

**ROMANIA**  
**MINISTERUL APELOR ȘI PROTECȚIEI MEDIULUI**  
**COMISIA NAȚIONALĂ PENTRU CONTROLUL ACTIVITĂȚILOR NUCLEARE**

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**NSR-01**

**NORMELE FUNDAMENTALE  
DE SECURITATE RADIOLOGICĂ**



# COMISIA NATIONALA PENTRU CONTROLUL ACTIVITATILOR NUCLEARE

NSR-01

**NORME FUNDAMENTALE DE SECURITATE RADIOLOGICA** au fost aprobate prin **Ordinul Presedintelui CNCAN nr. 14/24.01.2000** si publicate in **Monitorul Oficial al Romaniei Partea I nr. 404 bis /29.08.2000**

## NORME FUNDAMENTALE DE SECURITATE RADIOLOGICA

### Cap. I SCOP SI DEFINITII

**Art. 1.** - Prezentele norme stabilesc cerintele referitoare la asigurarea securitatii radiologice a personalului expus profesional, a populatiei si a mediului, potrivit prevederilor Legii 111/1996 privind desfasurarea in siguranta a activitatilor nucleare, republicata.

**Art. 2.** - Termenii si expresiile utilizate in prezentele norme sunt definite in anexele nr. 1 si 3.

### Cap. II DOMENIUL DE APLICABILITATE

**Art. 3.** - (1) Prezentele norme se aplica practicilor care implica riscul expunerii la radiatii ionizante provenite de la:

- a) surse artificiale;
- b) surse naturale, in cazul in care radionuclizii sunt sau au fost procesati in vederea folosirii proprietatilor lor de substante radioactive, fisionabile sau fertile;
- c) echipamente electrice care, operand la o diferenta de potential de peste 5 kV, genereaza asemenea radiatii.

(2) Prezentele norme se aplica de asemenea activitatilor care implica prezenta surselor naturale de radiatii in alte situatii decat cele prevazute la al. (1), lit. b) si care conduc la o crestere semnificativa a expunerii lucratorilor sau a persoanelor din populatie.

(3) Prezentele norme se aplica de asemenea interventilor in caz de urgente radiologice, precum si in cazul expunerilor remanente ulterioare unei urgente radiologice, sau unei practici ori activitati profesionale vechi ori desfasurate in trecut.

**Art. 4.** - Prezentele norme nu se aplica in cazul:  
a) expunerilor datorate radonului in locuinte;  
b) expunerilor datorate fondului natural de radiatii;  
c) practicilor prevazute la art. 3, alin (1), lit. a) si b) care implica utilizarea de materiale pentru care sunt indeplinite cerintele de excludere din anexa nr. 2.

### Cap. III AUTORIZAREA PRACTICILOR

#### Autorizarea

**Art. 5.** - (1) Practicile prevazute la art. 3 alin (1) necesita, potrivit dispozitiilor art. 8 din Legea nr.

111/1996, privind desfasurarea in siguranta a activitatilor nucleare, republicata, o autorizatie din partea Comisiei Nationale pentru Controlul Activitatilor Nucleare, denumita in continuare CNCAN.

(2) Regimul de autorizare se aplica si in cazul depozitarii temporare a deeurilor radioactive dupa incheierea definitiva a practicii, dispunerii finale, reciclarii sau reutilizarii surselor inchise, deschise si a materialelor radioactive rezultate din orice activitate supusa cerintelor de autorizare.

**Art. 6.** - (1) Autorizatia emisa de CNCAN, potrivit dispozitiilor art. 5, este prealabila desfasurarii practicii.

(2) Exceptiile privitoare la caracterul prealabil al autorizatiei se stabilesc de CNCAN prin reglementarile specifice, potrivit legii.

**Art. 7.** - Continutul, conditiile si etapele procesului de autorizare a practicilor se stabilesc prin reglementari specifice emise de CNCAN.

#### Exceptiile de la autorizare

**Art. 8.** - (1) Sunt exceptate de la autorizarea de catre CNCAN urmatoarele practici:

a) care implica surse radioactive si materiale radioactive a caror activitate totala nu depaseste nivelul de exceptare prevazut in coloana 5 a Tabelului 2-B din anexa nr. 2 sau, in cazuri speciale, alt nivel de exceptare stabilit de CNCAN, care satisface criteriile fundamentale prevazute in anexa nr. 2 .

b) care implica surse radioactive si materiale radioactive a caror concentratie a activitatii pe unitatea de masa nu depaseste nivelul de exceptare prevazut in coloana 4 a Tabelului 2-B din anexa nr. 2 sau, in cazuri speciale, alt nivel de exceptare stabilit de CNCAN, care satisface criteriile fundamentale prevazute in anexa nr. 2 .

c) care implica instalatii nucleare continand surse radioactive, a caror activitate totala si concentratie a activitatii depasesc nivelurile de exceptare prevazute la punctele a) si b) daca sunt satisfacute conditiile stabilite de CNCAN.

d) care implica tuburi catodice destinate afisarii de imagini vizuale, sau alte aparate electrice operand la o diferenta de potential de maximum 30 kV, cu conditia ca aceasta operare sa nu produca, in conditii normale de lucru, un debit al echivalentului de doza ambiental  $H'(10)$  si nici un debit al echivalentului de doza directional  $H'(0,07;\Omega)$  (oricare ar fi directia  $\Omega$ ), mai

mare de 1  $\mu\text{Sv}$  pe ora la distanta de 0,1m de orice suprafata accesibila a instalatiei ;

e) care implica aparate electrice operand la diferente de potential mai mari de 30kV cu conditia ca tipul de aparat respectiv sa obtina o autorizatie de securitate radiologica in care se mentioneaza exceptarea utilizarii de la autorizare, iar operarea aparatului sa nu produca, in conditii normale de lucru, un debit al echivalentului de doza ambiental  $H^*(10)$  si nici un debit al echivalentului de doza directional  $H^*(0,07;\Omega)$  (oricare ar fi directia  $\Omega$ ), mai mare de 1  $\mu\text{Sv}$  pe ora la distanta de 0,1 m de orice suprafata accesibila a instalatiei;

f) care implica materiale contaminate cu radionuclizi rezultate din practici autorizate care indeplinesc nivelurile de eliberare de sub regimul de autorizare stabilite de CNCAN.

(2) Dispozitiile al. (1) nu se aplica practicilor care implica importul, furnizarea, repararea si montarea - instalarea.

(3) Eliberarile prevazute la alin (1) lit. f) se vor face numai dupa obtinerea autorizatiei din partea CNCAN.

**Art. 9.** - Pentru a fi exceptate de la autorizare, practicile prevazute la art. 8 lit. c) trebuie sa indeplineasca cumulativ urmatoarele conditii :

a) sursele radioactive sunt surse inchise;  
b) debitul echivalentului de doza ambiental  $H^*(10)$ , si debitul echivalentului de doza directional  $H^*(0,07;\Omega)$  (oricare ar fi directia  $\Omega$ ), nu depasesc 1  $\mu\text{Sv}$  pe ora la distanta de 0,1m de orice suprafata accesibila a instalatiei;

c) sunt stabilite conditiile de dispunere ca deseuri radioactive;

d) tipul de instalatie a obtinut autorizatia de securitate radiologica in care se mentioneaza exceptarea de la autorizare a practicilor implicand utilizarea instalatiilor respective.

**Art. 10.** - (1) Persoanele fizice si juridice care detin, depoziteaza sau utilizeaza instalatiile nucleare prevazute la art. 8 lit. c) trebuie sa respecte prevederile instructiunilor de utilizare emise de producator privind protectia fizica, radioprotectia, evidenta si gestiunea surselor, predarea ca deșeu radioactiv precum si raportarea pierderii sau furtului surselor radioactive.

(2) Continutul instructiunilor de utilizare emise de producator se aproba de CNCAN cu ocazia acordarii autorizatiei de securitate radiologica a instalatiilor nucleare respective.

**Art. 11.** - (1) Depozitarea temporara ca deșeu radioactiv dupa incheierea definitiva a practicii, dispunerea finala, reciclarea si reutilizarea materialelor radioactive rezultate din orice activitate supusa cerintelor de autorizare, nu mai sunt supuse ulterior cerintelor de autorizare in cazul cand ele indeplinesc conditiile privind nivelurile de eliberare de sub regimul de autorizare care vor fi stabilite de CNCAN pentru fiecare situatie concreta in parte.

(2) Nivelurile de eliberare de sub regimul de autorizare vor fi stabilite de CNCAN tinand cont de normativele tehnice ale Comisiei Europene.

## Cap.IV

### JUSTIFICAREA, OPTIMIZAREA SI LIMITAREA DOZELOR PENTRU PRACTICILE DIN DOMENIUL NUCLEAR

#### Sectiunea I Principii generale

##### Justificarea practicilor

**Art. 12.** - (1) Toate practicile noi care conduc la expunerea la radiatii ionizante vor fi justificate in scris de catre initiatorul acestora, precizandu-se avantajele lor economice, sociale sau de alta natura, in comparatie cu detrimentul pe care ar putea sa il cauzeze sanatatii.

(2) CNCAN va autoriza aceste practici, numai daca considera justificarea ca fiind temeinica.

**Art. 13.** - (1) Practicile existente vor fi reevaluate ori de cate ori apar situatii noi cu privire la consecintele si eficienta acestora, in conditiile prevazute la art. 12.

(2) Reevaluarea justificarii practicii este coordonata de CNCAN.

(3) Daca practica nu se mai justifica, CNCAN poate dispune reducerea extinderii practicii sau chiar oprirea acesteia.

**Art. 14.** - Sunt considerate nejustificate urmatoarele practici :

a) cele care implica activarea prin iradiere sau introducerea deliberata de substante radioactive in alimente, bauturi, cosmetice, sau orice alte marfuri sau produse destinate ingestiei, inhalarii sau transferului transdermic de catre o fiinta umana;

b) cele care implica utilizarea radiatiilor sau a substantelor radioactive in scop de divertisment, recreere sau in produse ca jucarii, bijuterii personale sau ornamente.

**Art. 15.** - Prevederile art. 14 lit. (a) nu se aplica practicilor referitoare la expunerile medicale.

##### Optimizarea practicilor

**Art. 16.** - Solicitantul, respectiv titularul de autorizatie, este obligat sa demonstreze ca sunt intreprinse toate actiunile pentru a asigura optimizarea radioprotectiei, in sensul de a asigura ca toate expunerile, inclusiv cele potentiale, din cadrul practicii desfasurate sa fie mentinute la cel mai scazut nivel rezonabil posibil, luand in considerare factorii economici si sociali - principiul ALARA .

##### Limitarea dozelor si constrangeri de doza

**Art. 17.** - (1) Suma dozelor anuale provenind de la toate practicile relevante trebuie sa nu depaseasca limitele de doza prevazute de prezentele norme pentru persoane expuse profesional, persoane in curs de pregatire si pentru persoane din populatie.

(2) Prevederile al. (1) nu se aplica in cazul urmatoarelor tipuri de expunere :

a) expunerea persoanelor ca parte a propriului diagnostic sau tratament medical ;

b) expunerea persoanelor care ajuta, in deplina cunostinta si in mod voluntar, in afara propriei activitati, la sprijinirea sau sustinerea pacientilor aflati in curs de diagnostic sau tratament medical ;

c) expunerea voluntarilor care participa la programele de cercetari medicale sau biomedicale.

**Art. 18.** - (1) CNCAN stabileste, ori de cate ori este cazul, constrangeri de doza pentru practici sau pentru anumite surse de radiatii din cadrul practicii.

(2) Constrangerile de doza vor fi utilizate ca margine superioara in procesul de optimizare a radioprotectiei.

**Art. 19.** - In cadrul procesului de autorizare si control al practicilor implicand expunerea medicala, CNCAN va verifica si:

a) respectarea constrangerilor de doza stabilite de Ministerul Sanatatii sub forma de niveluri de referinta pentru expunerea medicala;

b) respectarea constrangerilor de doza stabilite de Ministerul Sanatatii in cadrul procedurilor aplicabile persoanelor expuse conform art. 17 al. (2), lit. b) si c).

**Art. 20.** - (1) Titularul de autorizatie stabileste, ori de cate ori este cazul, limite derivate de emisie a efluentilor radioactivi, cu ajutorul unui expert acreditat sau al unui organism acreditat de protectie radiologica.

(2) CNCAN aproba limitele derivate in cadrul procesului de autorizare.

## Sectiunea II

### Cerinte specifice privind limitarea dozei

#### Limite de doza pentru persoane expuse profesional

**Art. 21.** - Este interzisa utilizarea persoanelor sub 18 ani in activitati care ar duce la expunerea lor profesionala, cu exceptia persoanelor aflate in curs de pregatire profesionala pentru practici in domeniul nuclear.

**Art. 22.** - (1) Limita dozei efective pentru personalul expus profesional este de 20 mSv (milisievert) pe an.

(2) Cu respectarea dispozitiilor al. (1), sunt valabile si urmatoarele limite de doza echivalenta:

a) 150 mSv pe an pentru cristalin;

b) 500 mSv pe an pentru piele; limita se aplica pentru valoarea medie a dozei pe 1 cm<sup>2</sup>, pe cea mai puternic iradiata zona a pielii;

c) 500 mSv pe an pentru extremitatile mainilor si picioarelor.

