2 E-10	1.3 E-10	8.2 E-11	6.1 E-11	5.4 E-11
Am-239	11.9 h	F	0.005	8.1 E-10	5.0 E-04	5.8 E-10	2.6 E-10	1.6 E-10	9.1 E-11	7.6 E-11
		M	0.005	1.5 E-09	5.0 E-04	1.1 E-09	5.6 E-10	3.7 E-10	2.7 E-10	2.2 E-10
		S	0.005	1.6 E-09	5.0 E-04	1.1 E-09	5.9 E-10	4.0 E-10	2.5 E-10	2.4 E-10
Am-240	2.12 d	F	0.005	2.0 E-09	5.0 E-04	1.7 E-09	8.8 E-10	5.7 E-10	3.6 E-10	2.3 E-10
		M	0.005	2.9 E-09	5.0 E-04	2.2 E-09	1.2 E-09	7.7 E-10	5.3 E-10	4.3 E-10
		S	0.005	3.0 E-09	5.0 E-04	2.3 E-09	1.2 E-09	7.8 E-10	5.3 E-10	4.3 E-10
Am-241	4.32 E+02 a	F	0.005	1.8 E-04	5.0 E-04	1.8 E-04	1.2 E-04	1.0 E-04	9.2 E-05	9.6 E-05
		M	0.005	7.3 E-05	5.0 E-04	6.9 E-05	5.1 E-05	4.0 E-05	4.0 E-05	4.2 E-05
		S	0.005	4.6 E-05	5.0 E-04	4.0 E-05	2.7 E-05	1.9 E-05	1.7 E-05	1.6 E-05
Am-242	16.0 h	F	0.005	9.2 E-08	5.0 E-04	7.1 E-08	3.5 E-08	2.1 E-08	1.4 E-08	1.1 E-08
		M	0.005	7.6 E-08	5.0 E-04	5.9 E-08	3.6 E-08	2.4 E-08	2.1 E-08	1.7 E-08
		S	0.005	8.0 E-08	5.0 E-04	6.2 E-08	3.9 E-08	2.7 E-08	2.4 E-08	2.0 E-08
Am-242m	1.52 E+02 a	F	0.005	1.6 E-04	5.0 E-04	1.5 E-04	1.1 E-04	9.4 E-05	8.8 E-05	9.2 E-05
		M	0.005	5.2 E-05	5.0 E-04	5.3 E-05	4.1 E-05	3.4 E-05	3.5 E-05	3.7 E-05
		S	0.005	2.5 E-05	5.0 E-04	2.4 E-05	1.7 E-05	1.2 E-05	1.1 E-05	1.1 E-05
Am-243	7.38 E+03 a	F	0.005	1.8 E-04	5.0 E-04	1.7 E-04	1.2 E-04	1.0 E-04	9.1 E-05	9.6 E-05
		M	0.005	7.2 E-05	5.0 E-04	6.8 E-05	5.0 E-05	4.0 E-05	4.0 E-05	4.1 E-05
		S	0.005	4.4 E-05	5.0 E-04	3.9 E-05	2.6 E-05	1.8 E-05	1.6 E-05	1.5 E-05

Am-244	10.1 h	F	0.005	1.0 E-08	5.0 E-04	9.2 E-09	5.6 E-09	4.1 E-09	3.5 E-09	3.7 E-09
		M	0.005	6.0 E-09	5.0 E-04	5.0 E-09	3.2 E-09	2.2 E-09	2.0 E-09	2.0 E-09
		S	0.005	6.1 E-09	5.0 E-04	4.8 E-09	2.4 E-09	1.6 E-09	1.4 E-09	1.2 E-09
Am-244m	0.433 h	F	0.005	4.6 E-10	5.0 E-04	4.0 E-10	2.4 E-10	1.8 E-10	1.5 E-10	1.6 E-10
		M	0.005	3.3 E-10	5.0 E-04	2.1 E-10	1.3 E-10	9.2 E-11	8.3 E-11	8.4 E-11
		S	0.005	3.0 E-10	5.0 E-04	2.2 E-10	1.2 E-10	8.1 E-11	5.5 E-11	5.7 E-11
Am-245	2.05 h	F	0.005	2.1 E-10	5.0 E-04	1.4 E-10	6.2 E-11	4.0 E-11	2.4 E-11	2.1 E-11
		M	0.005	3.9 E-10	5.0 E-04	2.6 E-10	1.3 E-10	8.7 E-11	6.4 E-11	5.3 E-11
		S	0.005	4.1 E-10	5.0 E-04	2.8 E-10	1.3 E-10	9.2 E-11	6.8 E-11	5.6 E-11
Am-246	0.650 h	F	0.005	3.0 E-10	5.0 E-04	2.0 E-10	9.3 E-11	6.1 E-11	3.8 E-11	3.3 E-11
		M	0.005	5.0 E-10	5.0 E-04	3.4 E-10	1.6 E-10	1.1 E-10	7.9 E-11	6.6 E-11
		S	0.005	5.3 E-10	5.0 E-04	3.6 E-10	1.7 E-10	1.2 E-10	8.3 E-11	6.9 E-11
Am-246m	0.417 h	F	0.005	1.3 E-10	5.0 E-04	8.9 E-11	4.2 E-11	2.6 E-11	1.6 E-11	1.4 E-11
		M	0.005	1.9 E-10	5.0 E-04	1.3 E-10	6.1 E-11	4.0 E-11	2.6 E-11	2.2 E-11
		S	0.005	2.0 E-10	5.0 E-04	1.4 E-10	6.4 E-11	4.1 E-11	2.7 E-11	2.3 E-11
Curium										
Cm-238	2.40 h	F	0.005	7.7 E-09	5.0 E-04	5.4 E-09	2.6 E-09	1.8 E-09	9.2 E-10	7.8 E-10
		M	0.005	2.1 E-08	5.0 E-04	1.5 E-08	7.9 E-09	5.9 E-09	5.6 E-09	4.5 E-09
		S	0.005	2.2 E-08	5.0 E-04	1.6 E-08	8.6 E-09	6.4 E-09	6.1 E-09	4.9 E-09
Cm-240	27.0 d	F	0.005	8.3 E-06	5.0 E-04	6.3 E-06	3.2 E-06	2.0 E-06	1.5 E-06	1.3 E-06
		M	0.005	1.2 E-05	5.0 E-04	9.1 E-06	5.8 E-06	4.2 E-06	3.8 E-06	3.2 E-06
		S	0.005	1.3 E-05	5.0 E-04	9.9 E-06	6.4 E-06	4.6 E-06	4.3 E-06	3.5 E-06
Cm-241	32.8 d	F	0.005	1.1 E-07	5.0 E-04	8.9 E-08	4.9 E-08	3.5 E-08	2.8 E-08	2.7 E-08
		M	0.005	1.3 E-07	5.0 E-04	1.0 E-07	6.6 E-08	4.8 E-08	4.4 E-08	3.7 E-08
		S	0.005	1.4 E-07	5.0 E-04	1.1 E-07	6.9 E-08	4.9 E-08	4.5 E-08	3.7 E-08
Cm-242	163 d	F	0.005	2.7 E-05	5.0 E-04	2.1 E-05	1.0 E-05	6.1 E-06	4.0 E-06	3.3 E-06
		M	0.005	2.2 E-05	5.0 E-04	1.8 E-05	1.1 E-05	7.3 E-06	6.4 E-06	5.2 E-06
		S	0.005	2.4 E-05	5.0 E-04	1.9 E-05	1.2 E-05	8.2 E-06	7.3 E-06	5.9 E-06
Cm-243	28.5 a	F	0.005	1.6 E-04	5.0 E-04	1.5 E-04	9.5 E-05	7.3 E-05	6.5 E-05	6.9 E-05
		M	0.005	6.7 E-05	5.0 E-04	6.1 E-05	4.2 E-05	3.1 E-05	3.0 E-05	3.1 E-05
		S	0.005	4.6 E-05	5.0 E-04	4.0 E-05	2.6 E-05	1.8 E-05	1.6 E-05	1.5 E-05
Cm-244	18.1 a	F	0.005	1.5 E-04	5.0 E-04	1.3 E-04	8.3 E-05	6.1 E-05	5.3 E-05	5.7 E-05
		M	0.005	6.2 E-05	5.0 E-04	5.7 E-05	3.7 E-05	2.7 E-05	2.6 E-05	2.7 E-05
		S	0.005	4.4 E-05	5.0 E-04	3.8 E-05	2.5 E-05	1.7 E-05	1.5 E-05	1.3 E-05
Cm-245	8.50 E+03 a	F	0.005	1.9 E-04	5.0 E-04	1.8 E-04	1.2 E-04	1.0 E-04	9.4 E-05	9.9 E-05
		M	0.005	7.3 E-05	5.0 E-04	6.9 E-05	5.1 E-05	4.1 E-05	4.1 E-05	4.2 E-05
		S	0.005	4.5 E-05	5.0 E-04	4.0 E-05	2.7 E-05	1.9 E-05	1.7 E-05	1.6 E-05
Cm-246	4.73 E+03 a	F	0.005	1.9 E-04	5.0 E-04	1.8 E-04	1.2 E-04	1.0 E-04	9.4 E-05	9.8 E-05
		M	0.005	7.3 E-05	5.0 E-04	6.9 E-05	5.1 E-05	4.1 E-05	4.1 E-05	4.2 E-05
		S	0.005	4.6 E-05	5.0 E-04	4.0 E-05	2.7 E-05	1.9 E-05	1.7 E-05	1.6 E-05
Cm-247	1.56 E+07 a	F	0.005	1.7 E-04	5.0 E-04	1.6 E-04	1.1 E-04	9.4 E-05	8.6 E-05	9.0 E-05
		M	0.005	6.7 E-05	5.0 E-04	6.3 E-05	4.7 E-05	3.7 E-05	3.7 E-05	3.9 E-05
		S	0.005	4.1 E-05	5.0 E-04	3.6 E-05	2.4 E-05	1.7 E-05	1.5 E-05	1.4 E-05
Cm-248	3.39 E+05 a	F	0.005	6.8 E-04	5.0 E-04	6.5 E-04	4.5 E-04	3.7 E-04	3.4 E-04	3.6 E-04
		M	0.005	2.5 E-04	5.0 E-04	2.4 E-04	1.8 E-04	1.4 E-04	1.4 E-04	1.5 E-04
		S	0.005	1.4 E-04	5.0 E-04	1.2 E-04	8.2 E-05	5.6 E-05	5.0 E-05	4.8 E-05
Cm-249	1.07 h	F	0.005	1.8 E-10	5.0 E-04	9.8 E-11	5.9 E-11	4.6 E-11	4.0 E-11	4.0 E-11
		M	0.005	2.4 E-10	5.0 E-04	1.6 E-10	8.2 E-11	5.8 E-11	3.7 E-11	3.3 E-11
		S	0.005	2.4 E-10	5.0 E-04	1.6 E-10	7.8 E-11	5.3 E-11	3.9 E-11	3.3 E-11
Cm-250	6.90 E+03 a	F	0.005	3.9 E-03	5.0 E-04	3.7 E-03	2.6 E-03	2.1 E-03	2.0 E-03	2.1 E-03
		M	0.005	1.4 E-03	5.0 E-04	1.3 E-03	9.9 E-04	7.9 E-04	7.9 E-04	8.4 E-04
		S	0.005	7.2 E-04	5.0 E-04	6.5 E-04	4.4 E-04	3.0 E-04	2.7 E-04	2.6 E-04
Berkelium										
Bk-245	4.94 d	M	0.005	8.8 E-09	5.0 E-04	6.6 E-09	4.0 E-09	2.9 E-09	2.6 E-09	2.1 E-09
Bk-246	1.83 d	M	0.005	2.1 E-09	5.0 E-04	1.7 E-09	9.3 E-10	6.0 E-10	4.0 E-10	3.3 E-10
Bk-247	1.38 E+03 a	M	0.005	1.5 E-04	5.0 E-04	1.5 E-04	1.1 E-04	7.9 E-05	7.2 E-05	6.9 E-05
Bk-249	320 d	M	0.005	3.3 E-07	5.0 E-04	3.3 E-07	2.4 E-07	1.8 E-07	1.6 E-07	1.6 E-07
Bk-250	3.22 h	M	0.005	3.4 E-09	5.0 E-04	3.1 E-09	2.0 E-09	1.3 E-09	1.1 E-09	1.0 E-09

Californium										
Cf-244	0.323 h	M	0.005	7.6 E-08	5.0 E-04	5.4 E-08	2.8 E-08	2.0 E-08	1.6 E-08	1.4 E-08
Cf-246	1.49 d	M	0.005	1.7 E-06	5.0 E-04	1.3 E-06	8.3 E-07	6.1 E-07	5.7 E-07	4.5 E-07
Cf-248	334 d	M	0.005	3.8 E-05	5.0 E-04	3.2 E-05	2.1 E-05	1.4 E-05	1.0 E-05	8.8 E-06

Cf-249	3.50 E+02 a	M	0.005	1.6 E-04	5.0 E-04	1.5 E-04	1.1 E-04	8.0 E-05	7.2 E-05	7.0 E-05
Cf-250	13.1 a	M	0.005	1.1 E-04	5.0 E-04	9.8 E-05	6.6 E-05	4.2 E-05	3.5 E-05	3.4 E-05
Cf-251	8.98 E+02 a	M	0.005	1.6 E-04	5.0 E-04	1.5 E-04	1.1 E-04	8.1 E-05	7.3 E-05	7.1 E-05
Cf-252	2.64 a	M	0.005	9.7 E-05	5.0 E-04	8.7 E-05	5.6 E-05	3.2 E-05	2.2 E-05	2.0 E-05
Cf-253	17.8 d	M	0.005	5.4 E-06	5.0 E-04	4.2 E-06	2.6 E-06	1.9 E-06	1.7 E-06	1.3 E-06
Cf-254	60.5 d	M	0.005	2.5 E-04	5.0 E-04	1.9 E-04	1.1 E-04	7.0 E-05	4.8 E-05	4.1 E-05
Einsteinium										
Es-250	2.10 h	M	0.005	2.0 E-09	5.0 E-04	1.8 E-09	1.2 E-09	7.8 E-10	6.4 E-10	6.3 E-10
Es-251	1.38 d	M	0.005	7.9 E-09	5.0 E-04	6.0 E-09	3.9 E-09	2.8 E-09	2.6 E-09	2.1 E-09
Es-253	20.5 d	M	0.005	1.1 E-05	5.0 E-04	8.0 E-06	5.1 E-06	3.7 E-06	3.4 E-06	2.7 E-06
Es-254	276 d	M	0.005	3.7 E-05	5.0 E-04	3.1 E-05	2.0 E-05	1.3 E-05	1.0 E-05	8.6 E-06
Es-254m	1.64 d	M	0.005	1.7 E-06	5.0 E-04	1.3 E-06	8.4 E-07	6.3 E-07	5.9 E-07	4.7 E-07
Fermium										
Fm-252	22.7 h	M	0.005	1.2 E-06	5.0 E-04	9.0 E-07	5.8 E-07	4.3 E-07	4.0 E-07	3.2 E-07
Fm-253	3.00 d	M	0.005	1.5 E-06	5.0 E-04	1.2 E-06	7.3 E-07	5.4 E-07	5.0 E-07	4.0 E-07
Fm-254	3.24 h	M	0.005	3.2 E-07	5.0 E-04	2.3 E-07	1.3 E-07	9.8 E-08	7.6 E-08	6.1 E-08
Fm-255	20.1 h	M	0.005	1.2 E-06	5.0 E-04	7.3 E-07	4.7 E-07	3.5 E-07	3.4 E-07	2.7 E-07
Fm-257	101 d	M	0.005	3.3 E-05	5.0 E-04	2.6 E-05	1.6 E-05	1.1 E-05	8.8 E-06	7.1 E-06
Mendelevium										
Md-257	5.20 h	M	0.005	1.0 E-07	5.0 E-04	8.2 E-08	5.1 E-08	3.6 E-08	3.1 E-08	2.5 E-08
Md-258	55.0 d	M	0.005	2.4 E-05	5.0 E-04	1.9 E-05	1.2 E-05	8.6 E-06	7.3 E-06	5.9 E-06

NOTE~:

(1). The column “Type” contains the characterization of absorption speed from lungs, letters F, M and/or respectively the significance of absorption speed: fast, moderate and slow.

(2). For the radionuclides marked (*) and for the interval of age from 1 year old to 15 years old and the type F, the coefficient f_1 has the following values:

for Calcium is 0,4;
for Iron is 0,2;
for Cobalt is 0,3;
for Strontium is 0,4;
for Barium is 0,3;
for Lead is 0,4;
for Radium is 0,3.

TABLE 4-C1

Coefficients of effective dose (Sv Bq^{-1})

Nucleus	Half Life	Inhalation				Ingestion	
		Type	f_1	$h(g)_{1\mu m}$	$h(g)_{5\mu m}$	f_1	h(g)
Hydrogen							
H_3O	12.3 a	Vezi Table C2				1.000	1.8 E-11
Tritium organic linked	12.3 a	Vezi Table C2				1.000	4.2 E-11
Beryllium							
Be-7	53.3 d	M	0.005	4.8 E-11	4.3 E-11	0.005	2.8 E-11
		S	0.005	5.2 E-11	4.6 E-11		
Be-10	1.60E+06 a	M	0.005	9.1 E-09	6.7 E-09	0.005	1.1 E-09
		S	0.005	3.2 E-08	1.9 E-08		
Carbon							
C-11	0.340 h		Vezi Tabelul C2				2.4 E-11
C-14	5.73E+03 a		Vezi Tabelul C2			1.000	5.8 E-10
Fluorine							
F-18	1.83 h	F	1.000	3.0 E-11	5.4 E-11	1.000	4.9 E-11
		M	1.000	5.7 E-11	8.9 E-11		
		S	1.000	6.0 E-11	9.3 E-11		
Sodium							
Na-22	2.60 a	F	1.000	1.3 E-09	2.0 E-09	1.000	3.2 E-09
Na-24	15.0 h	F	1.000	2.9 E-10	5.3 E-10	1.000	4.3 E-10
Magnesium							
Mg-28	20.9 h	F	0.500	6.4 E-10	1.1 E-09	0.500	2.2 E-09
		M	0.500	1.2 E-09	1.7 E-09		
Aluminum							
Al-26	7.16E+05 a	F	0.010	1.1 E-08	1.4 E-08	0.010	3.5 E-09
		M	0.010	1.8 E-08	1.2 E-08		
Silicon							
Si-31	2.62 h	F	0.010	2.9 E-11	5.1 E-11	0.010	1.6 E-10
		M	0.010	7.5 E-11	1.1 E-10		
		S	0.010	8.0 E-11	1.1 E-10		
Si-32	4.50E+02 a	F	0.010	3.2 E-09	3.7 E-09	0.010	5.6 E-10
		M	0.010	1.5 E-08	9.6 E-09		
		S	0.010	1.1 E-07	5.5 E-08		
Phosphorus							
P-32	14.3 d	F	0.800	8.0 E-10	1.1 E-09	0.800	2.4 E-09
		M	0.800	3.2 E-09	2.9 E-09		

P-33	25.4 d	F	0.800	9.6 E-11	1.4 E-10	0.800	2.4 E-10
		M	0.800	1.4 E-09	1.3 E-09		
Sulfur							
S-35 (anorganic)	87.4 d	F	0.800	5.3 E-11	8.0 E-11	0.800	1.4 E-10
		M	0.800	1.3 E-09	1.1 E-09	0.100	1.9 E-10
S-35 (organic)	87.4 d		Vezi Tabelul C2			1.000	7.7 E-10
Chlorine							