#### Protectia speciala in timpul perioadelor de graviditate si de alaptare

**Art. 23.** - (1) Indata ce o femeie expusa profesional ia cunostinta de faptul ca este gravida, ea trebuie sa informeze in scris titularul de autorizatie despre acest fapt.

(2) Titularul de autorizatie va lua imediat toate masurile pentru a asigura protectia fatului la nivelul de doza prevazut pentru populatie.

(3) Conditile de lucru ale femeii gravide trebuie sa asigure ca doza efectiva primita de fat sa fie la cel mai scazut nivel posibil, fara sa depaseasca 1 mSv pe toata perioada de graviditate ramasa.

**Art. 24.** - (1) Femeile expuse profesional care alaptea trebuie sa anunte in scris, de indata, titularul de autorizatie despre acest fapt.

(2) Titularul de autorizatie trebuie sa asigure imediat ca femeile respective sa nu desfasoare, pe perioada alaptarii, activitati implicand un risc semnificativ de contaminare radioactiva.

#### Limite de doza pentru populatie

**Art. 25.** - (1) Limita dozei efective pentru populatie este de 1 mSv pe an.

(2) In situatii speciale, CNCAN poate autoriza o limita superioara anuala de pana la 5 mSv pe an, cu conditia ca valoarea medie pe 5 ani consecutivi a dozei efective sa nu depaseasca 1 mSv pe an.

**Art. 26.** - Cu respectarea conditiilor prevazute la art. 25, pentru populatie sunt valabile si urmatoarele limite de doza echivalenta:

a) 15 mSv pe an pentru cristalin;

b) 50 mSv pe an pentru piele; limita se aplica pentru valoarea medie a dozei pe 1 cm<sup>2</sup>, pe cea mai puternic iradiata zona a pielii.

#### Limite de doza pentru persoane in curs de pregatire

**Art. 27.** - Limitele de doza pentru persoanele avand varsta sub 16 ani care, in timpul pregatirii lor sunt obligate sa utilizeze surse de radiatii, sunt cele prevazute la art. 25 si 26 pentru populatie.

**Art. 28.** - (1) Limita dozei efective pentru persoanele avand varsta cuprinsa intre 16 si 18 ani care, in timpul pregatirii lor, sunt obligate sa utilizeze surse de radiatii, este de 6 mSv pe an.

(2) Cu respectarea dispozitiilor al. (1), sunt valabile si urmatoarele limite de doza echivalenta:

a) 50 mSv pe an pentru cristalin;

b) 150 mSv pe an pentru piele; limita se aplica pentru valoarea medie a dozei pe 1 cm<sup>2</sup>, pe cea mai puternic iradiata zona a pielii;

c) 150 mSv pe an pentru extremitatile mainilor si picioarelor.

**Art. 29.** - Limitele de doza pentru persoanele avand varsta de peste 18 ani care, in timpul pregatirii lor, sunt obligate sa utilizeze surse de radiatii, sunt cele prevazute la art. 22 pentru personalul expus profesional.

#### Expuneri autorizate special

**Art. 30.** - In situatii exceptionale, dar care exclud urgentele radiologice, CNCAN poate sa autorizeze expunerea profesionala individuala a unor anumiți lucratori, care sa depaseasca limita dozei efective prevazuta la art. 22 al. (1), cu conditia ca aceste expuneri sa fie limitate in timp, restrictionate la

anumite spatii de lucru si sa se incadreze sub valoarea maxima aprobata de CNCAN pentru limitele de doza echivalenta prevazute la art. 22 al. (2) .

**Art. 31.** - Titularul de autorizatie care solicita autorizarea speciala pentru expuneri trebuie sa respecte urmatoarele conditii:

a) sa supuna la expuneri autorizate special numai persoanele expuse profesional de categoria A;

b) sa nu supuna la expuneri autorizate special persoanele aflate in curs de pregatire, femeile gravide si femeile care alapteaza, daca aceasta presupune posibilitatea de incorporare sau contaminare radioactiva;

c) sa justifice temeinic aceste expuneri si sa le discute detaliat cu lucratorii, care trebuie sa fie voluntari, cu reprezentantii lor, cu medicul acreditat sau cu organismul acreditat de supraveghere medicala a persoanelor expuse profesional si cu expertul acreditat sau cu organismul acreditat de protectie radiologica ;

d) sa asigure ca intreg personalul implicat in expunerile autorizate special sa fie informat asupra riscurilor presupuse si asupra precautiilor necesare a fi luate;

e) sa asigure ca toate dozele referitoare la aceste expuneri autorizate special sa fie inregistrate separat in dosarul medical si in inregistrarea monitorizarii individuale.

**Art. 32.** - In cazul unei expuneri autorizate special, avand ca efect depasirea limitei de doza efectiva prevazuta la art. 22 al. (1), nu este obligatorie schimbarea temporara sau definitiva a locului de munca al persoanei expuse, fara solicitarea acesteia.

#### Expunerea populatiei in general

**Art. 33.** - CNCAN va lua toate masurile pentru a asigura ca expunerea la radiatii a populatiei, datorata practicilor nucleare carora li se aplica prezentele norme, sa fie mentinuta la cel mai scazut nivel posibil, tinand cont de factorii economici si sociali.

**Art. 34.** - CNCAN va urmari periodic valoarea totala, pe cap de locuitor, a dozei efective pentru populatie in general.

#### Cap. V ESTIMAREA DOZELOR

**Art. 35.** - Pentru estimarea dozei efective si a dozelor echivalente, la expunerea externa, precum si a dozei efective la expunerea interna vor fi utilizate valorile si relatiile prevazute in anexa nr. 3 si anexa nr. 4.

**Art. 36.** - CNCAN poate accepta si utilizarea altor metode de estimare a dozelor.

#### Cap. VI

## RADIOPROTECTIA OPERATIONALA A EXPUSILOR PROFESIONALI SI A PERSOANELOR IN CURS DE PREGATIRE

#### Principii generale

**Art. 37.** - Titularul de autorizatie va lua toate masurile necesare pentru a reduce expunerea la radiatii a lucratorilor la cel mai scazut nivel rezonabil posibil. In acest scop:

a) va realiza evaluarea prealabila, care sa permita identificarea naturii si marimii riscului radiologic al expusilor profesional si nivelul la care sunt indeplinite prevederile referitoare la optimizarea radioprotectiei in toate conditiile de lucru;

b) va realiza clasificarea locurilor de munca, atunci cand este cazul, in diferite zone, in functie de evaluarea dozelor anuale previzibile, cat si de probabilitatea si amplexarea expunerilor potentiale;

c) va realiza clasificarea pe categorii a persoanelor expuse profesional;

d) va implementa masurile de control si supraveghere adaptate diferitelor zone si conditii de lucru, inclusiv cele de supraveghere individuale, atunci cand situatia o impune;

e) va asigura supravegherea medicala;

f) va asigura echipamentul de protectie la radiatii, atat individual cat si colectiv;

g) va utiliza in cadrul practicii doar personalul care poseda permise de exercitare valabile pentru activitatea respectiva.

h) va indeplini orice alte masuri necesare asigurarii radioprotectiei operationale a persoanelor expuse profesional, in cadrul practicii desfasurate.

#### Cerinte generale privind zona

**Art. 38.** - (1) In toate locurile de munca unde exista posibilitatea unei expuneri la radiatii ionizante superioare limitelor de doza pentru populatie prevazute in art. 25 si 26, titularul de autorizatie trebuie sa ia masuri in scop de radioprotectie, care vor fi adaptate naturii instalatiilor si surselor.

(2) Locurile de munca prevazute la al. (1) vor fi clasificate in zone controlate si zone supravegheate, dupa criteriile specifice stabilite de CNCAN, in reglementarile referitoare la practicile respective.

**Art. 39.** - Atat amplexarea actiunilor de prevenire si supraveghere, cat si natura si calitatea lor trebuie sa fie corespunzatoare riscurilor asociate lucrului in conditii de expunere la radiatii ionizante.

**Art. 40.** - Conditii de lucru in zonele controlate si supravegheate vor fi revazute periodic si atunci cand este cazul, vor fi revizuite de titularul de autorizatie.

**Art. 41.** - Regimul juridic al zonelor controlate/supravegheate, trebuie sa permita titularului de autorizatie indeplinirea obligatiilor prevazute in prezentele norme.

**Art. 42.** - (1) Pentru fiecare zona controlata/supravegheata, trebuie sa fie desemnat, in scris, cel putin un responsabil cu securitatea radiologica care va raspunde de aplicarea prezentelor norme si a reglementarilor specifice in zona respectiva.

(2) Responsabilul cu securitatea radiologica trebuie sa fie posesor al unui permis de exercitare emis de CNCAN in domeniul si specialitatea corespunzatoare practicilor care se desfasoara in zona controlata/supravegheata.

(3) In anumite cazuri, stabilite de CNCAN prin reglementarile specifice, aceasta functie va fi asigurata printr-un compartiment special condus de un expert acreditat.

#### **Cerinte referitoare la zonele controlate**

**Art. 43.** - Masurile minime pe care trebuie sa le indeplineasca un titular referitor la o zona controlata sunt urmatoarele:

a) va delimita precis zona, care trebuie sa nu fie accesibila decat persoanelor care au fost instruite corespunzator, iar accesul sa fie controlat potrivit instructiunii scrise a titularului de autorizatie. In caz de risc semnificativ pentru extinderea contaminarii radioactive, se vor lua masuri speciale de prevenire, incluzand controlul contaminarii la intrarea si iesirea din zona a persoanelor si obiectelor si asigurarea decontaminarii persoanelor si obiectelor;

b) va organiza monitorizarea radiologica a mediului de lucru in functie de natura si marimea riscurilor radiologice din zona controlata;

c) va afisa obligatoriu simbolul pericolului de radiatii prevazut in anexa nr. 5, precum si indicatii referitoare la tipul zonei, natura surselor si riscurilor pe care acestea le presupun;

d) va stabili si implementa instructiuni de lucru adaptate riscului radiologic asociat surselor si operatiilor efectuate.

**Art. 44.** - Accesul si stationarea in zona controlata sunt permise urmatoarelor categorii de persoane:

a) persoanelor expuse profesional, desemnate in scris dintre lucratori proprii ai titularului de autorizatie;

b) lucratorilor externi desemnati in scris, numai dupa verificarea indeplinirii cerintelor de catre persoana expusa profesional si a insusirii instructiunilor de lucru specifice.

**Art. 45.** - (1) Accesul si stationarea in zona controlata a altor persoane, decat cele prevazute la art. 44, este permis numai in urmatoarele situatii:

a) daca prin natura sarcinilor de serviciu, persoanele trebuie sa activeze in zona controlata, pentru un timp limitat si exista o procedura scrisa care stabileste conditiile de intrare si stationare, astfel incat sa se demonstreze ca persoanele respective nu vor fi expuse la doze superioare celor permise pentru persoanele din populatie;

b) in cazul in care, fara sa existe o procedura scrisa, se poate demonstra prin monitorizarea individuala sau prin alte mijloace adecvate ca limitele de doza pentru persoanele din populatie sunt respectate.

#### **Cerinte referitoare la zonele supravegheate**

**Art. 46.** - Masurile ce trebuie asigurate de catre titularul de autorizatie pentru o zona supravegheata sunt urmatoarele:

a) sa asigure monitorizarea radiologica a mediului de lucru, in functie de natura si marimea riscurilor radiologice din zona supravegheata;

b) sa afiseze indicatii relative la tipul zonei, natura surselor si riscurilor pe care acestea le presupun;

c) sa stabileasca si sa implementeze instructiuni de lucru adaptate riscului radiologic asociat surselor si operatiilor efectuate.

**Art. 47.** - Pentru indeplinirea cerintelor privind zonele controlate si supravegheate titularul de autorizatie are obligatia sa consulte un expert acreditat sau un organism acreditat de protectie radiologica, care va certifica zonarea propusa.

#### **Clasificarea persoanelor expuse profesional**

**Art. 48.** - Persoanele expuse profesional se clasifica in doua categorii:

a) Categoria A: cuprinzand persoanele expuse profesional pentru care exista o probabilitate semnificativa de a primi o doza anuala efectiva sau o doza anuala echivalenta mai mare decat trei zecimi din limita de doza respectiva prevazuta la art. 22;

b) Categoria B: cuprinzand alte persoane decat cele prevazute in categoria A..

#### **Informarea, pregatirea si autorizarea personalului**

**Art. 49.** - Titularul de autorizatie este obligat sa asigure informarea personalului expus profesional si a persoanelor in curs de pregatire cu privire la :

a) riscurile pe care le implica asupra sanatatii activitatea desfasurata;

b) procedurile generale de radioprotectie si masurile speciale necesare, referitoare atat la practici in general cat si la orice tip de activitate pe care o pot desfasura;

c) importanta respectarii masurilor tehnice, medicale si administrative;

d) obligatia femeilor gravide si a celor care alapteaza de a informa in scris, de indata, titularul de autorizatie despre situatia lor, avand in vedere riscurile expunerii pentru fat si riscul contaminarii sugarului in cazul contaminarii interne a mamei.

**Art. 50.** - (1) Titularul de autorizatie este obligat sa asigure pregatirea corespunzatoare a personalului expus profesional, in domeniul securitatii radiologice, si reciclarea acestuia cel putin o data la 5 ani, printr-un sistem de pregatire recunoscut de CNCAN.

(2) Prima perioada de 5 ani pentru aplicarea prevederilor al. (1) se aplica incepand cu data intrarii in vigoare a prezentelor norme.

(3) De asemenea, titularul de autorizatie este obligat sa instruiasca persoanele aflate in curs de pregatire inaintea utilizarii sau manipularii de catre acestea a surselor de radiatii.

## **Evaluarea si implementarea masurilor referitoare la radioprotectia persoanelor expuse profesional**

**Art. 51.** - Titularul de autorizatie raspunde de evaluarea si implementarea masurilor referitoare la radioprotectia persoanelor expuse profesional.

**Art. 52.** - (1) Titularul de autorizatie trebuie sa consulte experti acreditati sau organisme acreditate de protectie radiologica cu privire la verificarea, incercarea surselor de radiatii, a echipamentelor si dispozitivelor de radioprotectie, precum si a instrumentelor de masura dozimetrica.

(2) Consultarea se va face, in principal, pentru :

a) examinarea critica prealabila a planurilor obiectivelor si instalatiilor nucleare din punct de vedere al securitatii radiologice;

b) identificarea, in vederea utilizarii, doar a instalatiilor nucleare si a surselor de radiatii pentru care exista autorizatie de securitate radiologica;

c) acceptarea surselor de radiatii noi sau modificate, numai dupa verificarea din punct de vedere al securitatii radiologice ;

d) verificarea periodica a instalatiilor nucleare, a surselor de radiatii si eficientei echipamentelor, dispozitivelor si tehnicilor de protectie;

e) etalonarea, verificarea periodica a instrumentelor de masura, precum si evaluarea utilizarii lor corespunzatoare.

### **Monitorizarea radiologica a mediului de lucru**

**Art. 53.** - (1) Monitorizarea radiologica a mediului de lucru, prevazuta la art. 43 lit. b) si la art. 46 lit. a), trebuie sa cuprinda, dupa caz:

a) masurarea debitelor de doza datorate expunerii externe, cu indicarea naturii si calitatii radiatiilor respective;

b) masurarea concentratiei activitatii aerului si a contaminarii de suprafata, cu indicarea naturii radionuclizilor si a starii lor fizice si chimice.

(2) Rezultatele masurarilor vor fi inregistrate si utilizate, daca este necesar, pentru estimarea dozelor individuale. Durata de pastrare a inregistrarilor se stabileste de CNCAN in procesul de autorizare.

**Art. 54.** - Sistemul de monitorizare radiologica a mediului de lucru se aproba de CNCAN in cadrul procesului de autorizare a practicii.

### **Monitorizarea individuala a expunerii la radiatii a persoanelor expuse profesional**

**Art. 55.** - (1) Titularul de autorizatie trebuie sa asigure monitorizarea individuala sistematica a tuturor persoanelor expuse profesional de categorie A.

(2) Monitorizarea trebuie efectuata prin intermediul unui organism dozimetric acreditat.

**Art. 56.** - (1) In cazul in care exista posibilitatea ca persoanele expuse profesional de categorie A sa sufere o contaminare interna semnificativa, monitorizarea individuala prevazuta la art. 55 trebuie sa includa monitorizarea contaminarii interne a acestor persoane.

(2) Identificarea persoanelor prevazute la al. (1) trebuie facuta cu consultarea unui expert acreditat sau a unui organism acreditat de protectie radiologica.

**Art. 57.** - In cazul in care masurarile individuale prevazute la art. 55 si 56 sunt imposibile sau inadecvate, monitorizarea individuala trebuie sa se bazeze pe o estimare efectuata, fie pornind de la masurarile individuale facute asupra altor persoane expuse profesional, fie pornind de la rezultatele monitorizarii radiologice a mediului de lucru, potrivit prevederilor art. 53.

**Art. 58.** - (1) Monitorizarea individuala a persoanelor expuse profesional de categorie B va avea ca obiect demonstrarea incadrarii corecte a lucratorilor in aceasta categorie, urmand ca apoi sa nu mai fie necesara.

(2) In cazul anumitor practici, CNCAN poate impune ca, pentru persoanele expuse profesional de categorie B, sa fie asigurata monitorizarea individuala conform conditiilor stabilite pentru persoanele expuse profesional de categorie A.

**Art. 59.** - Sistemul de monitorizare a expunerii la radiatii a persoanelor expuse profesional se aproba de CNCAN in cadrul procesului de autorizare a practicii.

### **Monitorizarea expunerii la radiatii in cazul expunerilor accidentale si de urgenta**

**Art. 60.** - In cazul expunerilor accidentale, titularul de autorizatie trebuie sa asigure pentru toate persoanele implicate evaluarea neintarziata a dozelor individuale datorate atat expunerii externe cat si expunerii interne, precum si distributia acestor doze in corp.

**Art. 61.** - In cazul expunerii de urgenta titularul de autorizatie trebuie sa asigure monitorizarea dozimetrica individuala si/sau evaluarea dozelor primite, dupa caz.

**Art. 62.** - Pentru confirmarea rezultatelor evaluarii dozelor rezultate in urma expunerilor accidentale sau de urgenta, titularul de autorizatie trebuie sa consulte un expert acreditat sau un organism acreditat de protectie radiologica.

### **Inregistrarea si raportarea rezultatelor monitorizarii individuale a expunerii la radiatii**

**Art. 63.** - Titularul de autorizatie trebuie sa asigure inregistrarea rezultatelor monitorizarii individuale pentru fiecare persoana expusa profesional de categorie A sau persoana expusa profesional de categorie B, pentru care CNCAN a impus sa se asigure monitorizarea individuala, precum si pentru toate persoanele supuse expunerii accidentale sau de urgenta.

**Art. 64.** - (1) Titularul de autorizatie trebuie sa asigure pastrarea inregistrarii prevazute la art. 63 pana cand persoana in cauza implineste sau ar fi implinit 75 de

ani, dar nu mai puțin de 30 de ani de la parasirea lucrului ca persoana expusa profesional .

(2) In cazul desfiintarii persoanei juridice titulare de autorizatie, documentele prevazute la art. 63 vor fi preluate de organismul dozimetric acreditat ce a asigurat monitorizarea individuala, care le va pastra in conditiile prevazute la al. (1).

(3) Inregistrarea rezultatelor monitorizarii individuale va cuprinde:

a) inregistrarea dozelor individuale masurate sau estimate, dupa caz;

b) rapoartele privind circumstantele si actiunile intreprinse in cazul expunerilor accidentale si de urgenta;

c) rezultatele supravegherii radiologice a locului de munca, folosite pentru evaluarea dozelor, atunci cand a fost cazul .

(4) Rezultatele monitorizarii individuale a expunerilor autorizate special, a expunerilor accidentale sau de urgenta trebuie inregistrate separat de cele ale monitorizarilor individuale sistematice.

**Art. 65.** - In cazul in care titularul de autorizatie utilizeaza lucratori externi, sarcina inregistrarii rezultatelor monitorizarii individuale revine atat titularului de autorizatie care ii foloseste, cat si persoanei juridice din care fac parte persoanele respective.

**Art. 66.** - (1) Titularul de autorizatie va solicita la angajarea unei persoane expuse profesional o declaratie a acesteia privind dozele permise anterior ca expus profesional.

(2) Titularul de autorizatie va solicita de la ultimul angajator la care persoana respectiva a fost angajata ca expusa profesional, transmiterea oficiala a extrasului din evidenta dozei permise de acea persoana.

**Art. 67.** - (1) Organismele dozimetrice acreditate trebuie sa mentina evidenta expusilor profesional monitorizati si a dozelor atribuite pe perioada prevazuta la art. 64 al. (1), in conditiile stabilite prin reglementarile specifice emise de CNCAN.

(2) In cazul desfiintarii unui organism dozimetric acreditat, acesta este obligat sa predea la CNCAN documentele de evidenta a monitorizarii individuale a tuturor persoanelor inregistrate.

**Art. 68.** - (1) CNCAN organizeaza evidenta centralizata a inregistrarii dozelor pentru lucratorii expusi profesional.

(2) Titularii de autorizatie si organismele dozimetrice acreditate sunt obligate sa puna la dispozitia CNCAN rezultatele monitorizarii individuale.

**Art. 69.** - Titularul de autorizatie are obligatia sa aduca la cunostinta persoanei implicate rezultatele monitorizarii sale individuale si sa asigure accesul persoanei implicate la rezultatele masurarilor care au fost utilizate pentru estimarile de doza ale persoanei respective si la rezultatele monitorizarii radiologice a mediului de lucru utilizate la evaluarea dozelor permise de acea persoana.

**Art. 70.** - Titularul de autorizatie are obligatia sa puna la dispozitia medicului competent rezultatele monitorizarilor individuale in vederea interpretarii implicatiilor expunerilor la radiatii asupra starii de sanatate a persoanelor expuse.

**Art. 71.** - In cazul expunerilor accidentale sau de urgenta precum si in cazul constatarii oricaror depasiri ale limitelor de doza, organismul dozimetric acreditat va transmite de indata titularului de autorizatie rezultatul monitorizarii individuale, iar acesta va transmite imediat acest rezultat medicului competent si la CNCAN.

#### **Investigarea si raportarea supraexpunerilor si a expunerilor anormale**

**Art. 72.** - (1) Indata ce un titular de autorizatie banuieste sau a fost informat ca o persoana a suferit o expunere anormala sau o supraexpunere ca urmare a practicilor pentru care este responsabil, el are urmatoarele obligatii :

a) sa faca o prima investigatie pe baza careia sa stabileasca valoarea preliminara a dozelor permise;

b) sa faca o investigatie aprofundata prin care sa determine imprejurarile in care s-a produs supraexpunerea ;

c) sa evalueze doza primita pe baza tuturor datelor disponibile, inclusiv pe baza rezultatelor masurarilor dozimetrice individuale si, daca este necesar, sa ia masuri pentru a preintampina repetarea unor astfel de supraexpuneri;

d) sa notifice imediat persoana afectata;

e) sa anunte imediat CNCAN, medicul competent si angajatorul lucratorului extern (daca persoana implicata este un lucrator extern), asupra supraexpunerii banuite si a dozelor evaluate preliminar;

f) sa intocmeasca, in termen de 10 zile de la demararea investigatiei prevazute la al. (1), un raport asupra evenimentului, care va avea regimul de pastrare prevazut la art. 64, al. (1) si va fi trimis persoanelor prevazute la lit. e).

(2) Daca prin investigatia prevazuta la al. (1) lit. a) s-a determinat imediat si cu certitudine ca nu a avut loc o supraexpunere, titularul nu mai este tinut de restul obligatiilor prevazute la al. (1), dar va fi obligat sa intocmeasca un raport pe care il va pastra cel puțin 2 ani.

(3) In procesele de evaluare si investigare prevazute la al. (1) lit. b) si c), titularul de autorizatie va consulta un expert acreditat sau un organism acreditat de protectie radiologica.

**Art. 73.** - Supraexpunerile se inregistreaza potrivit prevederilor art. 64, al. (1).

**Art. 74.** - Persoanele expuse profesional care au suferit o supraexpunere pot continua sa lucreze in zone controlate daca nu exista contraindicatii medicale.

**Art. 75.** - Organismele dozimetrice acreditate au obligatia de a informa de indata CNCAN si autoritatea medico-sanitara locala asupra oricarei depasiri de limita de doza despre care au luat cunostiinta.



## **Cerinte generale privind supravegherea medicala a persoanelor expuse profesional**

**Art. 76.** - Supravegherea medicala a persoanelor expuse profesional se face potrivit reglementarilor stabilite de Ministerul Sanatatii.

### **Conditionarea medicala a utilizarii persoanelor expuse profesional**

**Art. 77.** - Nici un lucrator nu poate fi utilizat in nici o imprejurare ca persoana expusa profesional daca nu are avizul medical care sa certifice ca persoana respectiva este apta medical sa ocupe postul respectiv.

### **Supravegherea medicala speciala a persoanelor expuse profesional**

**Art. 78.** - Pentru persoanele expuse profesional care au fost expuse la doze superioare limitelor de doza prevazute la art. 22, va fi asigurata o supraveghere medicala speciala, potrivit reglementarilor emise de Ministerul Sanatatii.

**Art. 79.** - CNCAN va verifica respectarea conditiilor stabilite de medicul competent privind expunerea ulterioara depasirii limitelor de doza prevazute la art. 22.

### **Sistemul de protectie impotriva radiatiilor ionizante**

**Art. 80.** - (1) Potrivit prevederilor Legii 111/1996 privind desfasurarea in siguranta a activitatilor nucleare, republicata, titularul de autorizatie este obligat sa instituie si sa mentina un sistem de protectie contra radiatiilor ionizante.

(2) Sistemul de protectie impotriva radiatiilor ionizante implica cel putin urmatoarele masuri :

a) utilizarea expertilor acreditati sau a unui organism acreditat de protectie radiologica, dupa caz, in toate situatiile in care aceasta este ceruta de prezentele norme;

b) respectarea principiilor generale prevazute la art. 37 din prezentele norme;

c) elaborarea si implementarea unui set de documente care sa reglementeze desfasurarea practicii potrivit cerintelor prezentelor norme si ale normelor specifice din domeniul nuclear;

d) utilizarea in cadrul practicii numai a persoanelor care detin permis de exercitare valabil pentru activitatea respectiva;

e) atribuirea responsabilitatilor privind securitatea radiologica potrivit prevederilor art. 42 din prezentele norme.

## **Obligatiile persoanelor expuse profesional**

**Art. 81.** - O persoana expusa profesional are obligatia de a nu se expune si de a nu expune alte persoane la radiatii peste valorile rezonabile necesare realizarii sarcinilor de serviciu.