Cl-36	3.01E+05 a	F	1.000	3.4 E-10	4.9 E-10	1.000	9.3 E-10
		M	1.000	6.9 E-09	5.1 E-09		
Cl-38	0.620 h	F	1.000	2.7 E-11	4.6 E-11	1.000	1.2 E-10
		M	1.000	4.7 E-11	7.3 E-11		
Cl-39	0.927 h	F	1.000	2.7 E-11	4.8 E-11	1.000	8.5 E-11
		M	1.000	4.8 E-11	7.6 E-11		
Potassium							
K-40	1.28E+09 a	F	1.000	2.1 E-09	3.0 E-09	1.000	6.2 E-09
K-42	12.4 h	F	1.000	1.3 E-10	2.0 E-10	1.000	4.3 E-10
K-43	22.6 h	F	1.000	1.5 E-10	2.6 E-10	1.000	2.5 E-10
K-44	0.369 h	F	1.000	2.1 E-11	3.7 E-11	1.000	8.4 E-11
K-45	0.333 h	F	1.000	1.6 E-11	2.8 E-11	1.000	5.4 E-11
Calcium							
Ca-41	1.40E+05 a	M	0.300	1.7 E-10	1.9 E-10	0.300	2.9 E-10
Ca-45	163 d	M	0.300	2.7 E-09	2.3 E-09	0.300	7.6 E-10
Ca-47	4.53 d	M	0.300	1.8 E-09	2.1 E-09	0.300	1.6 E-09
Scandium							
Sc-43	3.89 h	S	1.0 E-04	1.2 E-10	1.8 E-10	1.0 E-04	1.9 E-10
Sc-44	3.93 h	S	1.0 E-04	1.9 E-10	3.0 E-10	1.0 E-04	3.5 E-10
Sc-44m	2.44 d	S	1.0 E-04	1.5 E-09	2.0 E-09	1.0 E-04	2.4 E-09
Sc-46	83.8 d	S	1.0 E-04	6.4 E-09	4.8 E-09	1.0 E-04	1.5 E-09
Sc-47	3.35 d	S	1.0 E-04	7.0 E-10	7.3 E-10	1.0 E-04	5.4 E-10
Sc-48	1.82 d	S	1.0 E-04	1.1 E-09	1.6 E-09	1.0 E-04	1.7 E-09
Sc-49	0.956 h	S	1.0 E-04	4.1 E-11	6.1 E-11	1.0 E-04	8.2 E-11
Titanium							
Ti-44	47.3 a	F	0.010	6.1 E-08	7.2 E-08	0.010	5.8 E-09
		M	0.010	4.0 E-08	2.7 E-08		
		S	0.010	1.2 E-07	6.2 E-08		
Ti-45	3.08 h	F	0.010	4.6 E-11	8.3 E-11	0.010	1.5 E-10
		M	0.010	9.1 E-11	1.4 E-10		
		S	0.010	9.6 E-11	1.5 E-10		
Vanadium							
V-47	0.543 h	F	0.010	1.9 E-11	3.2 E-11	0.010	6.3 E-11
		M	0.010	3.1 E-11	5.0 E-11		
V-48	16.2 d	F	0.010	1.1 E-09	1.7 E-09	0.010	2.0 E-09
		M	0.010	2.3 E-09	2.7 E-09		
V-49	330 d	F	0.010	2.1 E-11	2.6 E-11	0.010	1.8 E-11
		M	0.010	3.2 E-11	2.3 E-11		
Chromium							
Cr-48	23.0 h	F	0.100	1.0 E-10	1.7 E-10	0.100	2.0 E-10
		M	0.100	2.0 E-10	2.3 E-10	0.010	2.0 E-10
		S	0.100	2.2 E-10	2.5 E-10		
Cr-49	0.702 h	F	0.100	2.0 E-11	3.5 E-11	0.100	6.1 E-11
		M	0.100	3.5 E-11	5.6 E-11	0.010	6.1 E-11
		S	0.100	3.7 E-11	5.9 E-11		
Cr-51	27.7 d	F	0.100	2.1 E-11	3.0 E-11	0.100	3.8 E-11
		M	0.100	3.1 E-11	3.4 E-11	0.010	3.7 E-11
		S	0.100	3.6 E-11	3.6 E-11		
Manganese							
Mn-51	0.770 h	F	0.100	2.4 E-11	4.2 E-11	0.100	9.3 E-11
		M	0.100	4.3 E-11	6.8 E-11		
Mn-52	5.59 d	F	0.100	9.9 E-10	1.6 E-09	0.100	1.8 E-09
		M	0.100	1.4 E-09	1.8 E-09		
Mn-52m	0.352 h	F	0.100	2.0 E-11	3.5 E-11	0.100	6.9 E-11
		M	0.100	3.0 E-11	5.0 E-11		
Mn-53	3.70E+06 a	F	0.100	2.9 E-11	3.6 E-11	0.100	3.0 E-11

		M	0.100	5.2 E-11	3.6 E-11		
Mn-54	312 d	F	0.100	8.7 E-10	1.1 E-09	0.100	7.1 E-10
		M	0.100	1.5 E-09	1.2 E-09		
Mn-56	2.58 h	F	0.100	6.9 E-11	1.2 E-10	0.100	2.5 E-10
		M	0.100	1.3 E-10	2.0 E-10		
Iron							
Fe-52	8.28 h	F	0.100	4.1 E-10	6.9 E-10	0.100	1.4 E-09
		M	0.100	6.3 E-10	9.5 E-10		
Fe-55	2.70 a	F	0.100	7.7 E-10	9.2 E-10	0.100	3.3 E-10
		M	0.100	3.7 E-10	3.3 E-10		
Fe-59	44.5 d	F	0.100	2.2 E-09	3.0 E-09	0.100	1.8 E-09
		M	0.100	3.5 E-09	3.2 E-09		
Fe-60	1.00E+05 a	F	0.100	2.8 E-07	3.3 E-07	0.100	1.1 E-07
		M	0.100	1.3 E-07	1.2 E-07		
Cobalt							
Co-55	17.5 h	M	0.100	5.1 E-10	7.8 E-10	0.100	1.0 E-09
		S	0.050	5.5 E-10	8.3 E-10	0.050	1.1 E-09
Co-56	78.7 d	M	0.100	4.6 E-09	4.0 E-09	0.100	2.5 E-09
		S	0.050	6.3 E-09	4.9 E-09	0.050	2.3 E-09
Co-57	271 d	M	0.100	5.2 E-10	3.9 E-10	0.100	2.1 E-10
		S	0.050	9.4 E-10	6.0 E-10	0.050	1.9 E-10
Co-58	70.8 d	M	0.100	1.5 E-09	1.4 E-09	0.100	7.4 E-10
		S	0.050	2.0 E-09	1.7 E-09	0.050	7.0 E-10
Co-58m	9.15 h	M	0.100	1.3 E-11	1.5 E-11	0.100	2.4 E-11
		S	0.050	1.6 E-11	1.7 E-11	0.050	2.4 E-11
Co-60	5.27 a	M	0.100	9.6 E-09	7.1 E-09	0.100	3.4 E-09
		S	0.050	2.9 E-08	1.7 E-08	0.050	2.5 E-09
Co-60m	0.174 h	M	0.100	1.1 E-12	1.2 E-12	0.100	1.7 E-12
		S	0.050	1.3 E-12	1.2 E-12	0.050	1.7 E-12
Co-61	1.65 h	M	0.100	4.8 E-11	7.1 E-11	0.100	7.4 E-11
		S	0.050	5.1 E-11	7.5 E-11	0.050	7.4 E-11
Co-62m	0.232 h	M	0.100	2.1 E-11	3.6 E-11	0.100	4.7 E-11
		S	0.050	2.2 E-11	3.7 E-11	0.050	4.7 E-11
Nickel							
Ni-56	6.10 d	F	0.050	5.1 E-10	7.9 E-10	0.050	8.6 E-10
		M	0.050	8.6 E-10	9.6 E-10		
Ni-57	1.50 d	F	0.050	2.8 E-10	5.0 E-10	0.050	8.7 E-10
		M	0.050	5.1 E-10	7.6 E-10		
Ni-59	7.50E+04 a	F	0.050	1.8 E-10	2.2 E-10	0.050	6.3 E-11
		M	0.050	1.3 E-10	9.4 E-11		
Ni-63	96.0 a	F	0.050	4.4 E-10	5.2 E-10	0.050	1.5 E-10
		M	0.050	4.4 E-10	3.1 E-10		
Ni-65	2.52 h	F	0.050	4.4 E-11	7.5 E-11	0.050	1.8 E-10
		M	0.050	8.7 E-11	1.3 E-10		
Ni-66	2.27 d	F	0.050	4.5 E-10	7.6 E-10	0.050	3.0 E-09
		M	0.050	1.6 E-09	1.9 E-09		
Copper							
Cu-60	0.387 h	F	0.500	2.4 E-11	4.4 E-11	0.500	7.0 E-11
		M	0.500	3.5 E-11	6.0 E-11		
		S	0.500	3.6 E-11	6.2 E-11		
Cu-61	3.41 h	F	0.500	4.0 E-11	7.3 E-11	0.500	1.2 E-10
		M	0.500	7.6 E-11	1.2 E-10		
		S	0.500	8.0 E-11	1.2 E-10		
Cu-64	12.7 h	F	0.500	3.8 E-11	6.8 E-11	0.500	1.2 E-10
		M	0.500	1.1 E-10	1.5 E-10		
		S	0.500	1.2 E-10	1.5 E-10		
Cu-67	2.58 d	F	0.500	1.1 E-10	1.8 E-10	0.500	3.4 E-10
		M	0.500	5.2 E-10	5.3 E-10		

		S	0.500	5.8 E-10	5.8 E-10		
Zinc							
Zn-62	9.26 h	S	0.500	4.7 E-10	6.6 E-10	0.500	9.4 E-10
Zn-63	0.635 h	S	0.500	3.8 E-11	6.1 E-11	0.500	7.9 E-11
Zn-65	244 d	S	0.500	2.9 E-09	2.8 E-09	0.500	3.9 E-09
Zn-69	0.950 h	S	0.500	2.8 E-11	4.3 E-11	0.500	3.1 E-11
Zn-69m	13.8 h	S	0.500	2.6 E-10	3.3 E-10	0.500	3.3 E-10
Zn-71m	3.92 h	S	0.500	1.6 E-10	2.4 E-10	0.500	2.4 E-10
Zn-72	1.94 d	S	0.500	1.2 E-09	1.5 E-09	0.500	1.4 E-09
Gallium							
Ga-65	0.253 h	F	0.001	1.2 E-11	2.0 E-11	0.001	3.7 E-11
		M	0.001	1.8 E-11	2.9 E-11		
Ga-66	9.40 h	F	0.001	2.7 E-10	4.7 E-10	0.001	1.2 E-09
		M	0.001	4.6 E-10	7.1 E-10		
Ga-67	3.26 d	F	0.001	6.8 E-11	1.1 E-10	0.001	1.9 E-10
		M	0.001	2.3 E-10	2.8 E-10		

Ga-68	1.13 h	F	0.001	2.8 E-11	4.9 E-11	0.001	1.0 E-10
		M	0.001	5.1 E-11	8.1 E-11		
Ga-70	0.353 h	F	0.001	9.3 E-12	1.6 E-11	0.001	3.1 E-11
		M	0.001	1.6 E-11	2.6 E-11		
Ga-72	14.1 h	F	0.001	3.1 E-10	5.6 E-10	0.001	1.1 E-09
		M	0.001	5.5 E-10	8.4 E-10		
Ga-73	4.91 h	F	0.001	5.8 E-11	1.0 E-10	0.001	2.6 E-10
		M	0.001	1.5 E-10	2.0 E-10		
Germanium							
Ge-66	2.27 h	F	1.000	5.7 E-11	9.9 E-11	1.000	1.0 E-10
		M	1.000	9.2 E-11	1.3 E-10		
Ge-67	0.312 h	F	1.000	1.6 E-11	2.8 E-11	1.000	6.5 E-11
		M	1.000	2.6 E-11	4.2 E-11		
Ge-68	288 d	F	1.000	5.4 E-10	8.3 E-10	1.000	1.3 E-09
		M	1.000	1.3 E-08	7.9 E-09		
Ge-69	1.63 d	F	1.000	1.4 E-10	2.5 E-10	1.000	2.4 E-10
		M	1.000	2.9 E-10	3.7 E-10		
Ge-71	11.8 d	F	1.000	5.0 E-12	7.8 E-12	1.000	1.2 E-11
		M	1.000	1.0 E-11	1.1 E-11		
Ge-75	1.38 h	F	1.000	1.6 E-11	2.7 E-11	1.000	4.6 E-11
		M	1.000	3.7 E-11	5.4 E-11		
Ge-77	11.3 h	F	1.000	1.5 E-10	2.5 E-10	1.000	3.3 E-10
		M	1.000	3.6 E-10	4.5 E-10		
Ge-78	1.45 h	F	1.000	4.8 E-11	8.1 E-11	1.000	1.2 E-10
		M	1.000	9.7 E-11	1.4 E-10		
Arsenic							
As-69	0.253 h	M	0.500	2.2 E-11	3.5 E-11	0.500	5.7 E-11
As-70	0.876 h	M	0.500	7.2 E-11	1.2 E-10	0.500	1.3 E-10
As-71	2.70 d	M	0.500	4.0 E-10	5.0 E-10	0.500	4.6 E-10
As-72	1.08 d	M	0.500	9.2 E-10	1.3 E-09	0.500	1.8 E-09
As-73	80.3 d	M	0.500	9.3 E-10	6.5 E-10	0.500	2.6 E-10
As-74	17.8 d	M	0.500	2.1 E-09	1.8 E-09	0.500	1.3 E-09
As-76	1.10 d	M	0.500	7.4 E-10	9.2 E-10	0.500	1.6 E-09
As-77	1.62 d	M	0.500	3.8 E-10	4.2 E-10	0.500	4.0 E-10
As-78	1.51 h	M	0.500	9.2 E-11	1.4 E-10	0.500	2.1 E-10
Selenium							
Se-70	0.683 h	F	0.800	4.5 E-11	8.2 E-11	0.800	1.2 E-10
		M	0.800	7.3 E-11	1.2 E-10	0.050	1.4 E-10
Se-73	7.15 h	F	0.800	8.6 E-11	1.5 E-10	0.800	2.1 E-10
		M	0.800	1.6 E-10	2.4 E-10	0.050	3.9 E-10
Se-73m	0.650 h	F	0.800	9.9 E-12	1.7 E-11	0.800	2.8 E-11

		M	0.800	1.8 E-11	2.7 E-11	0.050	4.1 E-11
Se-75	120 d	F	0.800	1.0 E-09	1.4 E-09	0.800	2.6 E-09
		M	0.800	1.4 E-09	1.7 E-09	0.050	4.1 E-10
Se-79	6.50E+04 a	F	0.800	1.2 E-09	1.6 E-09	0.800	2.9 E-09
		M	0.800	2.9 E-09	3.1 E-09	0.050	3.9 E-10
Se-81	0.308 h	F	0.800	8.6 E-12	1.4 E-11	0.800	2.7 E-11
		M	0.800	1.5 E-11	2.4 E-11	0.050	2.7 E-11
Se-81m	0.954 h	F	0.800	1.7 E-11	3.0 E-11	0.800	5.3 E-11
		M	0.800	4.7 E-11	6.8 E-11	0.050	5.9 E-11
Se-83	0.375 h	F	0.800	1.9 E-11	3.4 E-11	0.800	4.7 E-11
		M	0.800	3.3 E-11	5.3 E-11	0.050	5.1 E-11
Bromine							
Br-74	0.422 h	F	1.000	2.8 E-11	5.0 E-11	1.000	8.4 E-11
		M	1.000	4.1 E-11	6.8 E-11		
Br-74m	0.691 h	F	1.000	4.2 E-11	7.5 E-11	1.000	1.4 E-10
		M	1.000	6.5 E-11	1.1 E-10		
Br-75	1.63 h	F	1.000	3.1 E-11	5.6 E-11	1.000	7.9 E-11
		M	1.000	5.5 E-11	8.5 E-11		
Br-76	16.2 h	F	1.000	2.6 E-10	4.5 E-10	1.000	4.6 E-10
		M	1.000	4.2 E-10	5.8 E-10		
Br-77	2.33 d	F	1.000	6.7 E-11	1.2 E-10	1.000	9.6 E-11
		M	1.000	8.7 E-11	1.3 E-10		
Br-80	0.290 h	F	1.000	6.3 E-12	1.1 E-11	1.000	3.1 E-11
		M	1.000	1.0 E-11	1.7 E-11		
Br-80m	4.42 h	F	1.000	3.5 E-11	5.8 E-11	1.000	1.1 E-10
		M	1.000	7.6 E-11	1.0 E-10		
Br-82	1.47 d	F	1.000	3.7 E-10	6.4 E-10	1.000	5.4 E-10
		M	1.000	6.4 E-10	8.8 E-10		
Br-83	2.39 h	F	1.000	1.7 E-11	2.9 E-11	1.000	4.3 E-11
		M	1.000	4.8 E-11	6.7 E-11		
Br-84	0.530 h	F	1.000	2.3 E-11	4.0 E-11	1.000	8.8 E-11
		M	1.000	3.9 E-11	6.2 E-11		
Rubidium							
Rb-79	0.382 h	F	1.000	1.7 E-11	3.0 E-11	1.000	5.0 E-11
Rb-81	4.58 h	F	1.000	3.7 E-11	6.8 E-11	1.000	5.4 E-11
Rb-81m	0.533 h	F	1.000	7.3 E-12	1.3 E-11	1.000	9.7 E-12
Rb-82m	6.20 h	F	1.000	1.2 E-10	2.2 E-10	1.000	1.3 E-10
Rb-83	86.2 d	F	1.000	7.1 E-10	1.0 E-09	1.000	1.9 E-09
Rb-84	32.8 d	F	1.000	1.1 E-09	1.5 E-09	1.000	2.8 E-09
Rb-86	18.6 d	F	1.000	9.6 E-10	1.3 E-09	1.000	2.8 E-09
Rb-87	4.70E+10 a	F	1.000	5.1 E-10	7.6 E-10	1.000	1.5 E-09
Rb-88	0.297 h	F	1.000	1.7 E-11	2.8 E-11	1.000	9.0 E-11
Rb-89	0.253 h	F	1.000	1.4 E-11	2.5 E-11	1.000	4.7 E-11
Strontium							
Sr-80	1.67 h	F	0.300	7.6 E-11	1.3 E-10	0.300	3.4 E-10
		S	0.010	1.4 E-10	2.1 E-10	0.010	3.5 E-10
Sr-81	0.425 h	F	0.300	2.2 E-11	3.9 E-11	0.300	7.7 E-11
		S	0.010	3.8 E-11	6.1 E-11	0.010	7.8 E-11
Sr-82	25.0 d	F	0.300	2.2 E-09	3.3 E-09	0.300	6.1 E-09
		S	0.010	1.0 E-08	7.7 E-09	0.010	6.0 E-09
Sr-83	1.35 d	F	0.300	1.7 E-10	3.0 E-10	0.300	4.9 E-10
		S	0.010	3.4 E-10	4.9 E-10	0.010	5.8 E-10
Sr-85	64.8 d	F	0.300	3.9 E-10	5.6 E-10	0.300	5.6 E-10
		S	0.010	7.7 E-10	6.4 E-10	0.010	3.3 E-10
Sr-85m	1.16 h	F	0.300	3.1 E-12	5.6 E-12	0.300	6.1 E-12
		S	0.010	4.5 E-12	7.4 E-12	0.010	6.1 E-12
Sr-87m	2.80 h	F	0.300	1.2 E-11	2.2 E-11	0.300	3.0 E-11