**Art. 82.** - Este interzis persoanelor expuse profesional sa utilizeze sursele de radiatii sau instalatiile nucleare in alte scopuri decat cele pentru care au fost create si autorizate, sau pentru alte lucrari decat cele rezultate din sarcinile de serviciu.

**Art. 83.** - Fiecare persoana expusa profesional este obligata:

a) sa poarte echipamentul individual de protectie si mijloacele de monitorizare individuala;

b) sa anunte de indata responsabilului cu securitatea radiologica orice defectiune constatata la echipamentul individual de protectie, la echipamentul colectiv de protectie, sau la sistemul de avertizare;

c) sa predea, imediat dupa folosire, la locul de pastrare, echipamentul individual de protectie si mijloacele de monitorizare individuala;

d) sa respecte instructiunile de lucru si indicatiile responsabilului cu securitatea radiologica pentru zona controlata sau supravegheata;

e) sa se prezinte la examinarile sau testele medicale cerute de medicul competent, in timpul de lucru si pe cheltuiala angajatorului, si sa dea toate detaliile privind starea sanatatii sale solicitate de medicul competent;

f) sa notifice de indata, inclusiv in scris, responsabilului cu securitatea radiologica sau conducerii titularului de autorizatie, ori de cate ori are motive intemeiate sa creada ca el sau alta persoana au suferit o supraexpunere ori ca a aparut un eveniment deosebit cum ar fi pierderea/furtul unei surse de radiatii sau instalatii nucleare, scurgeri de material radioactiv, defectiuni care pun in pericol securitatea surselor de radiatii, a instalatiilor nucleare sau integritatea mijloacelor de protectie;

g) in cazul in care este lucrator extern, sa pastreze corespunzator documentul de monitorizare radiologica individuala, referitor la propria sa monitorizare radiologica.

### **Obligatii privind transmiterea informatiilor relative la monitorizarea individuala**

**Art. 84.** - Titularii de autorizatie si organismele dozimetrice acreditate, care au asigurat monitorizarea individuala la ultimul loc de munca al unei persoane expuse profesional de categorie A sau de categorie B pentru cazurile prevazute la art. 58, au obligatia de a asigura, la cerere, transmiterea rezultatelor monitorizarii individuale respective catre titularul de autorizatie care angajeaza respectiva persoana ca persoana expusa profesional.

**Art. 85.** - Titularii de autorizatie si organismele dozimetrice acreditate au obligatia de a asigura transmiterea catre organismele corespunzatoare din strainatate, la cererea acestora, a rezultatelor monitorizarii individuale a persoanelor expuse profesional in Romania care solicita sa fie incadrate ca persoane expuse profesional in alte tari.

#### **Sarcinile CNCAN privind asigurarea securitatii radiologice in zonele controlate si supravegheate**

**Art. 86.** - Aplicarea prevederilor din prezentele norme privind asigurarea securitatii radiologice in zonele controlate si supravegheate se controleaza de catre CNCAN potrivit Cap.IV, "Regimul de control" din Legea 111/1996 privind desfasurarea in siguranta a activitatilor nucleare, republicata.

**Art. 87.** - CNCAN stabileste prin reglementari specifice cerintele de acreditare pentru expertii acreditati, organismele acreditate de protectie radiologica si organismele dozimetrice acreditate si verifica daca sunt create conditii pentru pregatirea si reciclarea acestor specialisti.

#### **Radioprotectia operationala a persoanelor in curs de pregatire**

**Art. 88.** - Conditile de expunere si radioprotectie operationala a persoanelor in curs de pregatire, avand varsta de peste 18 ani, trebuie sa fie echivalente celor ale persoanelor expuse profesional de categorie A sau B, dupa caz.

**Art. 89.** - Conditile de expunere si radioprotectie operationala a persoanelor in curs de pregatire, avand varsta cuprinsa intre 16 si 18 ani, trebuie sa fie echivalente celor ale persoanelor expuse profesional de categorie B.

### **Cap. VII CRESTEREA SEMNIFICATIVA A EXPUNERII DATORATA SURSELOR NATURALE**

#### **Domeniul de aplicare**

**Art. 90.** - Persoanele fizice si juridice care desfasoara activitati profesionale la locuri de munca de natura celor prevazute la art. 3 al. (2) sunt obligate sa identifice prin masurare si verificare aceste locuri de munca si sa evalueze consecintele.

**Art. 91.** - Urmatoarele activitati implica prezenta surselor naturale de radiatii ce conduc la cresterea semnificativa a expunerii lucratorilor sau a populatiei :

a) activitati profesionale in care lucratorii si/sau populatia sunt expuse la radon, thoron si descendentii acestora, la radiatii gama sau alte radiatii nucleare datorate mediului natural, in locuri de munca cum ar fi bai termale, pivnite, mine, locuri de munca in subteran sau locuri de munca deasupra solului in anumite zone identificate;

b) activitati profesionale in care sunt incluse extragerea, prelucrarea, utilizarea sau depozitarea de

materiale care in mod obisnuit nu sunt considerate ca radioactive, dar care contin radionuclizi naturali ce pot duce la cresterea semnificativa a expunerii populatiei sau a lucratorilor;

c) activitati profesionale care conduc la producerea de reziduuri, care in mod obisnuit nu sunt considerate ca radioactive, dar care contin radionuclizi naturali care provoaca cresterea semnificativa a expunerii populatiei sau a lucratorilor;

d) exploatarea avioanelor.

**Art. 92.** - (1) Daca rezultatul evaluarii prevazute la art. 90 stabileste cresterea expunerii lucratorilor si/sau a populatiei la valori ce nu pot fi neglijate din punct de vedere al radioprotectiei, persoana juridica sau fizica este obligata sa raporteze rezultatele la CNCAN si sa obtina incadrarea activitatilor desfasurate in prevederile legale.

(2) Daca rezultatul evaluarii prevazute la al. (1) stabileste cresterea expunerii populatiei, ca urmare a introducerii ulterioare in circuitul economic si social, in vederea utilizarii sau consumului, a produselor continand substante radioactive naturale, persoana juridica sau fizica ce desfasoara activitatea trebuie sa obtina in prealabil autorizatia Ministerului Sanatatii, potrivit prevederilor art. 38 al. (1) din Legea nr. 111/1996 privind desfasurarea in siguranta a activitatilor nucleare, republicata.

#### **Radioprotectia impotriva expunerii la sursele naturale terestre de radiatii**

**Art. 93.** - Pentru fiecare activitate profesionala supusa sistemului de autorizare, persoana juridica ce desfasoara activitatea respectiva trebuie sa ia urmatoarele masuri:

a) sa implementeze un sistem adecvat de supraveghere a expunerii;

b) sa aplice masurile de protectie impotriva radiatiilor potrivit prezentelor norme ;

c) daca CNCAN cere efectuarea unei interventii, sa asigure implementarea masurilor luate in vederea reducerii expunerii, potrivit prevederilor prezentelor norme referitoare la interventii.

#### **Radioprotectia echipajelor avioanelor**

**Art. 94.** - Persoanele juridice care exploateaza avioane trebuie sa asigure evaluarea dozelor efective pentru personalul navigant.

**Art. 95.** - Pentru persoanele care ar putea primi doze superioare valorii de 1 mSv pe an, persoanele juridice care exploateaza avioane trebuie sa ia urmatoarele masuri:

a) sa tina cont de doza evaluata in organizarea programelor de zbor, avand in vedere reducerea dozelor pentru persoanele cele mai expuse;

b) sa informeze lucratorii implicati asupra riscurilor prezentate de activitatea desfasurata asupra sanatatii;

c) sa aplice prevederile art. 23 referitor la personalul feminin.

**Cap. VIII**  
**IMPLEMENTAREA RADIOPROTECTIEI**  
**POPULATIEI IN CONDITII NORMALE**

**Principii generale**

**Art. 96.** - Titularul de autorizatie trebuie sa asigure cea mai buna radioprotectie a populatiei, pe baza principiilor generale prevazute la Cap IV.

**Conditii pentru autorizarea practicilor implicand  
riscul expunerii populatiei la radiatii ionizante**

**Art. 97.** - In vederea asigurarii radioprotectiei operationale a populatiei, CNCAN:

a) examineaza si aproba amplasarea si constructia instalatiilor nucleare din punct de vedere al radioprotectiei;

b) accepta punerea in functiune a instalatiilor nucleare cu potential de contaminare in afara perimetrului propriu, doar daca s-au luat masuri de radioprotectie corespunzatoare, care sa tina cont si de conditiile demografice, meteorologice, geologice, hidrologice si ecologice, dupa caz;

c) in cadrul procesului de autorizare a practicilor in care sunt posibile emisii de efluenti radioactivi, evalueaza si aproba planurile de eliminare a efluentilor radioactivi, inclusiv limitele derivate de emisie a efluentilor radioactivi si verifica pe timpul desfasurarii practicii respectarea planurilor respective;

d) in cadrul procesului de autorizare, evalueaza si aproba, iar in timpul desfasurarii practicii verifica masurile de gestionare si de asigurare a protectiei fizice a surselor de radiatii si materialelor radioactive.

**Art. 98.** - Modalitatile de realizare a celor prevazute la art. 97 se stabilesc de CNCAN prin reglementari specifice, in functie de marimea riscului implicat, datorat expunerii.

**Estimarea dozelor la care este supusa populatia**

**Art. 99.** - Pentru a elibera sau mentine autorizatia unei practici, CNCAN trebuie sa verifice daca :

a) estimarile dozelor pentru populatie, provenind din toate expunerile rezultate din practica respectiva, inclusiv din cele potentiale, sunt facute corect atat pentru intreaga populatie cat si pentru grupurile critice, in toate amplasamentele unde asemenea grupuri critice pot aparea ;

b) analiza probabilitatii si severitatii expunerilor potentiale este facuta in acord cu limitele prevazute in prezentele norme ;

c) exista un sistem corespunzator de evidenta a inregistrarilor relevante pentru expunerea populatiei si se pastreaza evidenta pe durata stabilita in cadrul procesului de autorizare a practicii.

**Art. 100.** - (1) Estimările de doza prevazute la art. 99 lit. a) trebuie sa includa, in functie de riscurile radiologice :

a) evaluarea dozelor provenite din expunerea externa, cu indicarea, daca este cazul, a calitatii radiatiilor in cauza;

b) evaluarea incorporarii radionuclizilor, cu indicarea naturii lor si, daca este cazul, a starii lor fizice

si chimice, precum si determinarea activitatii totale si a concentratiei activitatii acestor radionuclizi, dupa caz;

c) indicarea caracteristicilor grupurilor critice si a dozelor pe care pot sa le primeasca persoanele din aceste grupuri.

(2) Frecventa estimarilor de doza si a analizelor prevazute la art. 99 lit. a) si b), precum si frecventa monitorizarilor de mediu necesare pentru confirmarea estimarilor de doza, trebuie sa fie conforme cerintelor pe care CNCAN le va stabili in procesul de autorizare.

**Controlul radioprotectiei populatiei**

**Art. 101.** - Potrivit competentelor fiecaruia, organele cu drept de control a activitatilor nucleare urmaresc aplicarea prevederilor privind asigurarea radioprotectiei populatiei, prevazute in Cap.IV, "Regimul de control" din Legea 111/1996 privind desfasurarea in siguranta a activitatilor nucleare, republicata.

**Obligatiile titularilor de autorizatie**

**Art. 102.** - Titularul de autorizatie trebuie sa organizeze desfasurarea practicii in concordanta cu principiile radioprotectiei populatiei inclusiv prin indeplinirea urmatoarelor sarcini:

a) obtinerea si mentinerea unui nivel optim de radioprotectie a populatiei si a mediului;

b) verificarea periodica a eficacitatii dispozitivelor tehnice de radioprotectie a populatiei si a mediului;

c) utilizarea aparatelor, echipamentelor si procedurilor de masurare si evaluare a expunerii la radiatii si a contaminarii radioactive a populatiei si mediului numai in urma unei verificarii care sa ateste capacitatea acestora de a indeplini in mod corespunzator functiile pentru care sunt destinate;

d) asigurarea pentru toate instrumentele de masura utilizate in radioprotectia populatiei si a mediului, etalonarea, verificarea metrologica si verificarea corectei lor utilizari.

**Art. 103.** - (1) Titularul de autorizatie trebuie sa asigure monitorizarea radioactivitatii factorilor de mediu in jurul obiectivelor nucleare, al depozitelor de deseuri radioactive si al altor instalatii nucleare importante care vor fi stabilite de CNCAN.

(2) Sistemul de monitorizare al factorilor de mediu se aproba de CNCAN in procesul de autorizare.

**Art. 104.** - (1) Pentru obiectivele nucleare si alte instalatii nucleare cu risc de accident cu consecinte asupra populatiei, se va stabili o zona de excludere si o zona cu populatie redusa, in care sunt luate masuri de excludere, respectiv restrictionare a amplasarii resedintelor permanente pentru populatie si a desfasurarii de practici social economice.

(2) Criteriile privind stabilirea celor doua zone se bazeaza pe definirea eliberarii in mediu a produsilor de fisiune si a unor obiective de doza pentru accident nuclear care sunt precizate de CNCAN in normele specifice.

**Art. 105.** - Pentru indeplinirea obligatiilor ce ii revin referitor la radioprotectia populatiei, titularul de autorizatie are obligatia sa faca apel la serviciile

expertilor acreditati sau ale organismelor acreditate de protectie radiologica.