		S	0.010	2.2 E-11	3.5 E-11	0.010	3.3 E-11
Sr-89	50.5 d	F	0.300	1.0 E-09	1.4 E-09	0.300	2.6 E-09
		S	0.010	7.5 E-09	5.6 E-09	0.010	2.3 E-09
Sr-90	29.1 a	F	0.300	2.4 E-08	3.0 E-08	0.300	2.8 E-08
		S	0.010	1.5 E-07	7.7 E-08	0.010	2.7 E-09
Sr-91	9.50 h	F	0.300	1.7 E-10	2.9 E-10	0.300	6.5 E-10
		S	0.010	4.1 E-10	5.7 E-10	0.010	7.6 E-10
Sr-92	2.71 h	F	0.300	1.1 E-10	1.8 E-10	0.300	4.3 E-10
		S	0.010	2.3 E-10	3.4 E-10	0.010	4.9 E-10
Yttrium							
Y-86	14.7 h	M	1.0 E-04	4.8 E-10	8.0 E-10	1.0 E-04	9.6 E-10
		S	1.0 E-04	4.9 E-10	8.1 E-10		
Y-86m	0.800 h	M	1.0 E-04	2.9 E-11	4.8 E-11	1.0 E-04	5.6 E-11
		S	1.0 E-04	3.0 E-11	4.9 E-11		
Y-87	3.35 d	M	1.0 E-04	3.8 E-10	5.2 E-10	1.0 E-04	5.5 E-10
		S	1.0 E-04	4.0 E-10	5.3 E-10		
Y-88	107 d	M	1.0 E-04	3.9 E-09	3.3 E-09	1.0 E-04	1.3 E-09
		S	1.0 E-04	4.1 E-09	3.0 E-09		
Y-90	2.67 d	M	1.0 E-04	1.4 E-09	1.6 E-09	1.0 E-04	2.7 E-09
		S	1.0 E-04	1.5 E-09	1.7 E-09		
Y-90m	3.19 h	M	1.0 E-04	9.6 E-11	1.3 E-10	1.0 E-04	1.7 E-10
		S	1.0 E-04	1.0 E-10	1.3 E-10		
Y-91	58.5 d	M	1.0 E-04	6.7 E-09	5.2 E-09	1.0 E-04	2.4 E-09
		S	1.0 E-04	8.4 E-09	6.1 E-09		
Y-91m	0.828 h	M	1.0 E-04	1.0 E-11	1.4 E-11	1.0 E-04	1.1 E-11
		S	1.0 E-04	1.1 E-11	1.5 E-11		
Y-92	3.54 h	M	1.0 E-04	1.9 E-10	2.7 E-10	1.0 E-04	4.9 E-10
		S	1.0 E-04	2.0 E-10	2.8 E-10		
Y-93	10.1 h	M	1.0 E-04	4.1 E-10	5.7 E-10	1.0 E-04	1.2 E-09
		S	1.0 E-04	4.3 E-10	6.0 E-10		
Y-94	0.318 h	M	1.0 E-04	2.8 E-11	4.4 E-11	1.0 E-04	8.1 E-11
		S	1.0 E-04	2.9 E-11	4.6 E-11		
Y-95	0.178 h	M	1.0 E-04	1.6 E-11	2.5 E-11	1.0 E-04	4.6 E-11
		S	1.0 E-04	1.7 E-11	2.6 E-11		
Zirconium							
Zr-86	16.5 h	F	0.002	3.0 E-10	5.2 E-10	0.002	8.6 E-10
		M	0.002	4.3 E-10	6.8 E-10		
		S	0.002	4.5 E-10	7.0 E-10		
Zr-88	83.4 d	F	0.002	3.5 E-09	4.1 E-09	0.002	3.3 E-10
		M	0.002	2.5 E-09	1.7 E-09		
		S	0.002	3.3 E-09	1.8 E-09		
Zr-89	3.27 d	F	0.002	3.1 E-10	5.2 E-10	0.002	7.9 E-10
		M	0.002	5.3 E-10	7.2 E-10		
		S	0.002	5.5 E-10	7.5 E-10		
Zr-93	1.53E+06 a	F	0.002	2.5 E-08	2.9 E-08	0.002	2.8 E-10
		M	0.002	9.6 E-09	6.6 E-09		
		S	0.002	3.1 E-09	1.7 E-09		
Zr-95	64.0 d	F	0.002	2.5 E-09	3.0 E-09	0.002	8.8 E-10
		M	0.002	4.5 E-09	3.6 E-09		
		S	0.002	5.5 E-09	4.2 E-09		
Zr-97	16.9 h	F	0.002	4.2 E-10	7.4 E-10	0.002	2.1 E-09
		M	0.002	9.4 E-10	1.3 E-09		
		S	0.002	1.0 E-09	1.4 E-09		
Niobium							
Nb-88	0.238 h	M	0.010	2.9 E-11	4.8 E-11	0.010	6.3 E-11
		S	0.010	3.0 E-11	5.0 E-11		
Nb-89	2.03 h	M	0.010	1.2 E-10	1.8 E-10	0.010	3.0 E-10
		S	0.010	1.3 E-10	1.9 E-10		
Nb-89	1.10 h	M	0.010	7.1 E-11	1.1 E-10	0.010	1.4 E-10
		S	0.010	7.4 E-11	1.2 E-10		

Nb-90	14.6 h	M	0.010	6.6 E-10	1.0 E-09	0.010	1.2 E-09
		S	0.010	6.9 E-10	1.1 E-09		
Nb-93m	13.6 a	M	0.010	4.6 E-10	2.9 E-10	0.010	1.2 E-10
		S	0.010	1.6 E-09	8.6 E-10		
Nb-94	2.03E+04 a	M	0.010	1.0 E-08	7.2 E-09	0.010	1.7 E-09
		S	0.010	4.5 E-08	2.5 E-08		
Nb-95	35.1 d	M	0.010	1.4 E-09	1.3 E-09	0.010	5.8 E-10
		S	0.010	1.6 E-09	1.3 E-09		
Nb-95m	3.61 d	M	0.010	7.6 E-10	7.7 E-10	0.010	5.6 E-10
		S	0.010	8.5 E-10	8.5 E-10		
Nb-96	23.3 h	M	0.010	6.5 E-10	9.7 E-10	0.010	1.1 E-09
		S	0.010	6.8 E-10	1.0 E-09		
Nb-97	1.20 h	M	0.010	4.4 E-11	6.9 E-11	0.010	6.8 E-11
		S	0.010	4.7 E-11	7.2 E-11		
Nb-98	0.858 h	M	0.010	5.9 E-11	9.6 E-11	0.010	1.1 E-10
		S	0.010	6.1 E-11	9.9 E-11		
Molybdenum							
Mo-90	5.67 h	F	0.800	1.7 E-10	2.9 E-10	0.800	3.1 E-10
		S	0.050	3.7 E-10	5.6 E-10	0.050	6.2 E-10
Mo-93	3.50E+03 a	F	0.800	1.0 E-09	1.4 E-09	0.800	2.6 E-09
		S	0.050	2.2 E-09	1.2 E-09	0.050	2.0 E-10
Mo-93m	6.85 h	F	0.800	1.0 E-10	1.9 E-10	0.800	1.6 E-10
		S	0.050	1.8 E-10	3.0 E-10	0.050	2.8 E-10
Mo-99	2.75 d	F	0.800	2.3 E-10	3.6 E-10	0.800	7.4 E-10
		S	0.050	9.7 E-10	1.1 E-09	0.050	1.2 E-09
Mo-101	0.244 h	F	0.800	1.5 E-11	2.7 E-11	0.800	4.2 E-11
		S	0.050	2.7 E-11	4.5 E-11	0.050	4.2 E-11
Technetium							
Tc-93	2.75 h	F	0.800	3.4 E-11	6.2 E-11	0.800	4.9 E-11
		M	0.800	3.6 E-11	6.5 E-11		
Tc-93m	0.725 h	F	0.800	1.5 E-11	2.6 E-11	0.800	2.4 E-11
		M	0.800	1.7 E-11	3.1 E-11		
Tc-94	4.88 h	F	0.800	1.2 E-10	2.1 E-10	0.800	1.8 E-10
		M	0.800	1.3 E-10	2.2 E-10		
Tc-94m	0.867 h	F	0.800	4.3 E-11	6.9 E-11	0.800	1.1 E-10
		M	0.800	4.9 E-11	8.0 E-11		
Tc-95	20.0 h	F	0.800	1.0 E-10	1.8 E-10	0.800	1.6 E-10
		M	0.800	1.0 E-10	1.8 E-10		
Tc-95m	61.0 d	F	0.800	3.1 E-10	4.8 E-10	0.800	6.2 E-10
		M	0.800	8.7 E-10	8.6 E-10		
Tc-96	4.28 d	F	0.800	6.0 E-10	9.8 E-10	0.800	1.1 E-09
		M	0.800	7.1 E-10	1.0 E-09		
Tc-96m	0.858 h	F	0.800	6.5 E-12	1.1 E-11	0.800	1.3 E-11
		M	0.800	7.7 E-12	1.1 E-11		
Tc-97	2.60E+06 a	F	0.800	4.5 E-11	7.2 E-11	0.800	8.3 E-11
		M	0.800	2.1 E-10	1.6 E-10		
Tc-97m	87.0 d	F	0.800	2.8 E-10	4.0 E-10	0.800	6.6 E-10
		M	0.800	3.1 E-09	2.7 E-09		
Tc-98	4.20E+06 a	F	0.800	1.0 E-09	1.5 E-09	0.800	2.3 E-09
		M	0.800	8.1 E-09	6.1 E-09		
Tc-99	2.13E+05 a	F	0.800	2.9 E-10	4.0 E-10	0.800	7.8 E-10
		M	0.800	3.9 E-09	3.2 E-09		
Tc-99m	6.02 h	F	0.800	1.2 E-11	2.0 E-11	0.800	2.2 E-11
		M	0.800	1.9 E-11	2.9 E-11		
Tc-101	0.237 h	F	0.800	8.7 E-12	1.5 E-11	0.800	1.9 E-11
		M	0.800	1.3 E-11	2.1 E-11		
Tc-104	0.303 h	F	0.800	2.4 E-11	3.9 E-11	0.800	8.1 E-11
		M	0.800	3.0 E-11	4.8 E-11		

Ruthenium							
Ru-94	0.863 h	F	0.050	2.7 E-11	4.9 E-11	0.050	9.4 E-11
		M	0.050	4.4 E-11	7.2 E-11		
		S	0.050	4.6 E-11	7.4 E-11		
Ru-97	2.90 d	F	0.050	6.7 E-11	1.2 E-10	0.050	1.5 E-10
		M	0.050	1.1 E-10	1.6 E-10		
		S	0.050	1.1 E-10	1.6 E-10		
Ru-103	39.3 d	F	0.050	4.9 E-10	6.8 E-10	0.050	7.3 E-10
		M	0.050	2.3 E-09	1.9 E-09		
		S	0.050	2.8 E-09	2.2 E-09		
Ru-105	4.44 h	F	0.050	7.1 E-11	1.3 E-10	0.050	2.6 E-10
		M	0.050	1.7 E-10	2.4 E-10		
		S	0.050	1.8 E-10	2.5 E-10		
Ru-106	1.01 a	F	0.050	8.0 E-09	9.8 E-09	0.050	7.0 E-09
		M	0.050	2.6 E-08	1.7 E-08		
		S	0.050	6.2 E-08	3.5 E-08		
Rhodium							
Rh-99	16.0 d	F	0.050	3.3 E-10	4.9 E-10	0.050	5.1 E-10
		M	0.050	7.3 E-10	8.2 E-10		
		S	0.050	8.3 E-10	8.9 E-10		
Rh-99m	4.70 h	F	0.050	3.0 E-11	5.7 E-11	0.050	6.6 E-11
		M	0.050	4.1 E-11	7.2 E-11		
		S	0.050	4.3 E-11	7.3 E-11		
Rh-100	20.8 h	F	0.050	2.8 E-10	5.1 E-10	0.050	7.1 E-10
		M	0.050	3.6 E-10	6.2 E-10		
		S	0.050	3.7 E-10	6.3 E-10		
Rh-101	3.20 a	F	0.050	1.4 E-09	1.7 E-09	0.050	5.5 E-10
		M	0.050	2.2 E-09	1.7 E-09		
		S	0.050	5.0 E-09	3.1 E-09		
Rh-101m	4.34 d	F	0.050	1.0 E-10	1.7 E-10	0.050	2.2 E-10
		M	0.050	2.0 E-10	2.5 E-10		
		S	0.050	2.1 E-10	2.7 E-10		
Rh-102	2.90 a	F	0.050	7.3 E-09	8.9 E-09	0.050	2.6 E-09
		M	0.050	6.5 E-09	5.0 E-09		
		S	0.050	1.6 E-08	9.0 E-09		
Rh-102m	207 d	F	0.050	1.5 E-09	1.9 E-09	0.050	1.2 E-09
		M	0.050	3.8 E-09	2.7 E-09		
		S	0.050	6.7 E-09	4.2 E-09		
Rh-103m	0.935 h	F	0.050	8.6 E-13	1.2 E-12	0.050	3.8 E-12
		M	0.050	2.3 E-12	2.4 E-12		
		S	0.050	2.5 E-12	2.5 E-12		
Rh-105	1.47 d	F	0.050	8.7 E-11	1.5 E-10	0.050	3.7 E-10
		M	0.050	3.1 E-10	4.1 E-10		
		S	0.050	3.4 E-10	4.4 E-10		
Rh-106m	2.20 h	F	0.050	7.0 E-11	1.3 E-10	0.050	1.6 E-10
		M	0.050	1.1 E-10	1.8 E-10		
		S	0.050	1.2 E-10	1.9 E-10		
Rh-107	0.362 h	F	0.050	9.6 E-12	1.6 E-11	0.050	2.4 E-11
		M	0.050	1.7 E-11	2.7 E-11		
		S	0.050	1.7 E-11	2.8 E-11		
Palladium							
Pd-100	3.63 d	F	0.005	4.9 E-10	7.6 E-10	0.005	9.4 E-10
		M	0.005	7.9 E-10	9.5 E-10		
		S	0.005	8.3 E-10	9.7 E-10		
Pd-101	8.27 h	F	0.005	4.2 E-11	7.5 E-11	0.005	9.4 E-11
		M	0.005	6.2 E-11	9.8 E-11		
		S	0.005	6.4 E-11	1.0 E-10		
Pd-103	17.0 d	F	0.005	9.0 E-11	1.2 E-10	0.005	1.9 E-10
		M	0.005	3.5 E-10	3.0 E-10		
		S	0.005	4.0 E-10	2.9 E-10		

Pd-107	6.50E+06 a	F	0.005	2.6 E-11	3.3 E-11	0.005	3.7 E-11
		M	0.005	8.0 E-11	5.2 E-11		
		S	0.005	5.5 E-10	2.9 E-10		
Pd-109	13.4 h	F	0.005	1.2 E-10	2.1 E-10	0.005	5.5 E-10
		M	0.005	3.4 E-10	4.7 E-10		
		S	0.005	3.6 E-10	5.0 E-10		
Silver							
Ag-102	0.215 h	F	0.050	1.4 E-11	2.4 E-11	0.050	4.0 E-11
		M	0.050	1.8 E-11	3.2 E-11		
		S	0.050	1.9 E-11	3.2 E-11		
Ag-103	1.09 h	F	0.050	1.6 E-11	2.8 E-11	0.050	4.3 E-11
		M	0.050	2.7 E-11	4.3 E-11		
		S	0.050	2.8 E-11	4.5 E-11		
Ag-104	1.15 h	F	0.050	3.0 E-11	5.7 E-11	0.050	6.0 E-11
		M	0.050	3.9 E-11	6.9 E-11		
		S	0.050	4.0 E-11	7.1 E-11		
Ag-104m	0.558 h	F	0.050	1.7 E-11	3.1 E-11	0.050	5.4 E-11
		M	0.050	2.6 E-11	4.4 E-11		
		S	0.050	2.7 E-11	4.5 E-11		
Ag-105	41.0 d	F	0.050	5.4 E-10	8.0 E-10	0.050	4.7 E-10
		M	0.050	6.9 E-10	7.0 E-10		
		S	0.050	7.8 E-10	7.3 E-10		
Ag-106	0.399 h	F	0.050	9.8 E-12	1.7 E-11	0.050	3.2 E-11
		M	0.050	1.6 E-11	2.6 E-11		
		S	0.050	1.6 E-11	2.7 E-11		
Ag-106m	8.41 d	F	0.050	1.1 E-09	1.6 E-09	0.050	1.5 E-09
		M	0.050	1.1 E-09	1.5 E-09		
		S	0.050	1.1 E-09	1.4 E-09		
Ag-108m	1.27E+02 a	F	0.050	6.1 E-09	7.3 E-09	0.050	2.3 E-09
		M	0.050	7.0 E-09	5.2 E-09		
		S	0.050	3.5 E-08	1.9 E-08		
Ag-110m	250 d	F	0.050	5.5 E-09	6.7 E-09	0.050	2.8 E-09
		M	0.050	7.2 E-09	5.9 E-09		
		S	0.050	1.2 E-08	7.3 E-09		
Ag-111	7.45 d	F	0.050	4.1 E-10	5.7 E-10	0.050	1.3 E-09
		M	0.050	1.5 E-09	1.5 E-09		
		S	0.050	1.7 E-09	1.6 E-09		
Ag-112	3.12 h	F	0.050	8.2 E-11	1.4 E-10	0.050	4.3 E-10
		M	0.050	1.7 E-10	2.5 E-10		
		S	0.050	1.8 E-10	2.6 E-10		
Ag-115	0.333 h	F	0.050	1.6 E-11	2.6 E-11	0.050	6.0 E-11
		M	0.050	2.8 E-11	4.3 E-11		
		S	0.050	3.0 E-11	4.4 E-11		
Cadmium							
Cd-104	0.961 h	F	0.050	2.7 E-11	5.0 E-11	0.050	5.8 E-11
		M	0.050	3.6 E-11	6.2 E-11		
		S	0.050	3.7 E-11	6.3 E-11		
Cd-107	6.49 h	F	0.050	2.3 E-11	4.2 E-11	0.050	6.2 E-11
		M	0.050	8.1 E-11	1.0 E-10		
		S	0.050	8.7 E-11	1.1 E-10		
Cd-109	1.27 a	F	0.050	8.1 E-09	9.6 E-09	0.050	2.0 E-09
		M	0.050	6.2 E-09	5.1 E-09		
		S	0.050	5.8 E-09	4.4 E-09		
Cd-113	9.30E+15 a	F	0.050	1.2 E-07	1.4 E-07	0.050	2.5 E-08
		M	0.050	5.3 E-08	4.3 E-08		
		S	0.050	2.5 E-08	2.1 E-08		
Cd-113m	13.6 a	F	0.050	1.1 E-07	1.3 E-07	0.050	2.3 E-08
		M	0.050	5.0 E-08	4.0 E-08		
		S	0.050	3.0 E-08	2.4 E-08		
Cd-115	2.23 d	F	0.050	3.7 E-10	5.4 E-10	0.050	1.4 E-09
		M	0.050	9.7 E-10	1.2 E-09		

		S	0.050	1.1 E-09	1.3 E-09		
Cd-115m	44.6 d	F	0.050	5.3 E-09	6.4 E-09	0.050	3.3 E-09
		M	0.050	5.9 E-09	5.5 E-09		
		S	0.050	7.3 E-09	5.5 E-09		

Cd-117	2.49 h	F	0.050	7.3 E-11	1.3 E-10	0.050	2.8 E-10
		M	0.050	1.6 E-10	2.4 E-10		
		S	0.050	1.7 E-10	2.5 E-10		
Cd-117m	3.36 h	F	0.050	1.0 E-10	1.9 E-10	0.050	2.8 E-10
		M	0.050	2.0 E-10	3.1 E-10		
		S	0.050	2.1 E-10	3.2 E-10		
Indium							
In-109	4.20 h	F	0.020	3.2 E-11	5.7 E-11	0.020	6.6 E-11
		M	0.020	4.4 E-11	7.3 E-11		
In-110	4.90 h	F	0.020	1.2 E-10	2.2 E-10	0.020	2.4 E-10
		M	0.020	1.4 E-10	2.5 E-10		
In-110	1.15 h	F	0.020	3.1 E-11	5.5 E-11	0.020	1.0 E-10
		M	0.020	5.0 E-11	8.1 E-11		
In-111	2.83 d	F	0.020	1.3 E-10	2.2 E-10	0.020	2.9 E-10
		M	0.020	2.3 E-10	3.1 E-10		
In-112	0.240 h	F	0.020	5.0 E-12	8.6 E-12	0.020	1.0 E-11
		M	0.020	7.8 E-12	1.3 E-11		
In-113m	1.66 h	F	0.020	1.0 E-11	1.9 E-11	0.020	2.8 E-11
		M	0.020	2.0 E-11	3.2 E-11		
In-114m	49.5 d	F	0.020	9.3 E-09	1.1 E-08	0.020	4.1 E-09
		M	0.020	5.9 E-09	5.9 E-09		
In-115	5.10E+15 a	F	0.020	3.9 E-07	4.5 E-07	0.020	3.2 E-08
		M	0.020	1.5 E-07	1.1 E-07		
In-115m	4.49 h	F	0.020	2.5 E-11	4.5 E-11	0.020	8.6 E-11
		M	0.020	6.0 E-11	8.7 E-11		
In-116m	0.902 h	F	0.020	3.0 E-11	5.5 E-11	0.020	6.4 E-11
		M	0.020	4.8 E-11	8.0 E-11		
In-117	0.730 h	F	0.020	1.6 E-11	2.8 E-11	0.020	3.1 E-11
		M	0.020	3.0 E-11	4.8 E-11		
In-117m	1.94 h	F	0.020	3.1 E-11	5.5 E-11	0.020	1.2 E-10
		M	0.020	7.3 E-11	1.1 E-10		
In-119m	0.300 h	F	0.020	1.1 E-11	1.8 E-11	0.020	4.7 E-11
		M	0.020	1.8 E-11	2.9 E-11		
Tin							
Sn-110	4.00 h	F	0.020	1.1 E-10	1.9 E-10	0.020	3.5 E-10
		M	0.020	1.6 E-10	2.6 E-10		
Sn-111	0.588 h	F	0.020	8.3 E-12	1.5 E-11	0.020	2.3 E-11
		M	0.020	1.4 E-11	2.2 E-11		
Sn-113	115 d	F	0.020	5.4 E-10	7.9 E-10	0.020	7.3 E-10
		M	0.020	2.5 E-09	1.9 E-09		
Sn-117m	13.6 d	F	0.020	2.9 E-10	3.9 E-10	0.020	7.1 E-10
		M	0.020	2.3 E-09	2.2 E-09		
Sn-119m	293 d	F	0.020	2.9 E-10	3.6 E-10	0.020	3.4 E-10
		M	0.020	2.0 E-09	1.5 E-09		
Sn-121	1.13 d	F	0.020	6.4 E-11	1.0 E-10	0.020	2.3 E-10
		M	0.020	2.2 E-10	2.8 E-10		
Sn-121m	55.0 a	F	0.020	8.0 E-10	9.7 E-10	0.020	3.8 E-10
		M	0.020	4.2 E-09	3.3 E-09		
Sn-123	129 d	F	0.020	1.2 E-09	1.6 E-09	0.020	2.1 E-09
		M	0.020	7.7 E-09	5.6 E-09		
Sn-123m	0.668 h	F	0.020	1.4 E-11	2.4 E-11	0.020	3.8 E-11
		M	0.020	2.8 E-11	4.4 E-11		
Sn-125	9.64 d	F	0.020	9.2 E-10	1.3 E-09	0.020	3.1 E-09
		M	0.020	3.0 E-09	2.8 E-09		
Sn-126	1.00E+05 a	F	0.020	1.1 E-08	1.4 E-08	0.020	4.7 E-09

		M	0.020	2.7 E-08	1.8 E-08		
Sn-127	2.10 h	F	0.020	6.9 E-11	1.2 E-10	0.020	2.0 E-10
		M	0.020	1.3 E-10	2.0 E-10		
Sn-128	0.985 h	F	0.020	5.4 E-11	9.5 E-11	0.020	1.5 E-10
		M	0.020	9.6 E-11	1.5 E-10		
Antimony							
Sb-115	0.530 h	F	0.100	9.2 E-12	1.7 E-11	0.100	2.4 E-11
		M	0.010	1.4 E-11	2.3 E-11		
Sb-116	0.263 h	F	0.100	9.9 E-12	1.8 E-11	0.100	2.6 E-11
		M	0.010	1.4 E-11	2.3 E-11		
Sb-116m	1.00 h	F	0.100	3.5 E-11	6.4 E-11	0.100	6.7 E-11
		M	0.010	5.0 E-11	8.5 E-11		
Sb-117	2.80 h	F	0.100	9.3 E-12	1.7 E-11	0.100	1.8 E-11
		M	0.010	1.7 E-11	2.7 E-11		
Sb-118m	5.00 h	F	0.100	1.0 E-10	1.9 E-10	0.100	2.1 E-10
		M	0.010	1.3 E-10	2.3 E-10		
Sb-119	1.59 d	F	0.100	2.5 E-11	4.5 E-11	0.100	8.1 E-11
		M	0.010	3.7 E-11	5.9 E-11		
Sb-120	5.76 d	F	0.100	5.9 E-10	9.8 E-10	0.100	1.2 E-09
		M	0.010	1.0 E-09	1.3 E-09		
Sb-120	0.265 h	F	0.100	4.9 E-12	8.5 E-12	0.100	1.4 E-11
		M	0.010	7.4 E-12	1.2 E-11		
Sb-122	2.70 d	F	0.100	3.9 E-10	6.3 E-10	0.100	1.7 E-09
		M	0.010	1.0 E-09	1.2 E-09		
Sb-124	60.2 d	F	0.100	1.3 E-09	1.9 E-09	0.100	2.5 E-09
		M	0.010	6.1 E-09	4.7 E-09		
Sb-124m	0.337 h	F	0.100	3.0 E-12	5.3 E-12	0.100	8.0E-12
		M	0.010	5.5 E-12	8.3 E-12		
Sb-125	2.77 a	F	0.100	1.4 E-09	1.7 E-09	0.100	1.1 E-09
		M	0.010	4.5 E-09	3.3 E-09		
Sb-126	12.4 d	F	0.100	1.1 E-09	1.7 E-09	0.100	2.4 E-09
		M	0.010	2.7 E-09	3.2 E-09		
Sb-126m	0.317 h	F	0.100	1.3 E-11	2.3 E-11	0.100	3.6 E-11
		M	0.010	2.0 E-11	3.3 E-11		
Sb-127	3.85 d	F	0.100	4.6 E-10	7.4 E-10	0.100	1.7 E-09
		M	0.010	1.6 E-09	1.7 E-09		
Sb-128	9.01 h	F	0.100	2.5 E-10	4.6 E-10	0.100	7.6 E-10
		M	0.010	4.2 E-10	6.7 E-10		
Sb-128	0.173 h	F	0.100	1.1 E-11	1.9 E-11	0.100	3.3 E-11
		M	0.010	1.5 E-11	2.6 E-11		
Sb-129	4.32 h	F	0.100	1.1 E-10	2.0 E-10	0.100	4.2 E-10
		M	0.010	2.4 E-10	3.5 E-10		
Sb-130	0.667 h	F	0.100	3.5 E-11	6.3 E-11	0.100	9.1 E-11
		M	0.010	5.4 E-11	9.1 E-11		
Sb-131	0.383 h	F	0.100	3.7 E-11	5.9 E-11	0.100	1.0 E-10
		M	0.010	5.2 E-11	8.3 E-11		
Tellurium							
Te-116	2.49 h	F	0.300	6.3 E-11	1.2 E-10	0.300	1.7 E-10
		M	0.300	1.1 E-10	1.7 E-10		
Te-121	17.0 d	F	0.300	2.5 E-10	3.9 E-10	0.300	4.3 E-10
		M	0.300	3.9 E-10	4.4 E-10		
Te-121m	154 d	F	0.300	1.8 E-09	2.3 E-09	0.300	2.3 E-09
		M	0.300	4.2 E-09	3.6 E-09		
Te-123	1.00E+13 a	F	0.300	4.0 E-09	5.0 E-09	0.300	4.4 E-09
		M	0.300	2.6 E-09	2.8 E-09		
Te-123m	120 d	F	0.300	9.7 E-10	1.2 E-09	0.300	1.4 E-09
		M	0.300	3.9 E-09	3.4 E-09		
Te-125m	58.0 d	F	0.300	5.1 E-10	6.7 E-10	0.300	8.7 E-10
		M	0.300	3.3 E-09	2.9 E-09		
Te-127	9.35 h	F	0.300	4.2 E-11	7.2 E-11	0.300	1.7 E-10
		M	0.300	1.2 E-10	1.8 E-10		

Te-127m	109 d	F	0.300	1.6 E-09	2.0 E-09	0.300	2.3 E-09
		M	0.300	7.2 E-09	6.2 E-09		
Te-129	1.16 h	F	0.300	1.7 E-11	2.9 E-11	0.300	6.3 E-11
		M	0.300	3.8 E-11	5.7 E-11		
Te-129m	33.6 d	F	0.300	1.3 E-09	1.8 E-09	0.300	3.0 E-09
		M	0.300	6.3 E-09	5.4 E-09		
Te-131	0.417 h	F	0.300	2.3 E-11	4.6 E-11	0.300	8.7 E-11
		M	0.300	3.8 E-11	6.1 E-11		
Te-131m	1.25 d	F	0.300	8.7 E-10	1.2 E-09	0.300	1.9 E-09
		M	0.300	1.1 E-09	1.6 E-09		
Te-132	3.26 d	F	0.300	1.8 E-09	2.4 E-09	0.300	3.7 E-09
		M	0.300	2.2 E-09	3.0 E-09		
Te-133	0.207 h	F	0.300	2.0 E-11	3.8 E-11	0.300	7.2 E-11
		M	0.300	2.7 E-11	4.4 E-11		
Te-133m	0.923 h	F	0.300	8.4 E-11	1.2 E-10	0.300	2.8 E-10
		M	0.300	1.2 E-10	1.9 E-10		
Te-134	0.696 h	F	0.300	5.0 E-11	8.3 E-11	0.300	1.1 E-10
		M	0.300	7.1 E-11	1.1 E-10		
Iodine							
I-120	1.35 h	F	1.000	1.0 E-10	1.9 E-10	1.000	3.4 E-10
I-120m	0.883 h	F	1.000	8.7 E-11	1.4 E-10	1.000	2.1 E-10
I-121	2.12 h	F	1.000	2.8 E-11	3.9 E-11	1.000	8.2 E-11
I-123	13.2 h	F	1.000	7.6 E-11	1.1 E-10	1.000	2.1 E-10
I-124	4.18 d	F	1.000	4.5 E-09	6.3 E-09	1.000	1.3 E-08
I-125	60.1 d	F	1.000	5.3 E-09	7.3 E-09	1.000	1.5 E-08
I-126	13.0 d	F	1.000	1.0 E-08	1.4 E-08	1.000	2.9 E-08
I-128	0.416 h	F	1.000	1.4 E-11	2.2 E-11	1.000	4.6 E-11
I-129	1.57E+07 a	F	1.000	3.7 E-08	5.1 E-08	1.000	1.1 E-07
I-130	12.4 h	F	1.000	6.9 E-10	9.6 E-10	1.000	2.0 E-09
I-131	8.04 d	F	1.000	7.6 E-09	1.1 E-08	1.000	2.2 E-08
I-132	2.30 h	F	1.000	9.6 E-11	2.0 E-10	1.000	2.9 E-10
I-132m	1.39 h	F	1.000	8.1 E-11	1.1 E-10	1.000	2.2 E-10
I-133	20.8 h	F	1.000	1.5 E-09	2.1 E-09	1.000	4.3 E-09
I-134	0.876 h	F	1.000	4.8 E-11	7.9 E-11	1.000	1.1 E-10
I-135	6.61 h	F	1.000	3.3 E-10	4.6 E-10	1.000	9.3 E-10
Caesium							
Cs-125	0.750 h	F	1.000	1.3 E-11	2.3 E-11	1.000	3.5 E-11
Cs-127	6.25 h	F	1.000	2.2 E-11	4.0 E-11	1.000	2.4 E-11
Cs-129	1.34 d	F	1.000	4.5 E-11	8.1 E-11	1.000	6.0 E-11
Cs-130	0.498 h	F	1.000	8.4 E-12	1.5 E-11	1.000	2.8 E-11
Cs-131	9.69 d	F	1.000	2.8 E-11	4.5 E-11	1.000	5.8 E-11
Cs-132	6.48 d	F	1.000	2.4 E-10	3.8 E-10	1.000	5.0 E-10
Cs-134	2.06 a	F	1.000	6.8 E-09	9.6 E-09	1.000	1.9 E-08
Cs-134m	2.90 h	F	1.000	1.5 E-11	2.6 E-11	1.000	2.0 E-11
Cs-135	2.30E+06 a	F	1.000	7.1 E-10	9.9 E-10	1.000	2.0 E-09
Cs-135m	0.883 h	F	1.000	1.3 E-11	2.4 E-11	1.000	1.9 E-11
Cs-136	13.1 d	F	1.000	1.3 E-09	1.9 E-09	1.000	3.0 E-09
Cs-137	30.0 a	F	1.000	4.8 E-09	6.7 E-09	1.000	1.3 E-08
Cs-138	0.536 h	F	1.000	2.6 E-11	4.6 E-11	1.000	9.2 E-11
Barium							
Ba-126	1.61 h	F	0.100	7.8 E-11	1.2 E-10	0.100	2.6 E-10
Ba-128	2.43 d	F	0.100	8.0 E-10	1.3 E-09	0.100	2.7 E-09
Ba-131	11.8 d	F	0.100	2.3 E-10	3.5 E-10	0.100	4.5 E-10
Ba-131m	0.243 h	F	0.100	4.1 E-12	6.4 E-12	0.100	4.9 E-12
Ba-133	10.7 a	F	0.100	1.5 E-09	1.8 E-09	0.100	1.0 E-09
Ba-133m	1.62 d	F	0.100	1.9 E-10	2.8 E-10	0.100	5.5 E-10
Ba-135m	1.20 d	F	0.100	1.5 E-10	2.3 E-10	0.100	4.5 E-10
Ba-139	1.38 h	F	0.100	3.5 E-11	5.5 E-11	0.100	1.2 E-10
Ba-140	12.7 d	F	0.100	1.0 E-09	1.6 E-09	0.100	2.5 E-09
Ba-141	0.305 h	F	0.100	2.2 E-11	3.5 E-11	0.100	7.0 E-11

Ba-142	0.177 h	F	0.100	1.6 E-11	2.7 E-11	0.100	3.5 E-11
Lanthanum							
La-131	0.983 h	F	5.0 E-04	1.4 E-11	2.4 E-11	5.0 E-04	3.5 E-11
		M	5.0 E-04	2.3 E-11	3.6 E-11		
La-132	4.80 h	F	5.0 E-04	1.1 E-10	2.0 E-10	5.0 E-04	3.9 E-10
		M	5.0 E-04	1.7 E-10	2.8 E-10		
La-135	19.5 h	F	5.0 E-04	1.1 E-11	2.0 E-11	5.0 E-04	3.0 E-11
		M	5.0 E-04	1.5 E-11	2.5 E-11		
La-137	6.00E+04 a	F	5.0 E-04	8.6 E-09	1.0 E-08	5.0 E-04	8.1 E-11
		M	5.0 E-04	3.4 E-09	2.3 E-09		
La-138	1.35E+11 a	F	5.0 E-04	1.5 E-07	1.8 E-07	5.0 E-04	1.1 E-09
		M	5.0 E-04	6.1 E-08	4.2 E-08		
La-140	1.68 d	F	5.0 E-04	6.0 E-10	1.0 E-09	5.0 E-04	2.0 E-09
		M	5.0 E-04	1.1 E-09	1.5 E-09		
La-141	3.93 h	F	5.0 E-04	6.7 E-11	1.1 E-10	5.0 E-04	3.6 E-10
		M	5.0 E-04	1.5 E-10	2.2 E-10		
La-142	1.54 h	F	5.0 E-04	5.6 E-11	1.0 E-10	5.0 E-04	1.8 E-10
		M	5.0 E-04	9.3 E-11	1.5 E-10		
La-143	0.237 h	F	5.0 E-04	1.2 E-11	2.0 E-11	5.0 E-04	5.6 E-11
		M	5.0 E-04	2.2 E-11	3.3 E-11		
Cerium							
Ce-134	3.00 d	M	5.0 E-04	1.3 E-09	1.5 E-09	5.0 E-04	2.5 E-09
		S	5.0 E-04	1.3 E-09	1.6 E-09		
Ce-135	17.6 h	M	5.0 E-04	4.9 E-10	7.3 E-10	5.0 E-04	7.9 E-10
		S	5.0 E-04	5.1 E-10	7.6 E-10		
Ce-137	9.00 h	M	5.0 E-04	1.0 E-11	1.8 E-11	5.0 E-04	2.5 E-11
		S	5.0 E-04	1.1 E-11	1.9 E-11		
Ce-137m	1.43 d	M	5.0 E-04	4.0 E-10	5.5 E-10	5.0 E-04	5.4 E-10
		S	5.0 E-04	4.3 E-10	5.9 E-10		
Ce-139	138 d	M	5.0 E-04	1.6 E-09	1.3 E-09	5.0 E-04	2.6 E-10
		S	5.0 E-04	1.8 E-09	1.4 E-09		
Ce-141	32.5 d	M	5.0 E-04	3.1 E-09	2.7 E-09	5.0 E-04	7.1 E-10
		S	5.0 E-04	3.6 E-09	3.1 E-09		
Ce-143	1.38 d	M	5.0 E-04	7.4 E-10	9.5 E-10	5.0 E-04	1.1 E-09
		S	5.0 E-04	8.1 E-10	1.0 E-09		
Ce-144	284 d	M	5.0 E-04	3.4 E-08	2.3 E-08	5.0 E-04	5.2 E-09
		S	5.0 E-04	4.9 E-08	2.9 E-08		
Praseodymium							
Pr-136	0.218 h	M	5.0 E-04	1.4 E-11	2.4 E-11	5.0 E-04	3.3 E-11
		S	5.0 E-04	1.5 E-11	2.5 E-11		
Pr-137	1.28 h	M	5.0 E-04	2.1 E-11	3.4 E-11	5.0 E-04	4.0 E-11
		S	5.0 E-04	2.2 E-11	3.5 E-11		
Pr-138m	2.10 h	M	5.0 E-04	7.6 E-11	1.3 E-10	5.0 E-04	1.3 E-10
		S	5.0 E-04	7.9 E-11	1.3 E-10		
Pr-139	4.51 h	M	5.0 E-04	1.9 E-11	2.9 E-11	5.0 E-04	3.1 E-11
		S	5.0 E-04	2.0 E-11	3.0 E-11		
Pr-142	19.1 h	M	5.0 E-04	5.3 E-10	7.0 E-10	5.0 E-04	1.3 E-09
		S	5.0 E-04	5.6 E-10	7.4 E-10		
Pr-142m	0.243 h	M	5.0 E-04	6.7 E-12	8.9 E-12	5.0 E-04	1.7 E-11
		S	5.0 E-04	7.1 E-12	9.4 E-12		
Pr-143	13.6 d	M	5.0 E-04	2.1 E-09	1.9 E-09	5.0 E-04	1.2 E-09
		S	5.0 E-04	2.3 E-09	2.2 E-09		
Pr-144	0.288 h	M	5.0 E-04	1.8 E-11	2.9 E-11	5.0 E-04	5.0 E-11
		S	5.0 E-04	1.9 E-11	3.0 E-11		
Pr-145	5.98 h	M	5.0 E-04	1.6 E-10	2.5 E-10	5.0 E-04	3.9 E-10
		S	5.0 E-04	1.7 E-10	2.6 E-10		
Pr-147	0.227 h	M	5.0 E-04	1.8 E-11	2.9 E-11	5.0 E-04	3.3 E-11
		S	5.0 E-04	1.9 E-11	3.0 E-11		
Neodymium							
Nd-136	0.844 h	M	5.0 E-04	5.3 E-11	8.5 E-11	5.0 E-04	9.9 E-11

		S	5.0 E-04	5.6 E-11	8.9 E-11		
Nd-138	5.04 h	M	5.0 E-04	2.4 E-10	3.7 E-10	5.0 E-04	6.4 E-10
		S	5.0 E-04	2.6 E-10	3.8 E-10		
Nd-139	0.495 h	M	5.0 E-04	1.0 E-11	1.7 E-11	5.0 E-04	2.0 E-11
		S	5.0 E-04	1.1 E-11	1.7 E-11		
Nd-139m	5.50 h	M	5.0 E-04	1.5 E-10	2.5 E-10	5.0 E-04	2.5 E-10
		S	5.0 E-04	1.6 E-10	2.5 E-10		
Nd-141	2.49 h	M	5.0 E-04	5.1 E-12	8.5 E-12	5.0 E-04	8.3 E-12
		S	5.0 E-04	5.3 E-12	8.8 E-12		
Nd-147	11.0 d	M	5.0 E-04	2.0 E-09	1.9 E-09	5.0 E-04	1.1 E-09
		S	5.0 E-04	2.3 E-09	2.1 E-09		
Nd-149	1.73 h	M	5.0 E-04	8.5 E-11	1.2 E-10	5.0 E-04	1.2 E-10
		S	5.0 E-04	9.0 E-11	1.3 E-10		