## **Cap. IX TRANSFERAREA IN MEDIU A DESEURILOR RADIOACTIVE**

### **Principiul fundamental**

**Art. 106.** - Protectia impotriva efectelor negative ale radiatiilor ionizante asupra mediului inconjurator se realizeaza prin:

- a) interzicerea transferarii in mediu a deeurilor radioactive solide;
- b) interzicerea eliberarii in mediu a deeurilor radioactive lichide sau gazoase care au activitati totale sau concentratii ale activitatii superioare limitelor derivate de emisie a efluentilor radioactivi aprobate de CNCAN potrivit prevederilor art. 20.
- c) optimizarea eliberarilor in mediu a efluentilor radioactivi lichizi si gazosi.

### **Controlul transferului in mediu al deeurilor radioactive**

**Art. 107.** - Prin exceptie de la prevederile art. 106, lit. a) si b), transferul in mediu al deeurilor radioactive se poate face in mod controlat:

- a) de unitati special autorizate de CNCAN pentru disponerea finala a deeurilor radioactive;
- b) numai pentru deeurile solide, si numai pentru activitati totale, concentratii ale activitatii si contaminari de suprafata, inferioare valorilor stabilite de CNCAN prin reglementari specifice, prin sistemul de colectare si evacuare a deeurilor industriale.

**Art. 108.** - (1) Titularii de autorizatie au obligatia sa predea la organismele autorizate pentru colectarea, tratarea si conditionarea deeurilor radioactive toate sursele radioactive care nu mai sunt utilizate in cadrul practicii desfasurate si toate deeurile radioactive rezultate din activitatea respectiva.

(2) Daca titularul de autorizatie pentru o anumita practica este el insusi autorizat pentru tratarea, conditionarea, depozitarea intermediara sau disponerea finala a deeurilor proprii, el trebuie sa realizeze aceste practici la termenul si cu ritmicitatea impuse prin autorizatie.

### **Eliberarea efluentilor radioactivi**

**Art. 109.** - (1) Eliberarea in mediu a efluentilor radioactivi lichizi sau gazosi se poate face numai cu respectarea limitelor derivate de eliberare aprobate de CNCAN, potrivit prevederilor art. 20 si a conditiilor privind evidentele, raportarile si anuntarile, prevazute in prezentele norme.

(2) Pentru efluentii lichizi trebuie sa fie indeplinita si conditia ca reziduurile radioactive sa fie sub forma de solutii neutre si perfect miscibile cu apa.

**Art. 110.** - Eliminarea efluentilor radioactivilor lichizi in canalizarea publica se poate face numai daca sunt indeplinite cumulativ urmatoarele conditii:

- a) eliminarea este prevazuta expres in autorizatia eliberata de CNCAN;

b) reziduurile radioactive sunt sub forma de solutii neutre si perfect miscibile cu apa;

c) activitatile totale si concentratiile activitatii sunt inferioare limitelor derivate de evacuare in canalizarea publica a efluentilor radioactivi lichizi aprobate de CNCAN potrivit prevederilor art. 20.

**Art. 111.** - Daca nu sunt indeplinite conditiile de evacuare de la art. 109, titularul de autorizatie este obligat sa ia masuri de depozitare temporara a deeurilor radioactive lichide sau gazoase, dupa care:

- a) daca radionuclizii sunt de viata scurta, se asteapta indeplinirea conditiilor de la art. 109 si deeurile se elimina ca efluentii radioactivi. In cazul deeurilor lichide, eliminarea se va face la canalizarea unitatii racordata la canalizarea publica, doar daca sunt indeplinite si conditiile prevazute la art. 110;
- b) pentru celelalte cazuri, deeurile radioactive se transfera catre un organism autorizat pentru tratarea deeurilor radioactive lichide sau gazoase sau se trateaza chiar de catre organizatia producatoare a deeurilor, daca aceasta este autorizata pentru aceasta practica.

**Art. 112.** - Eliminarea efluentilor radioactivi lichizi de catre organismele autorizate care realizeaza tratarea deeurilor se poate face doar in conditiile prevazute la art. 109 si doar daca concentratiile activitatii pe unitatea de volum ale apei receptoare, dupa dilutie, indeplinesc conditiile stabilite in procesul de autorizare.

## **Cap. X RADIOPROTECTIA IN INTERVENTII**

### **Domeniul de aplicare si principii**

**Art. 113.** - Dispozitiile prezentului capitol se aplica pentru interventia in caz de urgenta radiologica sau in caz de expunere cronica rezultata in urma unei urgente radiologice sau a unei practici profesionale desfasurate in trecut si care a condus la o crestere inacceptabila a expunerii.

**Art. 114.** - Sistemul radioprotectiei pentru interventie trebuie sa respecte urmatoarelor principii:

- a) interventia se va produce doar daca reducerea detrimentului datorat radiatiilor justifica eventualele daune ce pot fi produse prin interventie, precum si costurile interventiei, inclusiv cele sociale;
- b) forma, amplexarea si durata interventiei trebuie optimizate astfel incat beneficiul obtinut prin reducerea detrimentului datorat radiatiilor, din care s-a sczut detrimentul datorat interventiei, sa fie maxim;
- c) limitele de doza prevazute la Cap IV nu se aplica in cazul interventiilor, cu exceptia situatiilor de expuneri cronice, caz in care limitele de doza prevazute la art. 22 se aplica pentru persoanele participante la interventie;
- d) actiunile de interventie se desfasoara daca doza evitabila prin actiunea respectiva este superioara nivelurilor de interventie, niveluri care trebuie sa fie prevazute ca indicatii in planurile de interventie.

## Cerinte generale

**Art. 115.** - Planificarea, pregatirea si executarea interventiei pentru urgentele radiologice care ar putea apare datorita practicilor desfasurate pe teritoriul tarii sau in afara ei se fac pe baza reglementarilor specifice emise de CNCAN.

**Art. 116.** - CNCAN stabileste intelegeri cu autoritatile corespunzatoare din statele vecine in vederea organizarii interventiei in caz de urgente radiologice transfrontiere care pot apare, indiferent de originea acestora.

## Expuneri potentiale

**Art. 117.** - Autorizarea de catre CNCAN a oricarei practici se va face, dupa caz, daca solicitantul autorizatiei:

- a) ia in considerare urgentele radiologice care ar putea apare in cursul desfasurarii practicii respective;
- b) evalueaza distributia spatiala si temporala a substantelor radioactive dispersate in caz de urgente radiologice identificate ca posibile;
- c) evalueaza expunerile potentiale, corespunzatoare acestor urgente radiologice.

## Planificarea si pregatirea interventiei

**Art. 118.** - (1) Planificarea interventiei in caz de urgenta radiologica consta in existenta unui plan de interventie corespunzator, la toate nivelurile necesare, in functie de amploarea urgentei.

(2) Planurile de interventie se vor intocmi avand in vedere principiile radioprotectiei pentru interventie, prevazute la art. 114 si de nivelurile de interventie recomandate in reglementarile specifice, elaborate potrivit art. 115.

(3) Planurile de interventie trebuie sa fie testate la intervale regulate prin exercitii corespunzatoare.

(4) Autoritatile publice trebuie sa infiinteze si sa pregateasca corespunzator echipe speciale de interventie tehnica, medicala si sanitara pentru cazurile de urgenta radiologica.

**Art. 119.** - Planul de interventie trebuie sa prevada forma interventiei, obligatiile tehnice ale lucratorilor, riscurile asupra sanatatii lucratorilor implicati, mijloacele de protectie si de monitorizare dozimetrica individuala si a mediului in care are loc interventia, precum si nominalizarea persoanelor care pot aproba expunerea de urgenta.

## Efectuarea interventiei

**Art. 120.** - Titularul de autorizatie este obligat sa anunte imediat orice urgenta radiologica aparuta la obiectivul sau instalatia sa nucleara, in conformitate cu dispozitiile reglementarilor specifice prevazute la art. 115 si sa ia toate masurile corespunzatoare pentru reducerea consecintelor urgentei radiologice, potrivit prevederilor planului de interventie in caz de urgenta.

**Art. 121.** - (1) Pentru indeplinirea corespunzatoare a sarcinilor proprii privind interventia, titularul de autorizatie este obligat sa faca o evaluare initiala

provizorie a circumstantelor si consecintelor urgentei radiologice, pentru indeplinirea corespunzatoare a sarcinilor proprii privind interventia, si sa o comunice imediat la autoritatea competenta, pentru dimensionarea corecta a raspunsului celorlalte organisme implicate in interventie.

(2) In conformitate cu prevederile planurilor de interventie, titularul de autorizatie participa si la evaluarile ulterioare.

**Art. 122.** - (1) Interventiile in caz de urgenta radiologica au ca obiect, dupa caz:

- a) sursa, in scopul reducerii sau opririi radiatiei directe si a emisiei de radionuclizi;
- b) mediul, in scopul reducerii transferului de substante radioactive catre persoane;
- c) persoanele, in scopul reducerii expunerii si organizarii tratarii victimelor.

**Art. 123.** - Toate partile implicate in interventie trebuie sa evalueze si sa inregistreze consecintele situatiei de urgenta radiologica precum si eficacitatea interventiei.

**Art. 124.** - In cazul unei urgente radiologice in Romania care poate afecta si alte tari, sau in cazul unei urgente radiologice pe teritoriul altei tari care ar putea afecta teritoriul Romaniei, vor fi respectate si prevederile conventiilor internationale la care Romania este parte.

## Expunerea de urgenta

**Art. 125.** - (1) In cazul urgentelor, pentru actiuni rapide de ajutorare a persoanelor in pericol, de prevenire a expunerii la radiatii a unui numar mare de oameni sau de salvare a unor instalatii sau bunuri de valoare, pot fi depasite limitele de doza anuale stabilite la art. 22 pentru persoanele expuse profesional.

(2) In cazurile prevazute la alin (1), limitele de doza prevazute la art. 22 sunt inlocuite cu niveluri limita de doza pentru expuneri de urgenta, incluse in planurile de interventie si aprobate de CNCAN in procesul de autorizare.

(3) Pentru situatiile exceptionale, cum ar fi pericole grave asupra vietii umane, nivelurile limita de doza prevazute la alin (2), pentru expunerile de urgenta, pot fi depasite.

**Art. 126.** - (1) Persoanele participante la actiuni de tipul celor prevazute la art. 125 alin (1) sunt voluntari informati asupra riscurilor implicate de actiunile lor.

(2) Aceste persoane sunt nominalizate in planul de urgenta si vor fi pregatite in mod special pentru a reduce la minimum dozele rezultate in urma interventiei.

**Art. 127.** - Actiunile persoanelor implicate in interventii de tipul celor prevazute la art. 125 al. (3) vor respecta principiile justificarii si optimizarii expunerii in caz de interventii, prevazute la art. 114 lit. a) si b) si valorile de aparitie a efectelor deterministice prevazute in reglementarile specifice elaborate de CNCAN referitoare la planificarea, pregatirea si efectuarea interventiei.

**Art. 128.** - Persoanele din echipele de interventie vor fi supuse monitorizarii dozimetrice individuale si vor beneficia de supravegherea medicala corespunzatoare.

#### **Interventia in cazul expunerilor cronice**

**Art. 129.** - (1) Daca s-a identificat o situatie de expunere cronica rezultata in urma unei urgente radiologice sau a unei practici sau activitati profesionale din trecut, care a condus la o crestere nepermisa a expunerii, proprietarul terenului sau cladirilor trebuie sa anunte CNCAN despre situatia aparuta.

(2) CNCAN poate dispune, proportional cu riscul de expunere implicat, urmatoarele masuri:

- a) marcarea perimetrului de interes;
- b) asigurarea unui sistem de monitorizare a expunerii;
- c) asigurarea unor masuri de interventie corespunzatoare, tinand cont de caracteristicile reale ale situatiei;
- d) reglementarea utilizarii terenurilor sau cladirilor situate in perimetrul delimitat, precum si a accesului in interiorul acestora.

**Art. 130.** - Proprietarul terenului sau cladirilor trebuie sa asigure aducerea la indeplinire a masurilor dispuse potrivit art. 129, al. (2).

#### **Cap. XI**

#### **ALTE EVIDENTE, RAPORTARI, ANUNTARI**

##### **Evidente**

**Art. 131.** - (1) Titularul de autorizatie va tine evidenta stricta si la zi a intrarilor, iesirilor, circulatiei si consumului de surse de radiatii, materiale radioactive si instalatii nucleare.

(2) Titularul de autorizatie va tine evidenta stricta si la zi a deseurilor radioactive rezultate in cadrul practicii autorizate, a deseurilor radioactive transferate persoanelor juridice autorizate pentru tratarea si dispunerea lor finala, precum si a efluentilor radioactivi eliminati in mediul inconjurator.

(3) Continutul evidentelor este stabilit in normele specifice sau in procesul de autorizare.

**Art. 132.** - Titularul de autorizatie trebuie sa pastreze evidentele prevazute la art. 131 al. (1) si (2) si dupa incetarea desfasurarii practicii, pe o perioada minima de 20 de ani, daca prin reglementari specifice nu se prevede altfel.

##### **Raportari**

**Art. 133.** Titularul de autorizatie va prezenta CNCAN rapoarte periodice, cuprinzand principalele aspecte privind securitatea radiologica in cadrul practicii

autorizate, conform prevederilor normelor specifice sau ale autorizatiei.