Nd-151	0.207 h	M	5.0 E-04	1.7 E-11	2.8 E-11	5.0 E-04	3.0 E-11
		S	5.0 E-04	1.8 E-11	2.9 E-11		
Promethium							
Pm-141	0.348 h	M	5.0 E-04	1.5 E-11	2.4 E-11	5.0 E-04	3.6 E-11
		S	5.0 E-04	1.6 E-11	2.5 E-11		
Pm-143	265 d	M	5.0 E-04	1.4 E-09	9.6 E-10	5.0 E-04	2.3 E-10
		S	5.0 E-04	1.3 E-09	8.3 E-10		
Pm-144	363 d	M	5.0 E-04	7.8 E-09	5.4 E-09	5.0 E-04	9.7 E-10
		S	5.0 E-04	7.0 E-09	3.9 E-09		
Pm-145	17.7 a	M	5.0 E-04	3.4 E-09	2.4 E-09	5.0 E-04	1.1 E-10
		S	5.0 E-04	2.1 E-09	1.2 E-09		
Pm-146	5.53 a	M	5.0 E-04	1.9 E-08	1.3 E-08	5.0 E-04	9.0 E-10
		S	5.0 E-04	1.6 E-08	9.0 E-09		
Pm-147	2.62 a	M	5.0 E-04	4.7 E-09	3.5 E-09	5.0 E-04	2.6 E-10
		S	5.0 E-04	4.6 E-09	3.2 E-09		
Pm-148	5.37 d	M	5.0 E-04	2.0 E-09	2.1 E-09	5.0 E-04	2.7 E-09
		S	5.0 E-04	2.1 E-09	2.2 E-09		
Pm-148m	41.3 d	M	5.0 E-04	4.9 E-09	4.1 E-09	5.0 E-04	1.8 E-09
		S	5.0 E-04	5.4 E-09	4.3 E-09		
Pm-149	2.21 d	M	5.0 E-04	6.6 E-10	7.6 E-10	5.0 E-04	9.9 E-10
		S	5.0 E-04	7.2 E-10	8.2 E-10		
Pm-150	2.68 h	M	5.0 E-04	1.3 E-10	2.0 E-10	5.0 E-04	2.6 E-10
		S	5.0 E-04	1.4 E-10	2.1 E-10		
Pm-151	1.18 d	M	5.0 E-04	4.2 E-10	6.1 E-10	5.0 E-04	7.3 E-10
		S	5.0 E-04	4.5 E-10	6.4 E-10		
Samarium							
Sm-141	0.170 h	M	5.0 E-04	1.6 E-11	2.7 E-11	5.0 E-04	3.9 E-11
Sm-141m	0.377 h	M	5.0 E-04	3.4 E-11	5.6 E-11	5.0 E-04	6.5 E-11
Sm-142	1.21 h	M	5.0 E-04	7.4 E-11	1.1 E-10	5.0 E-04	1.9 E-10
Sm-145	340 d	M	5.0 E-04	1.5 E-09	1.1 E-09	5.0 E-04	2.1 E-10
Sm-146	1.03E+08 a	M	5.0 E-04	9.9 E-06	6.7 E-06	5.0 E-04	5.4 E-08
Sm-147	1.06E+11 a	M	5.0 E-04	8.9 E-06	6.1 E-06	5.0 E-04	4.9 E-08
Sm-151	90.0 a	M	5.0 E-04	3.7 E-09	2.6 E-09	5.0 E-04	9.8 E-11
Sm-153	1.95 d	M	5.0 E-04	6.1 E-10	6.8 E-10	5.0 E-04	7.4 E-10
Sm-155	0.368 h	M	5.0 E-04	1.7 E-11	2.8 E-11	5.0 E-04	2.9 E-11
Sm-156	9.40 h	M	5.0 E-04	2.1 E-10	2.8 E-10	5.0 E-04	2.5 E-10
Europium							
Eu-145	5.94 d	M	5.0 E-04	5.6 E-10	7.3 E-10	5.0 E-04	7.5 E-10
Eu-146	4.61 d	M	5.0 E-04	8.2 E-10	1.2 E-09	5.0 E-04	1.3 E-09
Eu-147	24.0 d	M	5.0 E-04	1.0 E-09	1.0 E-09	5.0 E-04	4.4 E-10
Eu-148	54.5 d	M	5.0 E-04	2.7 E-09	2.3 E-09	5.0 E-04	1.3 E-09
Eu-149	93.1 d	M	5.0 E-04	2.7 E-10	2.3 E-10	5.0 E-04	1.0 E-10
Eu-150	34.2 a	M	5.0 E-04	5.0 E-08	3.4 E-08	5.0 E-04	1.3 E-09
Eu-150	12.6 h	M	5.0 E-04	1.9 E-10	2.8 E-10	5.0 E-04	3.8 E-10
Eu-152	13.3 a	M	5.0 E-04	3.9 E-08	2.7 E-08	5.0 E-04	1.4 E-09
Eu-152m	9.32 h	M	5.0 E-04	2.2 E-10	3.2 E-10	5.0 E-04	5.0 E-10

Eu-154	8.80 a	M	5.0 E-04	5.0 E-08	3.5 E-08	5.0 E-04	2.0 E-09
Eu-155	4.96 a	M	5.0 E-04	6.5 E-09	4.7 E-09	5.0 E-04	3.2 E-10
Eu-156	15.2 d	M	5.0 E-04	3.3 E-09	3.0 E-09	5.0 E-04	2.2 E-09
Eu-157	15.1 h	M	5.0 E-04	3.2 E-10	4.4 E-10	5.0 E-04	6.0 E-10
Eu-158	0.765 h	M	5.0 E-04	4.8 E-11	7.5 E-11	5.0 E-04	9.4 E-11
Gadolinium							
Gd-145	0.382 h	F	5.0 E-04	1.5 E-11	2.6 E-11	5.0 E-04	4.4 E-11
		M	5.0 E-04	2.1 E-11	3.5 E-11		
Gd-146	48.3 d	F	5.0 E-04	4.4 E-09	5.2 E-09	5.0 E-04	9.6 E-10
		M	5.0 E-04	6.0 E-09	4.6 E-09		
Gd-147	1.59 d	F	5.0 E-04	2.7 E-10	4.5 E-10	5.0 E-04	6.1 E-10
		M	5.0 E-04	4.1 E-10	5.9 E-10		
Gd-148	93.0 a	F	5.0 E-04	2.5 E-05	3.0 E-05	5.0 E-04	5.5 E-08
		M	5.0 E-04	1.1 E-05	7.2 E-06		
Gd-149	9.40 d	F	5.0 E-04	2.6 E-10	4.5 E-10	5.0 E-04	4.5 E-10
		M	5.0 E-04	7.0 E-10	7.9 E-10		
Gd-151	120 d	F	5.0 E-04	7.8 E-10	9.3 E-10	5.0 E-04	2.0 E-10
		M	5.0 E-04	8.1 E-10	6.5 E-10		
Gd-152	1.08E+14 a	F	5.0 E-04	1.9 E-05	2.2 E-05	5.0 E-04	4.1 E-08
		M	5.0 E-04	7.4 E-06	5.0 E-06		
Gd-153	242 d	F	5.0 E-04	2.1 E-09	2.5 E-09	5.0 E-04	2.7 E-10
		M	5.0 E-04	1.9 E-09	1.4 E-09		
Gd-159	18.6 h	F	5.0 E-04	1.1 E-10	1.8 E-10	5.0 E-04	4.9 E-10
		M	5.0 E-04	2.7 E-10	3.9 E-10		
Terbium							
Tb-147	1.65 h	M	5.0 E-04	7.9 E-11	1.2 E-10	5.0 E-04	1.6 E-10
Tb-149	4.15 h	M	5.0 E-04	4.3 E-09	3.1 E-09	5.0 E-04	2.5 E-10
Tb-150	3.27 h	M	5.0 E-04	1.1 E-10	1.8 E-10	5.0 E-04	2.5 E-10
Tb-151	17.6 h	M	5.0 E-04	2.3 E-10	3.3 E-10	5.0 E-04	3.4 E-10
Tb-153	2.34 d	M	5.0 E-04	2.0 E-10	2.4 E-10	5.0 E-04	2.5 E-10
Tb-154	21.4 h	M	5.0 E-04	3.8 E-10	6.0 E-10	5.0 E-04	6.5 E-10
Tb-155	5.32 d	M	5.0 E-04	2.1 E-10	2.5 E-10	5.0 E-04	2.1 E-10
Tb-156	5.34 d	M	5.0 E-04	1.2 E-09	1.4 E-09	5.0 E-04	1.2 E-09
Tb-156m	1.02 d	M	5.0 E-04	2.0 E-10	2.3 E-10	5.0 E-04	1.7 E-10
Tb-156m	5.00 h	M	5.0 E-04	9.2 E-11	1.3 E-10	5.0 E-04	8.1 E-11
Tb-157	1.50E+02 a	M	5.0 E-04	1.1 E-09	7.9 E-10	5.0 E-04	3.4 E-11
Tb-158	1.50E+02 a	M	5.0 E-04	4.3 E-08	3.0 E-08	5.0 E-04	1.1 E-09
Tb-160	72.3 d	M	5.0 E-04	6.6 E-09	5.4 E-09	5.0 E-04	1.6 E-09
Tb-161	6.91 d	M	5.0 E-04	1.2 E-09	1.2 E-09	5.0 E-04	7.2 E-10
Dysprosium							
Dy-155	10.0 h	M	5.0 E-04	8.0 E-11	1.2 E-10	5.0 E-04	1.3 E-10
Dy-157	8.10 h	M	5.0 E-04	3.2 E-11	5.5 E-11	5.0 E-04	6.1 E-11
Dy-159	144 d	M	5.0 E-04	3.5 E-10	2.5 E-10	5.0 E-04	1.0 E-10
Dy-165	2.33 h	M	5.0 E-04	6.1 E-11	8.7 E-11	5.0 E-04	1.1 E-10
Dy-166	3.40 d	M	5.0 E-04	1.8 E-09	1.8 E-09	5.0 E-04	1.6 E-09
Holmium							
Ho-155	0.800 h	M	5.0 E-04	2.0 E-11	3.2 E-11	5.0 E-04	3.7 E-11
Ho-157	0.210 h	M	5.0 E-04	4.5 E-12	7.6 E-12	5.0 E-04	6.5 E-12
Ho-159	0.550 h	M	5.0 E-04	6.3 E-12	1.0 E-11	5.0 E-04	7.9 E-12
Ho-161	2.50 h	M	5.0 E-04	6.3 E-12	1.0 E-11	5.0 E-04	1.3 E-11
Ho-162	0.250 h	M	5.0 E-04	2.9 E-12	4.5 E-12	5.0 E-04	3.3 E-12
Ho-162m	1.13 h	M	5.0 E-04	2.2 E-11	3.3 E-11	5.0 E-04	2.6 E-11
Ho-164	0.483 h	M	5.0 E-04	8.6 E-12	1.3 E-11	5.0 E-04	9.5 E-12
Ho-164m	0.625 h	M	5.0 E-04	1.2 E-11	1.6 E-11	5.0 E-04	1.6 E-11
Ho-166	1.12 d	M	5.0 E-04	6.6 E-10	8.3 E-10	5.0 E-04	1.4 E-09
Ho-166m	1.20E+03 a	M	5.0 E-04	1.1 E-07	7.8 E-08	5.0 E-04	2.0 E-09
Ho-167	3.10 h	M	5.0 E-04	7.1 E-11	1.0 E-10	5.0 E-04	8.3 E-11
Erbium							

Er-161	3.24 h	M	5.0 E-04	5.1 E-11	8.5 E-11	5.0 E-04	8.0 E-11
Er-165	10.4 h	M	5.0 E-04	8.3 E-12	1.4 E-11	5.0 E-04	1.9 E-11
Er-169	9.30 d	M	5.0 E-04	9.8 E-10	9.2 E-10	5.0 E-04	3.7 E-10
Er-171	7.52 h	M	5.0 E-04	2.2 E-10	3.0 E-10	5.0 E-04	3.6 E-10
Er-172	2.05 d	M	5.0 E-04	1.1 E-09	1.2 E-09	5.0 E-04	1.0 E-09
Thulium							
Tm-162	0.362 h	M	5.0 E-04	1.6 E-11	2.7 E-11	5.0 E-04	2.9 E-11
Tm-166	7.70 h	M	5.0 E-04	1.8 E-10	2.8 E-10	5.0 E-04	2.8 E-10
Tm-167	9.24 d	M	5.0 E-04	1.1 E-09	1.0 E-09	5.0 E-04	5.6 E-10
Tm-170	129 d	M	5.0 E-04	6.6 E-09	5.2 E-09	5.0 E-04	1.3 E-09
Tm-171	1.92 a	M	5.0 E-04	1.3 E-09	9.1 E-10	5.0 E-04	1.1 E-10
Tm-172	2.65 d	M	5.0 E-04	1.1 E-09	1.4 E-09	5.0 E-04	1.7 E-09
Tm-173	8.24 h	M	5.0 E-04	1.8 E-10	2.6 E-10	5.0 E-04	3.1 E-10
Tm-175	0.253 h	M	5.0 E-04	1.9 E-11	3.1 E-11	5.0 E-04	2.7 E-11
Ytterbium							
Yb-162	0.315 h	M	5.0 E-04	1.4 E-11	2.2 E-11	5.0 E-04	2.3 E-11
		S	5.0 E-04	1.4 E-11	2.3 E-11		
Yb-166	2.36 d	M	5.0 E-04	7.2 E-10	9.1 E-10	5.0 E-04	9.5 E-10
		S	5.0 E-04	7.6 E-10	9.5 E-10		
Yb-167	0.292 h	M	5.0 E-04	6.5 E-12	9.0 E-12	5.0 E-04	6.7 E-12
		S	5.0 E-04	6.9 E-12	9.5 E-12		
Yb-169	32.0 d	M	5.0 E-04	2.4 E-09	2.1 E-09	5.0 E-04	7.1 E-10
		S	5.0 E-04	2.8 E-09	2.4 E-09		
Yb-175	4.19 d	M	5.0 E-04	6.3 E-10	6.4 E-10	5.0 E-04	4.4 E-10
		S	5.0 E-04	7.0 E-10	7.0 E-10		
Yb-177	1.90 h	M	5.0 E-04	6.4 E-11	8.8 E-11	5.0 E-04	9.7 E-11
		S	5.0 E-04	6.9 E-11	9.4 E-11		
Yb-178	1.23 h	M	5.0 E-04	7.1 E-11	1.0 E-10	5.0 E-04	1.2 E-10
		S	5.0 E-04	7.6 E-11	1.1 E-10		
Lutetium							
Lu-169	1.42 d	M	5.0 E-04	3.5 E-10	4.7 E-10	5.0 E-04	4.6 E-10
		S	5.0 E-04	3.8 E-10	4.9 E-10		
Lu-170	2.00 d	M	5.0 E-04	6.4 E-10	9.3 E-10	5.0 E-04	9.9 E-10
		S	5.0 E-04	6.7 E-10	9.5 E-10		
Lu-171	8.22 d	M	5.0 E-04	7.6 E-10	8.8 E-10	5.0 E-04	6.7 E-10
		S	5.0 E-04	8.3 E-10	9.3 E-10		
Lu-172	6.70 d	M	5.0 E-04	1.4 E-09	1.7 E-09	5.0 E-04	1.3 E-09
		S	5.0 E-04	1.5 E-09	1.8 E-09		

Lu-173	1.37 a	M	5.0 E-04	2.0 E-09	1.5 E-09	5.0 E-04	2.6 E-10
		S	5.0 E-04	2.3 E-09	1.4 E-09		
Lu-174	3.31 a	M	5.0 E-04	4.0 E-09	2.9 E-09	5.0 E-04	2.7 E-10
		S	5.0 E-04	3.9 E-09	2.5 E-09		
Lu-174m	142 d	M	5.0 E-04	3.4 E-09	2.4 E-09	5.0 E-04	5.3 E-10
		S	5.0 E-04	3.8 E-09	2.6 E-09		
Lu-176	3.60E+10 a	M	5.0 E-04	6.6 E-08	4.6 E-08	5.0 E-04	1.8 E-09
		S	5.0 E-04	5.2 E-08	3.0 E-08		
Lu-176m	3.68 h	M	5.0 E-04	1.1 E-10	1.5 E-10	5.0 E-04	1.7 E-10
		S	5.0 E-04	1.2 E-10	1.6 E-10		
Lu-177	6.71 d	M	5.0 E-04	1.0 E-09	1.0 E-09	5.0 E-04	5.3 E-10
		S	5.0 E-04	1.1 E-09	1.1 E-09		
Lu-177m	161 d	M	5.0 E-04	1.2 E-08	1.0 E-08	5.0 E-04	1.7 E-09
		S	5.0 E-04	1.5 E-08	1.2 E-08		
Lu-178	0.473 h	M	5.0 E-04	2.5 E-11	3.9 E-11	5.0 E-04	4.7 E-11
		S	5.0 E-04	2.6 E-11	4.1 E-11		
Lu-178m	0.378 h	M	5.0 E-04	3.3 E-11	5.4 E-11	5.0 E-04	3.8 E-11
		S	5.0 E-04	3.5 E-11	5.6 E-11		
Lu-179	4.59 h	M	5.0 E-04	1.1 E-10	1.6 E-10	5.0 E-04	2.1 E-10
		S	5.0 E-04	1.2 E-10	1.6 E-10		

Hafnium							
Hf-170	16.0 h	F	0.002	1.7 E-10	2.9 E-10	0.002	4.8 E-10
		M	0.002	3.2 E-10	4.3 E-10		
Hf-172	1.87 a	F	0.002	3.2 E-08	3.7 E-08	0.002	1.0 E-09
		M	0.002	1.9 E-08	1.3 E-08		
Hf-173	24.0 h	F	0.002	7.9 E-11	1.3 E-10	0.002	2.3 E-10
		M	0.002	1.6 E-10	2.2 E-10		
Hf-175	70.0 d	F	0.002	7.2 E-10	8.7 E-10	0.002	4.1 E-10
		M	0.002	1.1 E-09	8.8 E-10		
Hf-177m	0.856 h	F	0.002	4.7 E-11	8.4 E-11	0.002	8.1 E-11
		M	0.002	9.2 E-11	1.5 E-10		
Hf-178m	31.0 a	F	0.002	2.6 E-07	3.1 E-07	0.002	4.7 E-09
		M	0.002	1.1 E-07	7.8 E-08		
Hf-179m	25.1 d	F	0.002	1.1 E-09	1.4 E-09	0.002	1.2 E-09
		M	0.002	3.6 E-09	3.2 E-09		
Hf-180m	5.50 h	F	0.002	6.4 E-11	1.2 E-10	0.002	1.7 E-10
		M	0.002	1.4 E-10	2.0 E-10		
Hf-181	42.4 d	F	0.002	1.4 E-09	1.8 E-09	0.002	1.1 E-09
		M	0.002	4.7 E-09	4.1 E-09		
Hf-182	9.00E+06 a	F	0.002	3.0 E-07	3.6 E-07	0.002	3.0 E-09
		M	0.002	1.2 E-07	8.3 E-08		
Hf-182m	1.02 h	F	0.002	2.3 E-11	4.0 E-11	0.002	4.2 E-11
		M	0.002	4.7 E-11	7.1 E-11		
Hf-183	1.07 h	F	0.002	2.6 E-11	4.4 E-11	0.002	7.3 E-11
		M	0.002	5.8 E-11	8.3 E-11		
Hf-184	4.12 h	F	0.002	1.3 E-10	2.3 E-10	0.002	5.2 E-10
		M	0.002	3.3 E-10	4.5 E-10		
Tantalum							
Ta-172	0.613 h	M	0.001	3.4 E-11	5.5 E-11	0.001	5.3 E-11
		S	0.001	3.6 E-11	5.7 E-11		
Ta-173	3.65 h	M	0.001	1.1 E-10	1.6 E-10	0.001	1.9 E-10
		S	0.001	1.2 E-10	1.6 E-10		
Ta-174	1.20 h	M	0.001	4.2 E-11	6.3 E-11	0.001	5.7 E-11
		S	0.001	4.4 E-11	6.6 E-11		
Ta-175	10.5 h	M	0.001	1.3 E-10	2.0 E-10	0.001	2.1 E-10
		S	0.001	1.4 E-10	2.0 E-10		
Ta-176	8.08 h	M	0.001	2.0 E-10	3.2 E-10	0.001	3.1 E-10
		S	0.001	2.1 E-10	3.3 E-10		
Ta-177	2.36 d	M	0.001	9.3 E-11	1.2 E-10	0.001	1.1 E-10
		S	0.001	1.0 E-10	1.3 E-10		
Ta-178	2.20 h	M	0.001	6.6 E-11	1.0 E-10	0.001	7.8 E-11
		S	0.001	6.9 E-11	1.1 E-10		
Ta-179	1.82 a	M	0.001	2.0 E-10	1.3 E-10	0.001	6.5 E-11
		S	0.001	5.2 E-10	2.9 E-10		
Ta-180	1.00E+13 a	M	0.001	6.0 E-09	4.6 E-09	0.001	8.4 E-10
		S	0.001	2.4 E-08	1.4 E-08		
Ta-180m	8.10 h	M	0.001	4.4 E-11	5.8 E-11	0.001	5.4 E-11
		S	0.001	4.7 E-11	6.2 E-11		
Ta-182	115 d	M	0.001	7.2 E-09	5.8 E-09	0.001	1.5 E-09
		S	0.001	9.7 E-09	7.4 E-09		
Ta-182m	0.264 h	M	0.001	2.1 E-11	3.4 E-11	0.001	1.2 E-11
		S	0.001	2.2 E-11	3.6 E-11		
Ta-183	5.10 d	M	0.001	1.8 E-09	1.8 E-09	0.001	1.3 E-09
		S	0.001	2.0 E-09	2.0 E-09		
Ta-184	8.70 h	M	0.001	4.1 E-10	6.0 E-10	0.001	6.8 E-10
		S	0.001	4.4 E-10	6.3 E-10		
Ta-185	0.816 h	M	0.001	4.6 E-11	6.8 E-11	0.001	6.8 E-11
		S	0.001	4.9 E-11	7.2 E-11		
Ta-186	0.175 h	M	0.001	1.8 E-11	3.0 E-11	0.001	3.3 E-11
		S	0.001	1.9 E-11	3.1 E-11		

Tungsten							
W-176	2.30 h	F	0.300	4.4 E-11	7.6 E-11	0.300	1.0 E-10
						0.010	1.1 E-10
W-177	2.25 h	F	0.300	2.6 E-11	4.6 E-11	0.300	5.8 E-11
						0.010	6.1 E-11
W-178	21.7 d	F	0.300	7.6 E-11	1.2 E-10	0.300	2.2 E-10
						0.010	2.5 E-10
W-179	0.625 h	F	0.300	9.9 E-13	1.8 E-12	0.300	3.3 E-12
						0.010	3.3 E-12
W-181	121 d	F	0.300	2.8 E-11	4.3 E-11	0.300	7.6 E-11
						0.010	8.2 E-11
W-185	75.1 d	F	0.300	1.4 E-10	2.2 E-10	0.300	4.4 E-10
						0.010	5.0 E-10
W-187	23.9 h	F	0.300	2.0 E-10	3.3 E-10	0.300	6.3 E-10
						0.010	7.1 E-10
W-188	69.4 d	F	0.300	5.9 E-10	8.4 E-10	0.300	2.1 E-09
						0.010	2.3 E-09
Rhenium							
Re-177	0.233 h	F	0.800	1.0 E-11	1.7 E-11	0.800	2.2 E-11
		M	0.800	1.4 E-11	2.2 E-11		
Re-178	0.220 h	F	0.800	1.1 E-11	1.8 E-11	0.800	2.5 E-11
		M	0.800	1.5 E-11	2.4 E-11		
Re-181	20.0 h	F	0.800	1.9 E-10	3.0 E-10	0.800	4.2 E-10
		M	0.800	2.5 E-10	3.7 E-10		
Re-182	2.67 d	F	0.800	6.8 E-10	1.1 E-09	0.800	1.4 E-09
		M	0.800	1.3 E-09	1.7 E-09		
Re-182	12.7 h	F	0.800	1.5 E-10	2.4 E-10	0.800	2.7 E-10
		M	0.800	2.0 E-10	3.0 E-10		
Re-184	38.0 d	F	0.800	4.6 E-10	7.0 E-10	0.800	1.0 E-09
		M	0.800	1.8 E-09	1.8 E-09		
Re-184m	165 d	F	0.800	6.1 E-10	8.8 E-10	0.800	1.5 E-09
		M	0.800	6.1 E-09	4.8 E-09		
Re-186	3.78 d	F	0.800	5.3 E-10	7.3 E-10	0.800	1.5 E-09
		M	0.800	1.1 E-09	1.2 E-09		
Re-186m	2.00E+05 a	F	0.800	8.5 E-10	1.2 E-09	0.800	2.2 E-09
		M	0.800	1.1 E-08	7.9 E-09		
Re-187	5.00E+10 a	F	0.800	1.9 E-12	2.6 E-12	0.800	5.1 E-12
		M	0.800	6.0 E-12	4.6 E-12		
Re-188	17.0 h	F	0.800	4.7 E-10	6.6 E-10	0.800	1.4 E-09
		M	0.800	5.5 E-10	7.4 E-10		
Re-188m	0.310 h	F	0.800	1.0 E-11	1.6 E-11	0.800	3.0 E-11
		M	0.800	1.4 E-11	2.0 E-11		
Re-189	1.01 d	F	0.800	2.7 E-10	4.3 E-10	0.800	7.8 E-10
		M	0.800	4.3 E-10	6.0 E-10		
Osmium							
Os-180	0.366 h	F	0.010	8.8 E-12	1.6 E-11	0.010	1.7 E-11
		M	0.010	1.4 E-11	2.4 E-11		
		S	0.010	1.5 E-11	2.5 E-11		
Os-181	1.75 h	F	0.010	3.6 E-11	6.4 E-11	0.010	8.9 E-11
		M	0.010	6.3 E-11	9.6 E-11		
		S	0.010	6.6 E-11	1.0 E-10		
Os-182	22.0 h	F	0.010	1.9 E-10	3.2 E-10	0.010	5.6 E-10
		M	0.010	3.7 E-10	5.0 E-10		
		S	0.010	3.9 E-10	5.2 E-10		
Os-185	94.0 d	F	0.010	1.1 E-09	1.4 E-09	0.010	5.1 E-10
		M	0.010	1.2 E-09	1.0 E-09		
		S	0.010	1.5 E-09	1.1 E-09		
Os-189m	6.00 h	F	0.010	2.7 E-12	5.2 E-12	0.010	1.8 E-11
		M	0.010	5.1 E-12	7.6 E-12		
		S	0.010	5.4 E-12	7.9 E-12		
Os-191	15.4 d	F	0.010	2.5 E-10	3.5 E-10	0.010	5.7 E-10

		M	0.010	1.5 E-09	1.3 E-09		
		S	0.010	1.8 E-09	1.5 E-09		
Os-191m	13.0 h	F	0.010	2.6 E-11	4.1 E-11	0.010	9.6 E-11
		M	0.010	1.3 E-10	1.3 E-10		
		S	0.010	1.5 E-10	1.4 E-10		
Os-193	1.25 d	F	0.010	1.7 E-10	2.8 E-10	0.010	8.1 E-10
		M	0.010	4.7 E-10	6.4 E-10		
		S	0.010	5.1 E-10	6.8 E-10		
Os-194	6.00 a	F	0.010	1.1 E-08	1.3 E-08	0.010	2.4 E-09
		M	0.010	2.0 E-08	1.3 E-08		
		S	0.010	7.9 E-08	4.2 E-08		
Iridium							
Ir-182	0.250 h	F	0.010	1.5 E-11	2.6 E-11	0.010	4.8 E-11
		M	0.010	2.4 E-11	3.9 E-11		
		S	0.010	2.5 E-11	4.0 E-11		
Ir-184	3.02 h	F	0.010	6.7 E-11	1.2 E-10	0.010	1.7 E-10
		M	0.010	1.1 E-10	1.8 E-10		
		S	0.010	1.2 E-10	1.9 E-10		
Ir-185	14.0 h	F	0.010	8.8 E-11	1.5 E-10	0.010	2.6 E-10
		M	0.010	1.8 E-10	2.5 E-10		
		S	0.010	1.9 E-10	2.6 E-10		
Ir-186	15.8 h	F	0.010	1.8 E-10	3.3 E-10	0.010	4.9 E-10
		M	0.010	3.2 E-10	4.8 E-10		
		S	0.010	3.3 E-10	5.0 E-10		
Ir-186	1.75 h	F	0.010	2.5 E-11	4.5 E-11	0.010	6.1 E-11
		M	0.010	4.3 E-11	6.9 E-11		
		S	0.010	4.5 E-11	7.1 E-11		
Ir-187	10.5 h	F	0.010	4.0 E-11	7.2 E-11	0.010	1.2 E-10
		M	0.010	7.5 E-11	1.1 E-10		
		S	0.010	7.9 E-11	1.2 E-10		
Ir-188	1.73 d	F	0.010	2.6 E-10	4.4 E-10	0.010	6.3 E-10
		M	0.010	4.1 E-10	6.0 E-10		
		S	0.010	4.3 E-10	6.2 E-10		
Ir-189	13.3 d	F	0.010	1.1 E-10	1.7 E-10	0.010	2.4 E-10
		M	0.010	4.8 E-10	4.1 E-10		
		S	0.010	5.5 E-10	4.6 E-10		
Ir-190	12.1 d	F	0.010	7.9 E-10	1.2 E-09	0.010	1.2 E-09
		M	0.010	2.0 E-09	2.3 E-09		
		S	0.010	2.3 E-09	2.5 E-09		
Ir-190m	3.10 h	F	0.010	5.3 E-11	9.7 E-11	0.010	1.2 E-10
		M	0.010	8.3 E-11	1.4 E-10		
		S	0.010	8.6 E-11	1.4 E-10		
Ir-190m	1.20 h	F	0.010	3.7 E-12	5.6 E-12	0.010	8.0 E-12
		M	0.010	9.0 E-12	1.0 E-11		
		S	0.010	1.0 E-11	1.1 E-11		
Ir-192	74.0 d	F	0.010	1.8 E-09	2.2 E-09	0.010	1.4 E-09
		M	0.010	4.9 E-09	4.1 E-09		
		S	0.010	6.2 E-09	4.9 E-09		
Ir-192m	2.41E+02 a	F	0.010	4.8 E-09	5.6 E-09	0.010	3.1 E-10
		M	0.010	5.4 E-09	3.4 E-09		
		S	0.010	3.6 E-08	1.9 E-08		
Ir-193m	11.9 d	F	0.010	1.0 E-10	1.6 E-10	0.010	2.7 E-10
		M	0.010	1.0 E-09	9.1 E-10		
		S	0.010	1.2 E-09	1.0 E-09		
Ir-194	19.1 h	F	0.010	2.2 E-10	3.6 E-10	0.010	1.3 E-09
		M	0.010	5.3 E-10	7.1 E-10		
		S	0.010	5.6 E-10	7.5 E-10		
Ir-194m	171 d	F	0.010	5.4 E-09	6.5 E-09	0.010	2.1 E-09

		M	0.010	8.5 E-09	6.5 E-09		
		S	0.010	1.2 E-08	8.2 E-09		
Ir-195	2.50 h	F	0.010	2.6 E-11	4.5 E-11	0.010	1.0 E-10
		M	0.010	6.7 E-11	9.6 E-11		
		S	0.010	7.2 E-11	1.0 E-10		
Ir-195m	3.80 h	F	0.010	6.5 E-11	1.1 E-10	0.010	2.1 E-10
		M	0.010	1.6 E-10	2.3 E-10		
		S	0.010	1.7 E-10	2.4 E-10		
Platinum							
Pt-186	2.00 h	F	0.010	3.6 E-11	6.6 E-11	0.010	9.3 E-11
Pt-188	10.2 d	F	0.010	4.3 E-10	6.3 E-10	0.010	7.6 E-10
Pt-189	10.9 h	F	0.010	4.1 E-11	7.3 E-11	0.010	1.2 E-10
Pt-191	2.80 d	F	0.010	1.1 E-10	1.9 E-10	0.010	3.4 E-10
Pt-193	50.0 a	F	0.010	2.1 E-11	2.7 E-11	0.010	3.1 E-11
Pt-193m	4.33 d	F	0.010	1.3 E-10	2.1 E-10	0.010	4.5 E-10
Pt-195m	4.02 d	F	0.010	1.9 E-10	3.1 E-10	0.010	6.3 E-10
Pt-197	18.3 h	F	0.010	9.1 E-11	1.6 E-10	0.010	4.0 E-10
Pt-197m	1.57 h	F	0.010	2.5 E-11	4.3 E-11	0.010	8.4 E-11
Pt-199	0.513 h	F	0.010	1.3 E-11	2.2 E-11	0.010	3.9 E-11
Pt-200	12.5 h	F	0.010	2.4 E-10	4.0 E-10	0.010	1.2 E-09
Gold							
Au-193	17.6 h	F	0.100	3.9 E-11	7.1 E-11	0.100	1.3 E-10
		M	0.100	1.1 E-10	1.5 E-10		
		S	0.100	1.2 E-10	1.6 E-10		
Au-194	1.64 d	F	0.100	1.5 E-10	2.8 E-10	0.100	4.2 E-10
		M	0.100	2.4 E-10	3.7 E-10		
		S	0.100	2.5 E-10	3.8 E-10		
Au-195	183 d	F	0.100	7.1 E-11	1.2 E-10	0.100	2.5 E-10
		M	0.100	1.0 E-09	8.0 E-10		
		S	0.100	1.6 E-09	1.2 E-09		
Au-198	2.69 d	F	0.100	2.3 E-10	3.9 E-10	0.100	1.0 E-09
		M	0.100	7.6 E-10	9.8 E-10		
		S	0.100	8.4 E-10	1.1 E-09		
Au-198m	2.30 d	F	0.100	3.4 E-10	5.9 E-10	0.100	1.3 E-09
		M	0.100	1.7 E-09	2.0 E-09		
		S	0.100	1.9 E-09	1.9 E-09		
Au-199	3.14 d	F	0.100	1.1 E-10	1.9 E-10	0.100	4.4 E-10
		M	0.100	6.8 E-10	6.8 E-10		
		S	0.100	7.5 E-10	7.6 E-10		
Au-200	0.807 h	F	0.100	1.7 E-11	3.0 E-11	0.100	6.8 E-11
		M	0.100	3.5 E-11	5.3 E-11		
		S	0.100	3.6 E-11	5.6 E-11		
Au-200m	18.7 h	F	0.100	3.2 E-10	5.7 E-10	0.100	1.1 E-09
		M	0.100	6.9 E-10	9.8 E-10		
		S	0.100	7.3 E-10	1.0 E-09		
Au-201	0.440 h	F	0.100	9.2 E-12	1.6 E-11	0.100	2.4 E-11
		M	0.100	1.7 E-11	2.8 E-11		
		S	0.100	1.8 E-11	2.9 E-11		
Mercury							
Hg-193	3.50 h	F	0.400	2.6 E-11	4.7 E-11	1.000	3.1 E-11
(organic)						0.400	6.6 E-11
Hg-193	3.50 h	F	0.020	2.8 E-11	5.0 E-11	0.020	8.2 E-11
(inorganic)		M	0.020	7.5 E-11	1.0 E-10		
Hg-193m	11.1 h	F	0.400	1.1 E-10	2.0 E-10	1.000	1.3 E-10
(organic)						0.400	3.0 E-10
Hg-193m	11.1 h	F	0.020	1.2 E-10	2.3 E-10	0.020	4.0 E-10
(inorganic)		M	0.020	2.6 E-10	3.8 E-10		
Hg-194	2.60E+02 a	F	0.400	1.5 E-08	1.9 E-08	1.000	5.1 E-08
(organic)						0.400	2.1 E-08
Hg-194	2.60E+02 a	F	0.020	1.3 E-08	1.5 E-08	0.020	1.4 E-09

(inorganic)		M	0.020	7.8 E-09	5.3 E-09		
Hg-195	9.90 h	F	0.400	2.4 E-11	4.4 E-11	1.000	3.4 E-11
(organic)						0.400	7.5 E-11
Hg-195	9.90 h	F	0.020	2.7 E-11	4.8 E-11	0.020	9.7 E-11
(inorganic)		M	0.020	7.2 E-11	9.2 E-11		
Hg-195m	1.73 d	F	0.400	1.3 E-10	2.2 E-10	1.000	2.2 E-10
(organic)						0.400	4.1 E-10
Hg-195m	1.73 d	F	0.020	1.5 E-10	2.6 E-10	0.020	5.6 E-10
(inorganic)		M	0.020	5.1 E-10	6.5 E-10		
Hg-197	2.67 d	F	0.400	5.0 E-11	8.5 E-11	1.000	9.9 E-11
(organic)						0.400	1.7 E-10
Hg-197	2.67 d	F	0.020	6.0 E-11	1.0 E-10	0.020	2.3 E-10
(inorganic)		M	0.020	2.9 E-10	2.8 E-10		
Hg-197m	23.8 h	F	0.400	1.0 E-10	1.8 E-10	1.000	1.5 E-10
(organic)						0.400	3.4 E-10
Hg-197m	23.8 h	F	0.020	1.2 E-10	2.1 E-10	0.020	4.7 E-10
(inorganic)		M	0.020	5.1 E-10	6.6 E-10		
Hg-199m	0.710 h	F	0.400	1.6 E-11	2.7 E-11	1.000	2.8 E-11
(organic)						0.400	3.1 E-11
Hg-199m	0.710 h	F	0.020	1.6 E-11	2.7 E-11	0.020	3.1 E-11
(inorganic)		M	0.020	3.3 E-11	5.2 E-11		
Hg-203	46.6 d	F	0.400	5.7 E-10	7.5 E-10	1.000	1.9 E-09
(organic)						0.400	1.1 E-09
Hg-203	46.6 d	F	0.020	4.7 E-10	5.9 E-10	0.020	5.4 E-10
(inorganic)		M	0.020	2.3 E-09	1.9 E-09		
Thallium							
Tl-194	0.550 h	F	1.000	4.8 E-12	8.9 E-12	1.000	8.1 E-12
Tl-194m	0.546 h	F	1.000	2.0 E-11	3.6 E-11	1.000	4.0 E-11
Tl-195	1.16 h	F	1.000	1.6 E-11	3.0 E-11	1.000	2.7 E-11
Tl-197	2.84 h	F	1.000	1.5 E-11	2.7 E-11	1.000	2.3 E-11
Tl-198	5.30 h	F	1.000	6.6 E-11	1.2 E-10	1.000	7.3 E-11
Tl-198m	1.87 h	F	1.000	4.0 E-11	7.3 E-11	1.000	5.4 E-11
Tl-199	7.42 h	F	1.000	2.0 E-11	3.7 E-11	1.000	2.6 E-11
Tl-200	1.09 d	F	1.000	1.4 E-10	2.5 E-10	1.000	2.0 E-10
Tl-201	3.04 d	F	1.000	4.7 E-11	7.6 E-11	1.000	9.5 E-11
Tl-202	12.2 d	F	1.000	2.0 E-10	3.1 E-10	1.000	4.5 E-10
Tl-204	3.78 a	F	1.000	4.4 E-10	6.2 E-10	1.000	1.3 E-09