#### **Anuntari**

**Art. 134.** - (1) Titularul de autorizatie va notifica de indata CNCAN in caz de:

a) eliberare de efluentii radioactivi lichizi sau gazosi peste limitele derivate de emisie stabilite in autorizatie si/sau in documentatia de autorizare;

b) eliberari de efluentii radioactivi sub limitele derivate de emisie a efluentilor radioactivi, daca autorizatia si/sau documentatia de autorizare prevad acest lucru.

(2) Titularul de autorizatie va notifica de indata la CNCAN, la autoritatile locale medico – sanitare si la organele de politie, din raza teritoriala unde s-a produs evenimentul, orice pierdere sau furt de instalatii nucleare, surse de radiatii sau materiale radioactive.

#### **Cap. XII**

#### **DISPOZITII TRANZITORII SI FINALE**

**Art. 135.** - Autorizatiile emise inaintea intrarii in vigoare a prezentelor norme isi pastreaza valabilitatea, dar nu mai mult de 2 ani de la intrarea in vigoare a prezentelor norme.

**Art. 136.** - Persoanele care au lucrat ca persoane expuse profesional inainte de intrarea in vigoare a prezentelor norme, vor fi considerate pentru perioada respectiva ca persoane expuse profesional de categorie A..

**Art. 137.** - Pana la aparitia reglementarilor prevazute de lege, persoanele expuse profesional care poseda permis de exercitare nivel 2, eliberat de CNCAN, pot fi numite ca persoane responsabile cu securitatea radiologica pentru zonele controlate si supravegheate in care se desfasoara practici din domeniul si specialitatea pentru care este valabil permisul de exercitare.

**Art. 138.** - (1) Persoanele cu studii superioare de specialitate, posesoare ale unui permis de exercitare nivel 2, valabil, isi pot desfasura activitatea ca experti acreditati in domeniul si specialitatea pentru care este valabil permisul de exercitare, daca, in urma unei solicitari individuale, au obtinut, in prealabil, acordul CNCAN.

(2) Durata desfasurarii activitatii prevazute la alin (1) este de cel mult 3 ani de la intrarea in vigoare a prezentelor norme.

**Art. 139.** - In termen de un an de la intrarea in vigoare a prezentelor norme, serviciile de supraveghere dozimetrica individuala, vor obtine acreditarea potrivit reglementarilor specifice, ca organisme dozimetrice acreditate.

**Art. 140.** - (1) Perioada de un an pentru care se aplica limitarea dozelor potrivit prevederilor prezentelor norme, coincide cu anul calendaristic.

(2) Daca expunerea incepe la o alta data, se considera ca a fost respectat sistemul de limitare a dozelor, daca, doza primita pana la sfarsitul anului calendaristic, nu depaseste valoarea obtinuta prin inmultirea numarului de luni ramase pana la sfarsitul anului respectiv (rotunjite prin adaos) cu 1.8 mSv.

**Art. 141.** - In cadrul procesului de autorizare, la solicitarea titularului de autorizatie, CNCAN poate stabili mai multe date de incepere a perioadei de un an pentru care se aplica limitarea dozelor.

**Art. 142.** - Anexele 1, 2, 3, 4 si 5 fac parte integranta din prezentele norme.

## DEFINITII

Accident nuclear: eveniment nuclear care afectează instalatia și provoacă iradierea sau contaminarea populației sau mediului peste limitele permise de reglementările în vigoare.

Activare: proces prin care un nucleu stabil bombardat cu particule sau fotoni este transformat într-un nucleu radioactiv.

Activitate (A): numărul de nuclee radioactive care se dezintegrează în unitatea de timp:

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

unde  $dN$  reprezintă numărul de nuclee radioactive care se dezintegrează în intervalul de timp  $dt$ .

Unitatea de măsură a activității  $A$  este becquerelul.

Autorizație: un document emis de CNCAN, către o persoană juridică, la cererea acesteia, prin care se permite desfășurarea unei practici sau a unei alte activități din domeniul de aplicare al prezentelor norme;

Becquerel (Bq): numele special al unității de activitate. Un becquerel este echivalent cu o dezintegrare pe secundă.

Cai de expunere: caile prin care materialul radioactiv ajunge la, sau poate iradia, organismul uman.

Combustibil nuclear: material sau ansamblu mecanic care conține materie primă sau material fisionabil, special destinat folosirii într-un reactor nuclear, în scopul producerii energiei nucleare.

Comisia Natională pentru Controlul Activităților Nucleare (CNCAN): este autoritatea națională competentă în domeniul nuclear care exercită atribuțiile de reglementare, autorizare și control potrivit Legii 111/1996 privind desfășurarea în siguranță a activităților nucleare, republicată în 1998.

Constrângere de doză: o restricție impusă dozelor pe care persoanele le pot eventual primi de la o anumită sursă de radiații și care este utilizată la proiectarea protecției la radiații, în scopul optimizării radioprotecției și al respectării limitelor de doză în cazul expunerii cumulative la radiații, datorate mai multor practici, și/sau mai multor surse de radiații din cadrul aceleiași practici și/sau emisiilor de efluenți produse de-a lungul timpului.

Contaminare radioactivă: contaminarea unui material, a unei suprafețe, a unui mediu oarecare sau a unei persoane cu substanțe radioactive; în cazul specific al corpului uman, contaminarea radioactivă include atât contaminarea externă a pielii cât și contaminarea internă, indiferent de calea de incorporare.

Deseu radioactiv: acele materiale rezultate din activitățile nucleare pentru care nu s-a prevăzut nici o întrebuințare și care contin sau sunt contaminate cu radionuclizi.

Detriment (al sănătății): o estimare a riscului reducerii duratei și calității vieții în urma expunerii la radiații ionizante; sunt incluse pierderile datorate efectelor somatice, cancerului și perturbarilor genetice severe.

Dispunere finală a deșeurilor radioactive (include și dispunerea finală a combustibilului nuclear ars pentru care nu se prevede o altă utilizare): amplasarea și păstrarea deșeurilor radioactive într-un depozit amenajat sau o anumită locație, fără intenția de a fi recuperate. Noțiunea de dispunere finală a deșeurilor radioactive acoperă și eliberările directe, aprobate, de efluenți radioactivi în mediu.

Doză absorbită (D): mărimea dozimetrică fundamentală definită ca energia medie cedată de radiația ionizantă unității de masă iradiată:

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

unde:

- $d\bar{\varepsilon}$  este energia medie cedată de radiația ionizantă materiei din elementul de volum
- $dm$  este masa materiei din elementul de volum respectiv.

În înțelesul prezentelor norme, doză absorbită înseamnă doză mediată pe un țesut sau organ.

Unitatea de măsură pentru doză absorbită este gray-ul (Gy).

Doză echivalentă  $H(T)$ : doză absorbită, în țesutul sau organul  $T$ , ponderată pentru calitatea radiației  $R$ . Este data de expresia:



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

unde:

- $D_{T,R}$  este doza absorbita mediata pe tesutul sau organul T, datorata radiatiei R,
- $w_R$  este factorul de ponderare al radiatiei.

In cazul in care campul de radiatii este compus din mai multe tipuri de radiatii avand energii diferite (diferite valori ale lui  $w_R$ ), doza echivalenta totala,  $H_T$ , este data de relatia:

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

Valorile corespunzatoare ale lui  $w_R$  sunt specificate in Anexa 3.  
Unitatea de masura pentru doza echivalenta este sievert-ul (Sv).

Doza efectiva (E): suma ponderata a dozelor echivalente provenite din expunerea externa si interna, efectuata pe toate tesuturile si organele corpului specificate in Anexa 3. Se defineste prin expresia:

$$E = \sum_T w_T H_T = \sum_T w_T \sum_R w_R D_{T,R}$$

unde:

- $D_{T,R}$  este doza absorbita mediata pe tesutul sau organul T, datorata radiatiei R,
- $w_R$  este factorul de ponderare al radiatiei,
- $w_T$  este factorul de ponderare al tesutului sau organului T.

Unitatea de masura pentru doza efectiva este sievert-ul.

Doza echivalenta angajata ( $H_T(\tau)$ ): integrala pe timpul ( $\tau$ ) a debitului dozei echivalente in organul sau tesutul T al unui organism uman ce va fi primita in urma unei incorporari de substante radioactive. Pentru o incorporare de activitate la un moment  $\tau_0$  ea este definita prin formula :

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

unde:

- $\tau_0$  este momentul incorporarii,
- $\dot{H}_T(\tau)$  este debitul dozei echivalente in organul sau tesutul T, datorata incorporarii respective ,
- $\tau$  este timpul pe care se face integrarea.

Cand timpul pe care se face integrarea nu este specificat, el se presupune egal cu 50 de ani- pentru adulti, respectiv cu durata din momentul incorporarii pana la implinirea varstei de 70 de ani - pentru copii.

Unitatea de masura pentru doza echivalenta angajata este sievert-ul.

Doza efectiva angajata  $E(\tau)$  : suma ponderata a dozelor echivalente angajate de organele si tesuturile unui organism uman ( $H_T(\tau)$ ) in urma unei incorporari de substante radioactive; fiecare din dozele echivalente angajate de un organ sau tesut este ponderata cu factorul de pondere al organului sau tesutului respectiv  $w_T$  (vezi Anexa 3).

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

unde:

- $\tau$  este timpul pe care se face integrarea (vezi definitia dozei echivalente angajate).

Unitatea de masura pentru doza efectiva angajata este sievert-ul.

Doza evitabila: doza a carei primire se poate evita printr-o masura de interventie; este diferenta dintre doza primita in absenta masurii de interventie si doza primita in cazul implementarii masurii respective.

Efect deterministic: pierderea funcției tisulare ca urmare a iradierii organismului viu cu radiații ionizante peste o anumită doză, denumită prag, și deasupra căreia severitatea efectului crește cu doza.

Efluenți radioactivi: substanțe radioactive sub formă lichidă sau gazoasă evacuate și dispersate în mediu.

Expert acreditat: o persoană având cunoștințele și pregătirea necesare pentru a efectua testele fizice, tehnice sau radiochimice care permit evaluarea dozelor și/sau pentru a oferi consultanță pentru realizarea unei protecții efective a persoanelor și al utilizării corecte a echipamentelor de protecție și a cărei capacitate de acțiune ca expert în acest sens este recunoscută de CNCAN. Recunoașterea constă în eliberarea unui permis de exercitare, potrivit reglementărilor specifice emise de CNCAN.

Expunere: procesul de iradiere al unei persoane.

Expunere accidentală: o expunere la radiații a indivizilor ca rezultat al unui accident (nu include expunerea de urgență).

Expunere anormală: o expunere datorată unei activități desfășurate, în care doza primită în mod real depășește semnificativ doza preliminară a fi primită datorită respectivei activități; expunerile accidentale și expunerile de urgență sunt considerate expuneri anormale chiar în cazul în care nu sunt supraexpuneri.

Expunere cronică: o situație de expunere persistentă, rezultată în urma unei urgențe radiologice sau a unei practici sau activități profesionale din trecut sau învechite care conduce la o creștere inacceptabilă a dozelor.

Expunere de urgență: expunere la radiații a persoanelor care execută acțiuni rapide de ajutorare a persoanelor în pericol, de prevenire a expunerii la radiații a unui număr mare de oameni sau de salvare a unor instalații sau bunuri de valoare și în care pot fi depășite unele din limitele de doză pentru persoanele expuse profesional. Expunerea de urgență se va aplica numai voluntarilor.

Expunere potențială: expunere la radiații care nu este așteptată să se producă cu certitudine, dar care poate apărea în urma unui accident nuclear sau, mai general, a unui eveniment sau secvențe de evenimente de natură probabilistică implicând expunerea la radiații.

Fond natural de radiații: radiația:

- a) datorată radionuclizilor naturali conținuți în corpul uman și neincorporați în urma unei practici;
- b) cosmică prezenta la nivelul solului;
- c) prezenta deasupra solului, datorată radionuclizilor naturali prezenți în mediul geologic neperturbat.

Gray (Gy): numele special al unității de doză absorbită. Un gray este egal cu un joule pe kilogram:

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

Grup critic: un grup de persoane din populație, rezonabil de omogen cu privire la expunerea sa la o anumită sursă de radiații și o anumită cale de expunere, și care primesc cea mai mare doză efectivă (sau doză echivalentă, după cum este cazul) pe această cale de expunere și de la această sursă.

Incorporare:

- a) în sens calitativ - este procesul de patrundere în corp al radionuclizilor din mediul înconjurător;
- b) în sens cantitativ - activitățile radionuclizilor care patrund în corp din mediul înconjurător.

Instalație nucleară:

- instalație producătoare de radiații ionizante, și/sau
  - instalație, aparat sau dispozitiv care extrage, produce, prelucrează sau conține substanțe radioactive.
- Instalația nucleară include și clădirile sau structurile aferente.

Intervenție: orice acțiune care evită sau micșorează expunerea sau probabilitatea expunerii la surse care nu sunt obiectul unei practici aflate sub control sau la surse care sunt scăpate de sub control, ca urmare a unui accident.

Limita de doză: Valoare maximă de referință pentru doză anuală rezultată din expunerile la radiații ionizante, peste fondul natural, vizate de prezentele norme; limita se aplică la suma dintre dozele provenite din expunerile externe din perioada respectivă și dozele angajate provenite din incorporările de substanțe radioactive din aceeași perioadă. Limitele de doză se referă la: doză efectivă, doză echivalentă pentru cristalin, doză echivalentă pentru piele și doză echivalentă pentru extremitățile mainilor (antebrațe, palme, degete) și picioarelor (glezne, labe, degete); valorile limitelor de doză sunt stabilite în Capitolul IV.