Lead							
Pb-195m	0.263 h	F	0.200	1.7 E-11	3.0 E-11	0.200	2.9 E-11
Pb-198	2.40 h	F	0.200	4.7 E-11	8.7 E-11	0.200	1.0 E-10
Pb-199	1.50 h	F	0.200	2.6 E-11	4.8 E-11	0.200	5.4 E-11
Pb-200	21.5 h	F	0.200	1.5 E-10	2.6 E-10	0.200	4.0 E-10
Pb-201	9.40 h	F	0.200	6.5 E-11	1.2 E-10	0.200	1.6 E-10
Pb-202	3.00E+05 a	F	0.200	1.1 E-08	1.4 E-08	0.200	8.7 E-09
Pb-202m	3.62 h	F	0.200	6.7 E-11	1.2 E-10	0.200	1.3 E-10
Pb-203	2.17 d	F	0.200	9.1 E-11	1.6 E-10	0.200	2.4 E-10
Pb-205	1.43E+07 a	F	0.200	3.4 E-10	4.1 E-10	0.200	2.8 E-10
Pb-209	3.25 h	F	0.200	1.8 E-11	3.2 E-11	0.200	5.7 E-11
Pb-210	22.3 a	F	0.200	8.9 E-07	1.1 E-06	0.200	6.8 E-07
Pb-211	0.601 h	F	0.200	3.9 E-09	5.6 E-09	0.200	1.8 E-10
Pb-212	10.6 h	F	0.200	1.9 E-08	3.3 E-08	0.200	5.9 E-09
Pb-214	0.447 h	F	0.200	2.9 E-09	4.8 E-09	0.200	1.4 E-10
Bismuth							
Bi-200	0.606 h	F	0.050	2.4 E-11	4.2 E-11	0.050	5.1 E-11
		M	0.050	3.4 E-11	5.6 E-11		
Bi-201	1.80 h	F	0.050	4.7 E-11	8.3 E-11	0.050	1.2 E-10
		M	0.050	7.0 E-11	1.1 E-10		
Bi-202	1.67 h	F	0.050	4.6 E-11	8.4 E-11	0.050	8.9 E-11
		M	0.050	5.8 E-11	1.0 E-10		
Bi-203	11.8 h	F	0.050	2.0 E-10	3.6 E-10	0.050	4.8 E-10

		M	0.050	2.8 E-10	4.5 E-10		
Bi-205	15.3 d	F	0.050	4.0 E-10	6.8 E-10	0.050	9.0 E-10
		M	0.050	9.2 E-10	1.0 E-09		
Bi-206	6.24 d	F	0.050	7.9 E-10	1.3 E-09	0.050	1.9 E-09
		M	0.050	1.7 E-09	2.1 E-09		
Bi-207	38.0 a	F	0.050	5.2 E-10	8.4 E-10	0.050	1.3 E-09
		M	0.050	5.2 E-09	3.2 E-09		
Bi-210	5.01 d	F	0.050	1.1 E-09	1.4 E-09	0.050	1.3 E-09
		M	0.050	8.4 E-08	6.0 E-08		
Bi-210m	3.00E+06 a	F	0.050	4.5 E-08	5.3 E-08	0.050	1.5 E-08
		M	0.050	3.1 E-06	2.1 E-06		
Bi-212	1.01 h	F	0.050	9.3 E-09	1.5 E-08	0.050	2.6 E-10
		M	0.050	3.0 E-08	3.9 E-08		
Bi-213	0.761 h	F	0.050	1.1 E-08	1.8 E-08	0.050	2.0 E-10
		M	0.050	2.9 E-08	4.1 E-08		
Bi-214	0.332 h	F	0.050	7.2 E-09	1.2 E-08	0.050	1.1 E-10
		M	0.050	1.4 E-08	2.1 E-08		
Polonium							
Po-203	0.612 h	F	0.100	2.5 E-11	4.5 E-11	0.100	5.2 E-11
		M	0.100	3.6 E-11	6.1 E-11		
Po-205	1.80 h	F	0.100	3.5 E-11	6.0 E-11	0.100	5.9 E-11
		M	0.100	6.4 E-11	8.9 E-11		
Po-207	5.83 h	F	0.100	6.3 E-11	1.2 E-10	0.100	1.4 E-10
		M	0.100	8.4 E-11	1.5 E-10		
Po-210	138 d	F	0.100	6.0 E-07	7.1 E-07	0.100	2.4 E-07
		M	0.100	3.0 E-06	2.2 E-06		
Astatine							
At-207	1.80 h	F	1.000	3.5 E-10	4.4 E-10	1.000	2.3 E-10
		M	1.000	2.1 E-09	1.9 E-09		
At-211	7.21 h	F	1.000	1.6 E-08	2.7 E-08	1.000	1.1 E-08
		M	1.000	9.8 E-08	1.1 E-07		
Francium							
Fr-222	0.240 h	F	1.000	1.4 E-08	2.1 E-08	1.000	7.1 E-10
Fr-223	0.363 h	F	1.000	9.1 E-10	1.3 E-09	1.000	2.3 E-09
Radium							
Ra-223	11.4 d	M	0.200	6.9 E-06	5.7 E-06	0.200	1.0 E-07
Ra-224	3.66 d	M	0.200	2.9 E-06	2.4 E-06	0.200	6.5 E-08
Ra-225	14.8 d	M	0.200	5.8 E-06	4.8 E-06	0.200	9.5 E-08
Ra-226	1.60E+03 a	M	0.200	3.2 E-06	2.2 E-06	0.200	2.8 E-07
Ra-227	0.703 h	M	0.200	2.8 E-10	2.1 E-10	0.200	8.4 E-11
Ra-228	5.75 a	M	0.200	2.6 E-06	1.7 E-06	0.200	6.7 E-07
Actinium							
Ac-224	2.90 h	F	5.0 E-04	1.1 E-08	1.3 E-08	5.0 E-04	7.0 E-10
		M	5.0 E-04	1.0 E-07	8.9 E-08		
		S	5.0 E-04	1.2 E-07	9.9 E-08		
Ac-225	10.0 d	F	5.0 E-04	8.7 E-07	1.0 E-06	5.0 E-04	2.4 E-08
		M	5.0 E-04	6.9 E-06	5.7 E-06		
		S	5.0 E-04	7.9 E-06	6.5 E-06		
Ac-226	1.21 d	F	5.0 E-04	9.5 E-08	2.2 E-07	5.0 E-04	1.0 E-08
		M	5.0 E-04	1.1 E-06	9.2 E-07		
		S	5.0 E-04	1.2 E-06	1.0 E-06		
Ac-227	21.8 a	F	5.0 E-04	5.4 E-04	6.3 E-04	5.0 E-04	1.1 E-06
		M	5.0 E-04	2.1 E-04	1.5 E-04		
		S	5.0 E-04	6.6 E-05	4.7 E-05		
Ac-228	6.13 h	F	5.0 E-04	2.5 E-08	2.9 E-08	5.0 E-04	4.3 E-10
		M	5.0 E-04	1.6 E-08	1.2 E-08		
		S	5.0 E-04	1.4 E-08	1.2 E-08		

Thorium							
Th-226	0.515 h	M	5.0 E-04	5.5 E-08	7.4 E-08	5.0 E-04	3.5 E-10
		S	2.0 E-04	5.9 E-08	7.8 E-08	2.0 E-04	3.6 E-10
Th-227	18.7 d	M	5.0 E-04	7.8 E-06	6.2 E-06	5.0 E-04	8.9 E-09
		S	2.0 E-04	9.6 E-06	7.6 E-06	2.0 E-04	8.4 E-09
Th-228	1.91 a	M	5.0 E-04	3.1 E-05	2.3 E-05	5.0 E-04	7.0 E-08
		S	2.0 E-04	3.9 E-05	3.2 E-05	2.0 E-04	3.5 E-08
Th-229	7.34E+03 a	M	5.0 E-04	9.9 E-05	6.9 E-05	5.0 E-04	4.8 E-07
		S	2.0 E-04	6.5 E-05	4.8 E-05	2.0 E-04	2.0 E-07
Th-230	7.70E+04 a	M	5.0 E-04	4.0 E-05	2.8 E-05	5.0 E-04	2.1 E-07
		S	2.0 E-04	1.3 E-05	7.2 E-06	2.0 E-04	8.7 E-08
Th-231	1.06 d	M	5.0 E-04	2.9 E-10	3.7 E-10	5.0 E-04	3.4 E-10
		S	2.0 E-04	3.2 E-10	4.0 E-10	2.0 E-04	3.4 E-10
Th-232	1.40E+10 a	M	5.0 E-04	4.2 E-05	2.9 E-05	5.0 E-04	2.2 E-07
		S	2.0 E-04	2.3 E-05	1.2 E-05	2.0 E-04	9.2 E-08
Th-234	24.1 d	M	5.0 E-04	6.3 E-09	5.3 E-09	5.0 E-04	3.4 E-09
		S	2.0 E-04	7.3 E-09	5.8 E-09	2.0 E-04	3.4 E-09
Protactinum							
Pa-227	0.638 h	M	5.0 E-04	7.0 E-08	9.0 E-08	5.0 E-04	4.5 E-10
		S	5.0 E-04	7.6 E-08	9.7 E-08		
Pa-228	22.0 h	M	5.0 E-04	5.9 E-08	4.6 E-08	5.0 E-04	7.8 E-10
		S	5.0 E-04	6.9 E-08	5.1 E-08		
Pa-230	17.4 d	M	5.0 E-04	5.6 E-07	4.6 E-07	5.0 E-04	9.2 E-10
		S	5.0 E-04	7.1 E-07	5.7 E-07		
Pa-231	3.27E+04 a	M	5.0 E-04	1.3 E-04	8.9 E-05	5.0 E-04	7.1 E-07
		S	5.0 E-04	3.2 E-05	1.7 E-05		
Pa-232	1.31 d	M	5.0 E-04	9.5 E-09	6.8 E-09	5.0 E-04	7.2 E-10
		S	5.0 E-04	3.2 E-09	2.0 E-09		
Pa-233	27.0 d	M	5.0 E-04	3.1 E-09	2.8 E-09	5.0 E-04	8.7 E-10
		S	5.0 E-04	3.7 E-09	3.2 E-09		
Pa-234	6.70 h	M	5.0 E-04	3.8 E-10	5.5 E-10	5.0 E-04	5.1 E-10
		S	5.0 E-04	4.0 E-10	5.8 E-10		
Uranium							
U-230	20.8 d	F	0.020	3.6 E-07	4.2 E-07	0.020	5.5 E-08
		M	0.020	1.2 E-05	1.0 E-05	0.002	2.8 E-08
		S	0.002	1.5 E-05	1.2 E-05		
U-231	4.20 d	F	0.020	8.3 E-11	1.4 E-10	0.020	2.8 E-10
		M	0.020	3.4 E-10	3.7 E-10	0.002	2.8 E-10
		S	0.002	3.7 E-10	4.0 E-10		
U-232	72.0 a	F	0.020	4.0 E-06	4.7 E-06	0.020	3.3 E-07
		M	0.020	7.2 E-06	4.8 E-06	0.002	3.7 E-08
		S	0.002	3.5 E-05	2.6 E-05		
U-233	1.58E+05 a	F	0.020	5.7 E-07	6.6 E-07	0.020	5.0 E-08
		M	0.020	3.2 E-06	2.2 E-06	0.002	8.5 E-09
		S	0.002	8.7 E-06	6.9 E-06		
U-234	2.44E+05 a	F	0.020	5.5 E-07	6.4 E-07	0.020	4.9 E-08
		M	0.020	3.1 E-06	2.1 E-06	0.002	8.3 E-09
		S	0.002	8.5 E-06	6.8 E-06		
U-235	7.04E+08 a	F	0.020	5.1 E-07	6.0 E-07	0.020	4.6 E-08
		M	0.020	2.8 E-06	1.8 E-06	0.002	8.3 E-09
		S	0.002	7.7 E-06	6.1 E-06		
U-236	2.34E+07 a	F	0.020	5.2 E-07	6.1 E-07	0.020	4.6 E-08
		M	0.020	2.9 E-06	1.9 E-06	0.002	7.9 E-09
		S	0.002	7.9 E-06	6.3 E-06		
U-237	6.75 d	F	0.020	1.9 E-10	3.3 E-10	0.020	7.6 E-10
		M	0.020	1.6 E-09	1.5 E-09	0.002	7.7 E-10
		S	0.002	1.8 E-09	1.7 E-09		
U-238	4.47E+09 a	F	0.020	4.9 E-07	5.8 E-07	0.020	4.4 E-08
		M	0.020	2.6 E-06	1.6 E-06	0.002	7.6 E-09
		S	0.002	7.3 E-06	5.7 E-06		
U-239	0.392 h	F	0.020	1.1 E-11	1.8 E-11	0.020	2.7 E-11

		M	0.020	2.3 E-11	3.3 E-11	0.002	2.8 E-11
		S	0.002	2.4 E-11	3.5 E-11		
U-240	14.1 h	F	0.020	2.1 E-10	3.7 E-10	0.020	1.1 E-09
		M	0.020	5.3 E-10	7.9 E-10	0.002	1.1 E-09
		S	0.002	5.7 E-10	8.4 E-10		
Neptunium							
Np-232	0.245 h	M	5.0 E-04	4.7 E-11	3.5 E-11	5.0 E-04	9.7 E-12
Np-233	0.603 h	M	5.0 E-04	1.7 E-12	3.0E-12	5.0 E-04	2.2 E-12
Np-234	4.40 d	M	5.0 E-04	5.4 E-10	7.3 E-10	5.0 E-04	8.1 E-10
Np-235	1.08 a	M	5.0 E-04	4.0 E-10	2.7 E-10	5.0 E-04	5.3 E-11
Np-236	1.15E+05 a	M	5.0 E-04	3.0 E-06	2.0 E-06	5.0 E-04	1.7 E-08
Np-236	22.5 h	M	5.0 E-04	5.0 E-09	3.6 E-09	5.0 E-04	1.9 E-10
Np-237	2.14E+06 a	M	5.0 E-04	2.1 E-05	1.5 E-05	5.0 E-04	1.1 E-07
Np-238	2.12 d	M	5.0 E-04	2.0 E-09	1.7 E-09	5.0 E-04	9.1 E-10
Np-239	2.36 d	M	5.0 E-04	9.0 E-10	1.1 E-09	5.0 E-04	8.0 E-10
Np-240	1.08 h	M	5.0 E-04	8.7 E-11	1.3 E-10	5.0 E-04	8.2 E-11
Plutonium							
Pu-234	8.80 h	M	5.0 E-04	1.9 E-08	1.6 E-08	5.0 E-04	1.6 E-10
		S	1.0 E-05	2.2 E-08	1.8 E-08	1.0 E-05	1.5 E-10
					1.0 E-04	1.6 E-10	
Pu-235	0.422 h	M	5.0 E-04	1.5 E-12	2.5 E-12	5.0 E-04	2.1 E-12
		S	1.0 E-05	1.6 E-12	2.6 E-12	1.0 E-05	2.1 E-12
						1.0 E-04	2.1 E-12
Pu-236	2.85 a	M	5.0 E-04	1.8 E-05	1.3 E-05	5.0 E-04	8.6 E-08
		S	1.0 E-05	9.6 E-06	7.4 E-06	1.0 E-05	6.3 E-09
						1.0 E-04	2.1 E-08
Pu-237	45.3 d	M	5.0 E-04	3.3 E-10	2.9 E-10	5.0 E-04	1.0 E-10
		S	1.0 E-05	3.6 E-10	3.0 E-10	1.0 E-05	1.0 E-10
						1.0 E-04	1.0 E-10
Pu-238	87.7 a	M	5.0 E-04	4.3 E-05	3.0 E-05	5.0 E-04	2.3 E-07
		S	1.0 E-05	1.5 E-05	1.1 E-05	1.0 E-05	8.8 E-09
						1.0 E-04	4.9 E-08
Pu-239	2.41E+04 a	M	5.0 E-04	4.7 E-05	3.2 E-05	5.0 E-04	2.5 E-07
		S	1.0 E-05	1.5 E-05	8.3 E-06	1.0 E-05	9.0 E-09
						1.0 E-04	5.3 E-08
Pu-240	6.54E+03 a	M	5.0 E-04	4.7 E-05	3.2 E-05	5.0 E-04	2.5 E-07
		S	1.0 E-05	1.5 E-05	8.3 E-06	1.0 E-05	9.0 E-09
						1.0 E-04	5.3 E-08
Pu-241	14.4 a	M	5.0 E-04	8.5 E-07	5.8 E-07	5.0 E-04	4.7 E-09
		S	1.0 E-05	1.6 E-07	8.4 E-08	1.0 E-05	1.1 E-10
						1.0 E-04	9.6 E-10
Pu-242	3.76E+05 a	M	5.0 E-04	4.4 E-05	3.1 E-05	5.0 E-04	2.4 E-07
		S	1.0 E-05	1.4 E-05	7.7 E-06	1.0 E-05	8.6 E-09
						1.0 E-04	5.0 E-08
Pu-243	4.95 h	M	5.0 E-04	8.2 E-11	1.1 E-10	5.0 E-04	8.5 E-11
		S	1.0 E-05	8.5 E-11	1.1 E-10	1.0 E-05	8.5 E-11
						1.0 E-04	8.5 E-11
Pu-244	8.26E+07 a	M	5.0 E-04	4.4 E-05	3.0 E-05	5.0 E-04	2.4 E-07
		S	1.0 E-05	1.3 E-05	7.4 E-06	1.0 E-05	1.1 E-08
						1.0 E-04	5.2 E-08
Pu-245	10.5 h	M	5.0 E-04	4.5 E-10	6.1 E-10	5.0 E-04	7.2 E-10
		S	1.0 E-05	4.8 E-10	6.5 E-10	1.0 E-05	7.2 E-10
						1.0 E-04	7.2 E-10
Pu-246	10.9 d	M	5.0 E-04	7.0 E-09	6.5 E-09	5.0 E-04	3.3 E-09
		S	1.0 E-05	7.6 E-09	7.0 E-09	1.0 E-05	3.3 E-09
						1.0 E-04	3.3 E-09
Americium							
Am-237	1.22 h	M	5.0 E-04	2.5 E-11	3.6 E-11	5.0 E-04	1.8 E-11
Am-238	1.63 h	M	5.0 E-04	8.5 E-11	6.6 E-11	5.0 E-04	3.2 E-11
Am-239	11.9 h	M	5.0 E-04	2.2 E-10	2.9 E-10	5.0 E-04	2.4 E-10

Am-240	2.12 d	M	5.0 E-04	4.4 E-10	5.9 E-10	5.0 E-04	5.8 E-10
Am-241	4.32E+02 a	M	5.0 E-04	3.9 E-05	2.7 E-05	5.0 E-04	2.0 E-07
Am-242	16.0 h	M	5.0 E-04	1.6 E-08	1.2 E-08	5.0 E-04	3.0 E-10
Am-242m	1.52E+02 a	M	5.0 E-04	3.5 E-05	2.4 E-05	5.0 E-04	1.9 E-07
Am-243	7.38E+03 a	M	5.0 E-04	3.9 E-05	2.7 E-05	5.0 E-04	2.0 E-07
Am-244	10.1 h	M	5.0 E-04	1.9 E-09	1.5 E-09	5.0 E-04	4.6 E-10
Am-244m	0.433 h	M	5.0 E-04	7.9 E-11	6.2 E-11	5.0 E-04	2.9 E-11
Am-245	2.05 h	M	5.0 E-04	5.3 E-11	7.6 E-11	5.0 E-04	6.2 E-11
Am-246	0.650 h	M	5.0 E-04	6.8 E-11	1.1 E-10	5.0 E-04	5.8 E-11
Am-246m	0.417 h	M	5.0 E-04	2.3 E-11	3.8 E-11	5.0 E-04	3.4 E-11
Curium							
Cm-238	2.40 h	M	5.0 E-04	4.1 E-09	4.8 E-09	5.0 E-04	8.0 E-11
Cm-240	27.0 d	M	5.0 E-04	2.9 E-06	2.3 E-06	5.0 E-04	7.6 E-09
Cm-241	32.8 d	M	5.0 E-04	3.4 E-08	2.6 E-08	5.0 E-04	9.1 E-10
Cm-242	163 d	M	5.0 E-04	4.8 E-06	3.7 E-06	5.0 E-04	1.2 E-08
Cm-243	28.5 a	M	5.0 E-04	2.9 E-05	2.0 E-05	5.0 E-04	1.5 E-07
Cm-244	18.1 a	M	5.0 E-04	2.5 E-05	1.7 E-05	5.0 E-04	1.2 E-07
Cm-245	8.50E+03 a	M	5.0 E-04	4.0 E-05	2.7 E-05	5.0 E-04	2.1 E-07
Cm-246	4.73E+03 a	M	5.0 E-04	4.0 E-05	2.7 E-05	5.0 E-04	2.1 E-07
Cm-247	1.56E+07 a	M	5.0 E-04	3.6 E-05	2.5 E-05	5.0 E-04	1.9 E-07
Cm-248	3.39E+05 a	M	5.0 E-04	1.4 E-04	9.5 E-05	5.0 E-04	7.7 E-07
Cm-249	1.07 h	M	5.0 E-04	3.2 E-11	5.1 E-11	5.0 E-04	3.1 E-11
Cm-250	6.90E+03 a	M	5.0 E-04	7.9 E-04	5.4 E-04	5.0 E-04	4.4 E-06
Berkelium							
Bk-245	4.94 d	M	5.0 E-04	2.0 E-09	1.8 E-09	5.0 E-04	5.7 E-10
Bk-246	1.83 d	M	5.0 E-04	3.4 E-10	4.6 E-10	5.0 E-04	4.8 E-10
Bk-247	1.38E+03 a	M	5.0 E-04	6.5 E-05	4.5 E-05	5.0 E-04	3.5 E-07
Bk-249	320 d	M	5.0 E-04	1.5 E-07	1.0 E-07	5.0 E-04	9.7 E-10
Bk-250	3.22 h	M	5.0 E-04	9.6 E-10	7.1 E-10	5.0 E-04	1.4 E-10
Californium							
Cf-244	0.323 h	M	5.0 E-04	1.3 E-08	1.8 E-08	5.0 E-04	7.0 E-11
Cf-246	1.49 d	M	5.0 E-04	4.2 E-07	3.5 E-07	5.0 E-04	3.3 E-09
Cf-248	334 d	M	5.0 E-04	8.2 E-06	6.1 E-06	5.0 E-04	2.8 E-08
Cf-249	3.50E+02 a	M	5.0 E-04	6.6 E-05	4.5 E-05	5.0 E-04	3.5 E-07
Cf-250	13.1 a	M	5.0 E-04	3.2 E-05	2.2 E-05	5.0 E-04	1.6 E-07
Cf-251	8.98E+02 a	M	5.0 E-04	6.7 E-05	4.6 E-05	5.0 E-04	3.6 E-07
Cf-252	2.64 a	M	5.0 E-04	1.8 E-05	1.3 E-05	5.0 E-04	9.0 E-08
Cf-253	17.8 d	M	5.0 E-04	1.2 E-06	1.0 E-06	5.0 E-04	1.4 E-09
Cf-254	60.5 d	M	5.0 E-04	3.7 E-05	2.2 E-05	5.0 E-04	4.0 E-07
Einsteinium							
Es-250	2.10 h	M	5.0 E-04	5.9 E-10	4.2 E-10	5.0 E-04	2.1 E-11
Es-251	1.38 d	M	5.0 E-04	2.0 E-09	1.7 E-09	5.0 E-04	1.7 E-10
Es-253	20.5 d	M	5.0 E-04	2.5 E-06	2.1 E-06	5.0 E-04	6.1 E-09
Es-254	276 d	M	5.0 E-04	8.0 E-06	6.0 E-06	5.0 E-04	2.8 E-08
Es-254m	1.64 d	M	5.0 E-04	4.4 E-07	3.7 E-07	5.0 E-04	4.2 E-09
Fermium							
Fm-252	22.7 h	M	5.0 E-04	3.0 E-07	2.6 E-07	5.0 E-04	2.7 E-09
Fm-253	3.00 d	M	5.0 E-04	3.7 E-07	3.0 E-07	5.0 E-04	9.1 E-10
Fm-254	3.24 h	M	5.0 E-04	5.6 E-08	7.7 E-08	5.0 E-04	4.4 E-10
Fm-255	20.1 h	M	5.0 E-04	2.5 E-07	2.6 E-07	5.0 E-04	2.5 E-09
Fm-257	101 d	M	5.0 E-04	6.6 E-06	5.2 E-06	5.0 E-04	1.5 E-08
Mendeleviu m							
Md-257	5.20 h	M	5.0 E-04	2.3 E-08	2.0 E-08	5.0 E-04	1.2 E-10
Md-258	55.0 d	M	5.0 E-04	5.5 E-06	4.4 E-06	5.0 E-04	1.3 E-08

NOTE:

(1). The column “Type”contains the characterization of absorption speed from lungs, letters F, M and/or respectively the signification of absorption speed: fast, moderate and slow.

TABLE 4-C2
Coefficients of effective dose for soluble and chemically active gas

Nucleus/Chemical Form	$t_{1/2}$	h(g) (Sv Bq^{-1})
Tritium gas	12,3a	1,8 E-15
H_3O	12,3a	1,8 E-11
Tritium organic linked	12,3a	4,1 E-11
Carbon – 11 vapours	0,34h	3,2 E-12
Carbon – 11 dioxide	0,34h	2,2 E-12
Carbon – 11 monoxide	0,34h	1,2 E-12
Carbon – 14 vapours	5,73E+3a	5,8 E-10
Carbon – 14 dioxide	5,73E+3a	6,5 E-12
Carbon – 14 monoxide	5,73E+3a	8,0 E-13
Sulfur – 35 vapours	87,4d	1,2 E-10
Nickel – 56 carbides	6,10d	1,2 E-9
Nickel – 57 carbides	1,50d	5,6 E-10
Nickel – 59 carbides	7,50 E+4d	8,3 E-10
Nickel – 63 carbides	96,0a	2,0 E-9
Nickel – 65 carbides	2,52h	3,6 E-10
Nickel – 66 carbides	2,27d	1,6 E-9
Iodine – 120 vapours	1,35h	3,0 E-10
Iodine – 120m vapours	0,88h	1,8 E-10
Iodine – 121 vapours	2,12h	8,6 E-11
Iodine – 123 vapours	13,2h	2,1 E-10
Iodine – 124 vapours	4,18d	1,2 E-8
Iodine – 125 vapours	60,1d	1,4 E-8
Iodine – 126 vapours	13,0d	2,6 E-8
Iodine – 128 vapours	0,42h	6,5 E-11
Iodine – 129 vapours	1,57 E+7a	9,6 E-8
Iodine – 130 vapours	12,4h	1,9 E-9
Iodine – 131 vapours	8,04d	2,0 E-8
Iodine – 132 vapours	2,30h	3,1 E-10
Iodine – 132m vapours	1,39h	2,7 E-10
Iodine – 133 vapours	20,8h	4,0 E-9
Iodine – 134 vapours	0,88h	1,5 E-10
Iodine – 135 vapours	6,61h	9,2 E-10
Mercury – 193 vapours	3,50h	1,1 E-9
Mercury – 193m vapours	11,1h	3,1 E-9
Mercury – 194 vapours	2,60E+2a	4,0 E-8
Mercury – 195 vapours	9,90h	1,4 E-9
Mercury – 195m vapours	1,73d	8,2 E-9
Mercury – 197 vapours	2,67d	4,4 E-9
Mercury – 197m vapours	2,38h	5,8 E-9
Mercury – 199m vapours	0,71h	1,8 E-10
Mercury – 203 vapours	46,60d	7,0 E-9

TABLE 4-D

The compounds and the values for the factors f_1 which have been used for the coeficients calculation of dose for ingestion

Element	f_1	Compounds
Hydrogen	1.000	H_3O (ingestion)
	1.000	Tritium organic linked
Carbon	1.000	Compounds organic marked
Fluorine	1.000	All compounds
Sodium	1.000	All compounds
Magnesium	0.500	All compounds
Aluminum	0.010	All compounds
Silicon	0.010	All compounds
Phosphorus	0.800	All compounds
Sulfur	0.800 0.100 1.000	Inorganic Compounds Elemental Sulfur Inorganic Sulfur
Chlorine	1.000	All compounds
Potassium	1.000	All compounds
Calcium	0.300	All compounds
Scandium	1.0 E-04	All compounds
Titanium	0.010	All compounds
Vanadium	0.010	All compounds
Chromium	0.100 0.010	Hexavalent Compounds Trivalent Compounds
Manganese	0.100	All compounds
Iron	0.100	All compounds
Cobalt	0.100 0.050	All unspecified compounds Oxides, hydroxides and inogarnic compounds
Nickel	0.050	All compounds
Copper	0.500	All compounds
Zinc	0.500	All compounds
Gallium	0.001	All compounds
Germanium	1.000	All compounds
Arsenic	0.500	All compounds
Selenium	0.800 0.050	All unspecified compounds Elemental Selenium and sels of selenium
Bromine	1.000	All compounds

Rubidium	1.000	All compounds
Strontium	0.300 0.010	All unspecified compounds Strontium Titanite(SrTiO3)
Yttrium	1.0 E-04	All compounds
Zirconium	0.002	All compounds
Niobium	0.010	All compounds
Molybdenum	0.800 0.050	All unspecified compounds Molybdenum Sulphides
Technetium	0.800	All compounds
Ruthenium	0.050	All compounds
Rhodium	0.050	All compounds
Palladium	0.005	All compounds
Silver	0.050	All compounds
Cadmium	0.050	All inorganic compounds
Indium	0.020	All compounds
Tin	0.020	All compounds
Antimony	0.100	All compounds
Tellurium	0.300	All compounds
Iodine	1.000	All compounds
Caesium	1.000	All compounds
Barium	0.100	All compounds
Lanthanum	5.0 E-04	All compounds
Cerium	5.0 E-04	All compounds
Praseodymium	5.0 E-04	All compounds
Neodymium	5.0 E-04	All compounds
Promethium	5.0 E-04	All compounds
Samarium	5.0 E-04	All compounds
Europium	5.0 E-04	All compounds
Gadolinium	5.0 E-04	All compounds
Terbium	5.0 E-04	All compounds
Dysprosium	5.0 E-04	All compounds
Holmium	5.0 E-04	All compounds
Erbium	5.0 E-04	All compounds
Thulium	5.0 E-04	All compounds
Ytterbium	5.0 E-04	All compounds
Lutetium	5.0 E-04	All compounds

Hafnium	0.002	All compounds
Tantalum	0.001	All compounds
Wolfram	0.300 0.010	All unspecified compounds Wolframic Acid
Rhenium	0.800	All compounds
Osmium	0.010	All compounds
Iridium	0.010	All compounds
Platinum	0.010	All compounds
Gold	0.100	All compounds
Mercury	0.020	All inorganic compounds
Mercury	1.000 0.400	Mercury Methyl All inorganic unspecified compounds
Thallium	1.000	All compounds
Lead	0.200	All compounds
Bismuth	0.050	All compounds
Polonium	0.100	All compounds
Astatine	1.000	All compounds
Francium	1.000	All compounds
Radium	0.200	All compounds
Actinium	5.0 E-04	All compounds
Thorium	5.0 E-04 2.0 E-04	All unspecified compounds Oxides and hydroxides
Protactinium	5.0 E-04	All compounds

Uranium	0.020 0.002	All unspecified compounds The most tetravalent compounds, for eg.:, UO_2, U_3O_8, UF_4
Neptunium	5.0 E-04	All compounds
Plutonium	5.0 E-04 1.0 E-04 1.0 E-05	All unspecified compounds Nitrates Insoluble Oxides
Americium	5.0 E-04	All compounds
Curium	5.0 E-04	All compounds
Berkelium	5.0 E-04	All compounds
Californium	5.0 E-04	All compounds
Einsteinium	5.0 E-04	All compounds
Fermium	5.0 E-04	All compounds
Mendelevium	5.0 E-04	All compounds

TABLE 4-E
The compounds, the types of pulmonary absorption and the values for factors f_1 which have been used for the coeficients calculation of dose for inhalation

Element	Type	f_1	Compounds
Beryllium	M S	0.005 0.005	All unspecified compounds Oxides, Halogens and Nitrates
Fluorine	F M S	1.000 1.000 1.000	Determined by the combination of cations Determined by the combination of cations Determined by the combination of cations
Sodium	F	1.000	All compounds
Magnesium	F M	0.500 0.500	All unspecified compounds Oxides, hydroxides, Carbides, Halogens and Nitrates
Aluminum	F M	0.010 0.010	All unspecified compounds Oxides, hydroxides, Carbides, Halogens and Nitrates and metallic Aluminum
Silicon	F M S	0.010 0.010 0.010	All unspecified compounds Oxides, hydroxides, Carbides, Halogens and Nitrates Glass Gas Dispersoids with Aluminosilicates
Phosphorus	F M	0.800 0.800	All unspecified compounds A few phosphates determined by the combination of cations
Sulfur	F M	0.800 0.800	Sulphides and sulphates determined by the combination of cations Elemental Sulphur. Sulphurs and sulphates: determined by the combination of cations
Chlorine	F M	1.000 1.000	Determined by the combination of cations Determined by the combination of cations
Potassium	F	1.000	All compounds
Calcium	M	0.300	All compounds
Scandium	S	1.0 E-04	All compounds
Titanium	F M S	0.010 0.010 0.010	All unspecified compounds Oxides, hydroxides, Carbides, Halogens and Nitrates Strontium titanite ($SrTiO_3$)
Vanadium	F M	0.010 0.010	All unspecified compounds Oxides, hydroxides, Carbides and Halogens
Chromium	F M S	0.100 0.100 0.100	All unspecified compounds Halogens and Nitrates Oxides and hydroxides
Manganese	F M	0.100 0.100	All unspecified compounds Oxides, Hydroxides, Carbides, Halogens and Nitrates
Iron	F M	0.100 0.100	All unspecified compounds Oxides, Hydroxides and Halogens
Cobalt	M S	0.100 0.050	All unspecified compounds Oxides, Hydroxides, Halogens and Nitrates
Nickel	F M	0.050 0.050	All unspecified compounds Oxides, Hydroxides and Carbides

Copper	F M S	0.500 0.500 0.500	All unspecified inorganic compounds Sulphides, Halogens and Nitrates Oxides and Hydroxides
Zinc	S	0.500	All compounds
Gallium	F M	0.001 0.001	All unspecified compounds Oxides, Hydroxides, Carbides, Halogens and Nitrates
Germanium	F M	1.000 1.000	All unspecified compounds Oxides,Sulphides and Halogens
Arsenic	M	0.500	All compounds
Selenium	F M	0.800 0.800	All unspecified inorganic compounds Elemental Selenium, Oxides, Hydroxides and Carbides
Bromine	F M	1.000 1.000	Determined by the combination of cations Determined by the combination of cations
Rubidium	F	1.000	All compounds
Strontium	F S	0.300 0.010	All unspecified compounds Strontium titanite ($SrTiO_3$)
Yttrium	M S	1.0 E-04 1.0 E-04	All unspecified compounds Oxides and Hydroxides
Zirconium	F M S	0.002 0.002 0.002	All unspecified compounds Oxides, Hydroxides, Carbides, Halogens and Nitrates Zirconium Carbides
Niobium	M S	0.010 0.010	All unspecified compounds Oxides and Hydroxides
Molybdenum	F S	0.800 0.050	All unspecified compounds Molybdenum Sulphides, Oxides and Hydroxides
Technetium	F M	0.800 0.800	All unspecified compounds Oxides, Hydroxides, Halogens and Nitrates
Ruthenium	F M S	0.050 0.050 0.050	All unspecified compounds Halogens Oxides and Hydroxides
Rhodium	F M S	0.050 0.050 0.050	All unspecified compounds Halogens Oxides and Hydroxides
Palladium	F M S	0.005 0.005 0.005	All unspecified compounds Nitrates and Halogens Oxides and Hydroxides
Silver	F M S	0.050 0.050 0.050	All unspecified compounds and metallic Silver Nitrates and Sulphides Oxides, Hydroxides and Carbides
Cadmium	F M S	0.050 0.050 0.050	All unspecified compounds Sulphides, Halogens and Nitrates Oxides and Hydroxides
Indium	F M	0.020 0.020	All unspecified compounds Oxides, Hydroxides, Halogens and Nitrates
Tin	F M	0.020 0.020	All unspecified compounds Tin Phosphate, Sulphides, Oxides, Hydroxides, Halogens and Nitrates
Antimony	F M	0.100 0.010	All unspecified compounds Oxides, Hydroxides, Halogens, Nitrates, Sulphides and

			Sulphates
Tellurium	F M	0.300 0.300	All unspecified compounds Oxides, Hydroxides and Nitrates
Iodine	F	1.000	All compounds
Caesium	F	1.000	All compounds
Barium	F	0.100	All compounds
Lanthanum	F M	5.0 E-04 5.0 E-04	All unspecified compounds Oxides and Hydroxides
Cerium	M S	5.0 E-04 5.0 E-04	All unspecified compounds Oxides, Hydroxides and Fluorides
Praseodymium	M S	5.0 E-04 5.0 E-04	All unspecified compounds Oxides, Hydroxides, Carbides and Fluorides
Neodymium	M S	5.0 E-04 5.0 E-04	All unspecified compounds Oxides, Hydroxides, Carbides and Fluorides
Promethium	M S	5.0 E-04 5.0 E-04	All unspecified compounds Oxides, Hydroxides, Carbides and Fluorides
Samarium	M	5.0 E-04	All compounds
Europium	M	5.0 E-04	All compounds
Gadolinium	F M	5.0 E-04 5.0 E-04	All unspecified compounds Oxides, Hydroxides and Fluorides
Terbium	M	5.0 E-04	All compounds
Dysprosium	M	5.0 E-04	All compounds
Holmium	M	5.0 E-04	All unspecified compounds
Erbium	M	5.0 E-04	All compounds
Thulium	M	5.0 E-04	All compounds
Ytterbium	M S	5.0 E-04 5.0 E-04	All unspecified compounds Oxides, Hydroxides and Fluorides
Lutetium	M S	5.0 E-04 5.0 E-04	All unspecified compounds Oxides, Hydroxides and Fluorides
Hafnium	F M	0.002 0.002	All unspecified compounds Oxides, Hydroxides, Carbides, Halogens and Nitrates
Tantalum	M S	0.001 0.001	All unspecified compounds Elemental Tantalum, Oxides, Hydroxides, Halogens, Nitrates and Nitrites
Wolfram	F	0.300	All compounds
Rhenium	F M	0.800 0.800	All unspecified compounds Oxides, Hydroxides, Halogens and Nitrates
Osmium	F M S	0.010 0.010 0.010	All unspecified compounds Halogens and Nitrates Oxides and Hydroxides
Iridium	F M S	0.010 0.010 0.010	All unspecified compounds Metallic Iridium, Halogens and Nitrates Oxides and Hydroxides
Platinum	F	0.010	All compounds

Gold	F M S	0.100 0.100 0.100	All unspecified compounds Halogens and Nitrates Oxides and Hydroxides
Mercury	F M	0.020 0.020	Sulphates Oxides, Hydroxides, Halogens, Sulphides and Nitrates
Mercury	F	0.400	All inorganic compounds
Thallium	F	1.000	All compounds
Lead	F	0.200	All compounds
Bismuth	F M	0.050 0.050	Bismuth Nitrate All unspecified compounds
Polonium	F M	0.100 0.100	All unspecified compounds Oxides, Hydroxides and Nitrates
Astatine	F M	1.000 1.000	Determined by the combination of cations Determined by the combination of cations
Francium	F	1.000	All compounds
Radium	M	0.200	All compounds
Actinium	F M S	5.0 E-04 5.0 E-04 5.0 E-04	All unspecified compounds Halogens and Nitrates Oxides and Hydroxides
Thorium	M S	5.0 E-04 2.0 E-04	All unspecified compounds Oxides and Hydroxides
Protactinium	M S	5.0 E-04 5.0 E-04	All unspecified compounds Oxides and Hydroxides
Uranium	F M S	0.020 0.020 0.002	The most hexavalent compounds, for eg.: UF_6 , UO_2F_2]i $UO_2(NO_3)_2$ The compounds less soluble, for eg.: UO_3, UF_4, UCl_4]i the most from the other hexavalent compounds The most insoluble compounds, for eg.: UO_2]i U_3O_8
Neptunium	M	5.0 E-04	All compounds
Plutonium	M S	5.0 E-04 1.0 E-05	All unspecified compounds Insoluble Oxides
Americium	M	5.0 E-04	All compounds
Curium	M	5.0 E-04	All compounds
Berkelium	M	5.0 E-04	All compounds
Californium	M	5.0 E-04	All compounds
Einsteinium	M	5.0 E-04	All compounds
Fermium	M	5.0 E-04	All compounds
Mendelevium	M	5.0 E-04	All compounds

Note:

(1). The column Type”contains the characterization of absorption speed from lungs, the letters F, M and S have respectively the signification of absorption speed fast, moderate and slow.

ANNEX 5
Symbol of radiation danger