Limite derivate (de emisie a efluentilor radioactivi sau de concentratie in aer sau apa a radionuclizilor): valori limita pentru activitate sau pentru concentratia activitatii, stabilite de titularul de autorizatie cu ajutorul unui expert acreditat sau al unui organism acreditat de protectie radiologica, in vederea respectarii limitelor de doza pentru persoanele expuse profesional si/sau pentru persoane din populatie, sau a respectarii constrangerilor de doza; limitele derivate sunt aprobate de CNCAN in procesul de autorizare.

Lucrator extern: o persoana expusa profesional care executa lucrari in zona controlata apartinand unui alt titular de autorizatie decat organizatia careia ii apartine persoana respectiva.

Material radioactiv: orice material care contine radionuclizi a caror activitate sau activitate specifica nu poate fi neglijata din punct de vedere al radioprotectiei.

Medic competent: un medic cu libera practica, responsabil in contextul prezentelor norme pentru supravegherea medicala a persoanelor expuse profesional, si a carui capacitate de a activa in acest sens este recunoscuta de Ministerul Sanatatii.

Nivel de interventie: o valoare a echivalentului de doza evitabila, a dozei efective evitabile sau a unei marimi derivate, la care ar trebui considerata luarea de masuri de interventie; valoarea dozei evitabile sau a marimii derivate este numai cea asociata cu calea de expunere pentru care masura de interventie este aplicata.

Niveluri de eliberare de sub cerintele de autorizare: valori stabilite de CNCAN, exprimate in termeni de concentratie a activitatii si de activitate de suprafata sub care materialele radioactive provenind din orice practica supusa cerintelor de autorizare pot fi eliberate de cerintele prezentelor norme.

Niveluri de exceptare: valori stabilite de CNCAN exprimate in termeni de activitate totala si specifica, sub care practica este exceptata de la cerintele de autorizare ale prezentelor norme.

Obiective nucleare: orice reactor nuclear, indiferent de putere, inclusiv ansamblurile critice sau subcritice, instalatii pentru fabricarea combustibilului nuclear, depozite temporare si finale de combustibil nuclear iradiat.

Organism acreditat de radioprotectie: un organism care desfasoara activitati privind asigurarea radioprotectiei expusilor profesional si/sau a persoanelor din populatie si a carui capacitate de a activa in acest domeniu este recunoscuta de CNCAN.

Organism dozimetric acreditat: un organism responsabil pentru etalonarea si verificarea instrumentelor de supraveghere dozimetrica individuala si citirea sau interpretarea indicatiilor acestora, sau pentru masurarile de radioactivitate in corpul omenesc sau in probe biologice, sau pentru evaluarea si atribuirea dozelor, a carei capacitate de a activa in acest sens este recunoscuta de CNCAN.

Permis de exercitare: documentul pe care, potrivit prevederilor Legii nr. 111/1996, republicate, orice persoana utilizata de titularul de autorizatie in practicile supuse respectivei autorizatii, trebuie sa-l detina. Permisul de exercitare trebuie sa fie valabil pentru activitatile desfasurate de respectiva persoana.

Persoana expusa profesional: o persoana angajata la o societate comerciala (eventual proprie), care este supusa la expuneri care apar datorita lucrului in cadrul unei practici aflate sub incidenta prezentelor norme, expuneri ce sumate pe un an pot depasi limitele de doza prevazute pentru persoanele din populatie.

Persoana din populatie:

- a) orice individ din populatie, in sens general;
- b) individul reprezentativ din grupul critic, in cazul verificarii respectarii limitelor anuale de doza pentru persoanele din populatie.

Persoana in curs de pregatire: un elev, ucenic sau student cu varsta peste 16 ani, aflat in curs de instruire practica si teoretica, sub responsabilitatea unui titular de autorizatie, in scopul obtinerii de cunostinte in domeniul nuclear.

Practica: orice activitate umana care poate creste expunerea indivizilor la radiatiile produse de surse artificiale, sau provenite de la orice echipament electric generand radiatii ionizante, sau produse de surse naturale (cand sunt procesati radionuclizi naturali avand in vedere proprietatile lor de substante radioactive, fisionabile sau fertile), cu exceptia expunerilor de urgenta.

Ca practici se mentioneaza, fara a se considera lista ca exhaustiva: producerea, prelucrarea, utilizarea, manipularea, detinerea, depozitarea, transportul, furnizarea, inchirierea, transferul, tranzitul, importul, exportul, dispunerea finala a surselor de radiatii si a materialelor radioactive precum si extractia si prelucrarea minereurilor de uraniu sau toriu.

Radionuclid: nucleu radioactiv.

Radiatie ionizanta: emiterea si propagarea, implicand transport de energie, a particulelor sau a undelor electromagnetice de lungime de unda de maximum 100 nanometri; radiatia ionizanta este capabila sa produca, direct sau indirect, ioni.

Radioprotectia operationala a personalului expus profesional (persoanelor din populatie): reprezinta ansamblul masurilor, dispozitiilor si controalelor care servesc la depistarea si eliminarea factorilor care, in cadrul practicii desfasurate, sunt susceptibile sa creeze pentru personalul expus profesional (persoanele din populatie) un risc de expunere neneglijabila din punct de vedere al radioprotectiei.

Responsabil cu securitatea radiologica: persoana care raspunde de aplicarea prevederilor prezentelor norme si a reglementarilor specifice in zona controlata si zona supravegheata adiacenta.

Securitate radiologica: asigurarea protectiei fiintelor umane impotriva expunerii la radiatii si a securitatii instalatiilor nucleare si a surselor radioactive, inclusiv asigurarea mijloacelor de realizare a acestei protectii si securitati si a mijloacelor de prevenire a accidentelor si de diminuare a consecintelor acestora, odata accidentele produse; securitatea obiectivelor nucleare si a surselor radioactive care prezinta risc de criticitate, este tratata de securitatea nucleara.

Sievert: numele special al unitatii echivalentului de doza sau al unitatii de doza efectiva. Un sievert este egal cu un joule pe kilogram:

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

Supraexpunere: o expunere care conduce la depasirea uneia din limitele de doza.

Sursa de radiatii: orice emitor de radiatii ionizante, inclusiv orice material radioactiv si orice dispozitiv generator de radiatii ionizante.

Sursa deschisa: o sursa radioactiva care nu indeplineste conditia din definitia sursei inchise.

Sursa inchisa: o sursa radioactiva a carei structura este astfel incat sa previna, in conditii normale de utilizare, orice dispersie in mediu a materialelor radioactive continute.

Sursa radioactiva: emitor de radiatii ionizante datorita materialelor radioactive continute.

Surse artificiale: surse de radiatii produse in urma unor practici umane.

Surse naturale: surse radioactive de provenienta naturala (terestra sau cosmica).

Tratarea si conditionarea deeurilor radioactive: succesiune de procese tehnologice prin care deeurile radioactive sunt transformatate intr-o forma stabila si nedispersabila, forma care este corespunzatoare pentru stocare indelungata sau dispunere finala.

Titular de autorizatie: orice persoana juridica care a obtinut din partea CNCAN o autorizatie de a desfasura o practica sau o alta actiune din domeniul prezentelor norme.

Urgenta radiologica: situatie consecutiva unui accident nuclear sau a unui alt eveniment implicand surse de radiatii, care necesita o actiune urgenta de protejare a persoanelor expuse profesional, a persoanelor din populatie sau a populatiei, fie partial, fie ca un intreg.

Zona controlata: o zona supusa la reguli speciale in scopul protectiei contra radiatiilor ionizante sau al prevenirii raspandirii contaminarii radioactive, si in care accesul este controlat.

Zona de excludere: zona din jurul unui obiectiv nuclear sau a unei alte instalatii nucleare cu risc de accident cu consecinte asupra populatiei, stabilita de titularul de autorizatie si aprobata de CNCAN, in care sunt luate masuri de excludere a amplasarii resedintelor permanente pentru populatie si a desfasurarii de activitati social economice care nu au legatura directa cu functionarea obiectivului nuclear respectiv, sau a instalatiei nucleare respective.

Zona cu populatie redusa: zona din jurul unui obiectiv nuclear sau a unei alte instalatii nucleare cu risc de accident cu consecinte asupra populatiei, stabilita de titularul de autorizatie si aprobata de CNCAN, in care sunt luate masuri de restrictionare a amplasarii resedintelor permanente pentru populatie si a desfasurarii de activitati social economice.

Zona supravegheata: o zona supusa supravegerii corespunzatoare in scopul protectiei impotriva radiatiei ionizante.

## CERINTELE SI CRITERIILE DE EXCLUDERE SI EXCEPTARE

1. Cerinta de excludere de la aplicarea prevederilor prezentelor norme conform dispozitiilor art. 4 lit. c) este ca, pentru toate liniile din tabelul 2-A care se refera la materialele, obiectele, deseurile sau apele uzate implicate, sa fie indeplinita conditia de linie.

Conditia de linie este indeplinita daca cel putin una din valorile prevazute in linie nu este depasita.

2. Nivelurile de excludere prezentate in Tabelul 2-B, col. 2 sunt deduse in ipoteza ca ingestia unui kg de material va duce la o doza eficace angajata de  $10\mu\text{Sv}$ . In cazul in care nivelul de excludere dedus depaseste unul din nivelurile de exceptare, nivelul de excludere dedus a fost inlocuit cu cel de exceptare.

3. Nivelurile de contaminare superficiala prezentate in Tabelul 2-B, col. 3 sunt valori mediate pe  $100\text{ cm}^2$ . Pentru calculul acestor niveluri s-a considerat cazul cel mai defavorabil rezultat din urmatoarele ipoteze:

a) iradierea pielii timp de 8760 de ore pe an duce la o doza efectiva de  $0,5\text{ mSv}$  pe an;

b) ingestia cotidiana a activitatii care s-ar putea gasi pe  $10\text{ cm}^2$  din regiunea miinii duce la o doza efectiva angajata de  $0,5\text{ mSv}$  pe an;

c) inhalarea intregii activitati prezente pe  $100\text{ cm}^2$  duce la o doza de  $5\text{ mSv}$  pe an.

4. In cazul amestecurilor de radionuclizi nivelul de excludere din Tabelul 2-B, col. 2, respectiv nivelul de contaminare din tabelul 2-B, col. 3, se considera respectate daca suma rapoartelor dintre valorile reale si nivelurile pentru fiecare radionuclid, prevazute in coloanele respective, este mai mica decat unu.

5. Criteriile fundamentale care sunt luate in considerare pentru exceptarea practicilor de la sistemul de autorizare sunt urmatoarele:

a) riscurile radiologice pentru o persoana, cauzate de practica exceptata, trebuie sa fie suficient de mici pentru a nu prezenta interes de reglementare;

b) impactul radiologic colectiv al practicii exceptate trebuie sa fie suficient de mic pentru a nu prezenta interes de reglementare;

c) practica exceptata este intrinsec fara semnificatie radiologica, adica cu probabilitate nesemnificativa de aparitie pentru scenarii care ar putea duce la nerespectarea criteriilor de la lit. a) si b).

6. O practica poate fi exceptata de la cerintele sistemului de autorizare fara o evaluare suplimentara, in acord cu prevederile art. 8, lit. a) si b), daca fie activitatea totala, fie concentratia activitatii radionuclidului implicat nu depaseste nivelul de exceptare mentionat in coloana 5, respectiv coloana 4 a Tabelului 2-B.

7. In mod exceptional, asa cum este prevazut in art. 8, lit. a) si b), CNCAN poate decide exceptarea unei practici fara o evaluare suplimentara, in concordanta

cu criteriile fundamentale, chiar daca sunt depasite nivelurile de exceptare din Tabelul 2-B, cu conditia ca urmatoarele criterii sa fie indeplinite cumulativ in toate situatiile previzibile:

a) doza efectiva anuala angajata pentru orice persoana din populatie datorita practicii respective sa fie de ordinul a  $10\mu\text{Sv}$  sau mai putin;

b) fie doza efectiva colectiva angajata pe un timp de un an de desfasurare a practicii respective sa nu depaseasca  $1\text{ mSv}$ , fie o evaluare a optimizarii radioprotectiei sa duca la concluzia ca exceptarea este solutia optima.

8. In toate cazurile in care practica implica mai multi radionuclizi, inclusiv amestecuri de radionuclizi, nivelurile de exceptare de la cerintele sistemului de autorizare vor fi deduse prin aplicarea criteriilor de sumare de mai jos:

a) suma rapoartelor dintre activitatile totale reale si nivelurile de exceptare prezentate in coloana 5 a Tabelului 2-B sau atribuite de CNCAN potrivit prevederilor paragrafului 7, pentru toti radionuclizii implicati in practica, trebuie sa fie mai mica decat unu.

b) suma rapoartelor dintre valorile reale ale concentratiilor activitatilor si nivelurile de exceptare prezentate in coloana 4 a Tabelului 2-B sau atribuite de CNCAN potrivit prevederilor paragrafului 7, pentru toti radionuclizii din amestec, trebuie sa fie mai mica decat unu.

9. Nivelurile de excludere si de exceptare pentru activitatile totale, prezentate in Tabelul 2-B, sau cele atribuite de CNCAN potrivit prevederilor de la paragraful 7, respectiv cerinta prezentata la paragraful 8, lit. a), se refera la totalul inventarului de substante radioactive detinut de o persoana fizica sau juridica, la orice moment de timp.

10. Nucleele marcate cu “ \* “ sau “ nat ” in Tabelul 2-B reprezinta nuclee precursora in echilibru cu descendentele lor si sunt listati in Tabelul 2-C. In acest caz, valorile date in Tabelul 2-B ca referindu-se numai la nucleul precursor, tin deja cont de prezenta descendentele lor.

11. Pentru radionuclizii care nu sunt listati in Tabelul 2-B, ca si pentru radionuclizii listati in Tabelul 2-B, dar pentru care nu sunt atribuite niveluri de excludere sau de contaminare, CNCAN trebuie, pe masura aparitiei nevoii, sa atribuipe nivelurile corespunzatoare.

## TABELUL 2-A

### 1. Materiale si obiecte

Materiale, obiecte	Activitate specifica	Activitate, masa	Contaminare, debit de doza
Substante solide	Nivelul de excludere din tabelul 2-B, col. 2	Nivelul de excludere din tabelul 2-B, col. 2	-
Substante solide	-	-	Debitul dozei ambientale la 10 cm de suprafata, dupa eliminarea fondului: 0,1 $\mu\text{Sv/h}$
Substante solide	-	-	Nivelul de contaminare din tabelul 2-A, col.3.
Lichide	Nivelul de excludere din tabelul 2-B, col. 2	Nivelul de excludere din tabelul 2-B, col. 2	-
Apa	Conform reglementarilor Ministerului Sanatatii	-	-
Produse alimentare	Conform reglementarilor Ministerului Sanatatii	-	-
Bunuri de larg consum destinate populatiei	Conform reglementarilor Ministerului Sanatatii	-	-
Minerale, colectii de minerale si de pietre	1000 de ori nivelul de excludere din tabelul 2-B, col. 2	10 g de toriu natural sau 100g de uraniu natural	-

### 2. Deseuri si ape uzate

Deseuri, ape uzate	Activitate specifica	Activitate	Contaminare, debit de doza
Deseuri solide	Nivelul de excludere din tabelul 2-B, col. 2	100 de ori nivelul de excludere din tabelul 2-B, col. 2., pe luna, la eliminarea in mediu.	-
Deseuri solide	-	-	Debitul dozei ambientale la 10 cm de suprafata, dupa eliminarea fondului: 0,1 $\mu\text{Sv/h}$
Deseuri solide	-	-	Nivelul de contaminare din tabelul 2-A, col.3.
Deseuri lichide	Nivelul de excludere din tabelul 2-B, col. 2	100 de ori nivelul de excludere din tabelul 2-B, col. 2., pe luna, la eliminarea in mediu	-
Ape uzate	1% din nivelul de excludere din tabelul 2-B, col. 2., ( ca medie saptamanala in apele uzate ale zonei de lucru)	100 de ori nivelul de excludere din tabelul 2-B, col. 2., pe luna	-
Deseuri sub forma gazoasa (imbuteliate)	-	Nivelul de exceptare din tabelul 2-B, col.5.	-

**TABELUL 2-B**

Nucleul	Nivelul de excludere (Bq/kg sau Bq)	Nivelul de contaminare (Bq/cm <sup>2</sup> )	Nivelul de exceptare (Bq/g)	Nivelul de exceptare (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
Am-243*	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

## TABELUL 2-C

### LISTA NUCLEELOR ÎN ECHILIBRU

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

**FACTORII DE PONDERARE PENTRU RADIATIE SI TISULARI**

**1. Definirea termenilor utilizați în prezenta anexă**

*C@mp expandat*: un c@mp derivat din c@mpul real, a cărui fluență și distribuție unghiulară și energetică au aceleași valori pretutindeni în volumul de interes ca și c@mpul real în punctul de referință.

*C@mp expandat și aliniat*: un c@mp de radiație în care fluența și distribuția sa unghiulară și energetică sunt aceleași cu ale c@mpului expandat, însă fluența este unidirecțională.

*Doza absorbită în țesut sau în organ* ( $D_T$ ): raportul dintre energia depusă într-un țesut sau organ și masa acelui țesut sau organ. Numele special al unității de măsură este gray (Gy).

*Echivalent de doză direcțională*  $H^*(d, \Omega)$ : echivalentul de doză, într-un punct din c@mpul de radiație, care ar fi produs de c@mpul expandat corespunzător, în sfera ICRU, la o adâncime,  $d$ , pe o rază într-o direcție specificată,  $\Omega$ . Numele special al unității de măsură este sievert (Sv).

*Echivalent de doză ambientală*  $H^*(d)$ : echivalentul de doză, într-un punct din c@mpul de radiație, care ar fi produs de c@mpul expandat și aliniat corespunzător, în sfera ICRU, la o adâncime  $d$ , pe raza ce se opune c@mpului aliniat. Numele special al unității de măsură este sievert (Sv).

*Echivalent de doză individuală*,  $H_p(d)$ : echivalentul de doză în țesuturile moi, la o adâncime corespunzătoare,  $d$ , sub un punct specificat pe corp. Numele special al unității de măsură este sievert (Sv).

*Factor de calitate* ( $Q$ ): o funcție de transferul liniar de energie nerestricționat ( $L$ ) utilizată pentru ponderarea dozelor absorbite într-un punct astfel încât să se ia în considerare calitatea radiației.

*Factor de calitate mediat*,  $\bar{Q}$ : valoarea medie a factorului de calitate într-un punct, în țesut, unde doza absorbită este furnizată de către particule cu valori ale lui  $L$  diferite. Valoarea lui se calculează cu formula:

$$\bar{Q} = \frac{1}{D} \int_0^{\infty} Q(L) D(L) dL$$

unde  $D$  este doza absorbită în punctul de interes iar  $D(L)dL$  este doza absorbită datorată particulelor în care are loc transferul liniar de energie nerestricționat cuprins între  $L$  și  $L+dL$ .  $Q(L)$  este factorul de calitate corespunzător în punctul de interes. Relațiile  $Q - L$  sunt date la par. 3.

*Factor de ponderare pentru radiație* ( $w_R$ ): un factor adimensional utilizat pentru ponderarea dozei absorbite în țesut sau în organ. Valorile corespunzătoare ale lui  $w_R$  sunt date la par. 2.

*Factor de ponderare tisulară* ( $w_T$ ): un factor adimensional utilizat pentru ponderarea dozei echivalente în țesutul sau în organul ( $T$ ). Valorile corespunzătoare ale lui  $w_T$  sunt date la par. 4.

*Fluență*,  $\Phi$ : raportul lui  $dN$  la  $da$ , unde  $dN$  reprezintă numărul de particule care intră în sfera de secțiune  $da$ :

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

*Sfera ICRU*: un corp standard definit de Comisia Internațională de Unități pentru Radiație (ICRU) pentru a aproxima corpul uman în ceea ce privește energia absorbită din radiația ionizantă; el constă dintr-o

sfer echivalent \esutului cu un diametru de 30 cm., o densitate de  $1 \text{ g.cm}^{-3}$  \i o compozi\ie procentual` masic` de 76,2% oxigen, 11,1% carbon, 10,1% hidrogen \i 2,6% azot.

*Transfer liniar de energie nerestric\ionat* ( $L_\infty$ ): o m`rime definit` ca:

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

unde  $dE$  este energia medie pierdut` de o particul` [nc`rcat`, av`nd energia  $E$ , prin ciocnirea cu electronii la traversarea unei distan\e  $dl$  [n ap`. \n aceast` norm`  $L_\infty$  este notat prin  $L$ .

## 2. Valorile factorului de ponderare pentru radia\ie, $w_R$

Valorile factorului de ponderare pentru radia\ie,  $w_R$ , depind de tipul \i calitatea c`mpului de radia\ie extern sau de tipul \i calitatea radia\iei emise de un radionuclid [ncorporat. Atunci c`nd c`mpul de radia\ii este compus din tipuri \i energii cu valori diferite pentru  $w_R$ , doza absorbit` trebuie divizat` [n blocuri, fiecare cu propria sa valoare pentru  $w_R$ , valori care se [nsumeaz` pentru a da doza echivalent` total`. Alternativ, se poate exprima ca o distribu\ie continu` [n energie, situa\ie [n care fiecare element de doz` absorbit` din intervalul de energie [ntre  $E$  \i  $E+dE$  este [nmul\it cu valoarea lui  $w_R$  corespunz`toare din tabelul urm`tor.

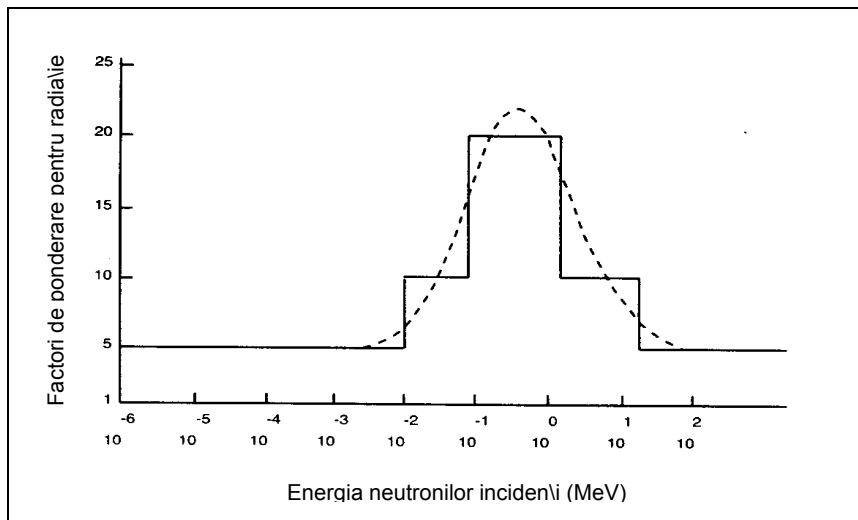
Tip \i domeniu de energie	Factor de ponderare pentru radia\ie, $w_R$
Fotoni, toate energiile	1
Electroni \i miuoni, toate energiile	1
Neutroni, energia < 10 keV	5
10 keV p`n` la 100 keV	10
>100 keV p`n` la 2 MeV	20
>2 MeV p`n` la 20 MeV	10
>20 MeV	5
Protoni, al\ii dec`t cei de recul, energii > 2 MeV	5
Particule alfa, fragmente de fisiune, nuclee grele	20

\n calculele pentru neutroni pot s` apar` dificult`\i dac` se utilizeaz` valorile unei func\ii [n trepte. \n aceste cazuri este preferabil` utilizarea unei func\ii continue descris` de urm`toarea formul` matematic`:

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

unde cu  $E$  este notat` energia neutronilor exprimat` [n MeV.

O compara\ie direct` [ntre cele dou` abord`ri este dat` [n figura de mai sus. Curba neted` este considerat`



ca o aproxima\ie.

Pentru tipurile de radiație și energiile care nu sunt incluse în tabel,  $w_R$  se poate aproxima cu factorul de calitate mediu  $\bar{Q}$  calculat la o adâncime de 10 mm în sfera ICRU.

### 3. Relația între factorul de calitate, $Q(L)$ , și transferul liniar de energie nerestricționat, $L$

Transfer liniar de energie nerestricționat, $L$ [n ap` (keV $\mu\text{m}^{-1}$ )	$Q(L)$
< 10	1
10 – 100	$0,32 L - 2,2$
> 100	$300/\sqrt{L}$

### 4. Factori de ponderare tisulară, $w_T$

Valorile factorilor de ponderare tisulară,  $w_T$ , sunt date în tabelul următor:

Țesut sau organ	Factor de ponderare tisulară, $w_T^{(1)}$
Gonade	0,20
Măduva osoasă hematopoietică	0,12
Colon	0,12
Plămâni	0,12
Stomac	0,12
Vezică urinară	0,05
Săni	0,05
Ficat	0,05
Esofag	0,05
Tiroidă	0,05
Piele	0,01
Suprafața osoasă	0,01
Restul organelor și țesuturilor	0,05 <sup>(2,3)</sup>

(1) Valorile au fost obținute dintr-o populație de referință cu ambele sexe reprezentate în număr egal și cu un domeniu larg de vârstă. În definiția dozei efective, aceste valori se aplică pentru lucrători, pentru populație în totalitate și pentru oricare dintre sexe.

(2) În scopul efectuării de calcule, prin “restul organelor și țesuturilor” se înțeleg următoarele organe și țesuturi: glande suprarenale, creier, intestinul gros superior, intestinul subțire, rinichi, mușchi, pancreas, splină, timus și uter. Lista include organe pentru care este probabil o iradiere selectivă. Se știe că unele organe din listă sunt susceptibile inducerii cancerului. Dacă alte țesuturi și organe vor fi identificate ulterior ca având un risc semnificativ pentru inducerea cancerului, atunci ele vor fi incluse fie cu un  $w_T$  specific în listă sau adăugate la restul organelor și țesuturilor. Restul organelor și țesuturilor poate include și alte organe și țesuturi iradiate selectiv.

(3) În acele situații excepționale în care numai un singur țesut sau organ din restul organelor și țesuturilor primește o doză echivalentă în surplus față de cea mai mare doză în oricare din cele douăsprezece organe pentru care este specificat un factor de ponderare, trebuie aplicat un factor de ponderare de 0,025 pentru acel țesut sau organ și un factor de ponderare de 0,025 pentru doza medie în celelalte țesuturi și organe ale restului organelor și țesuturilor.

### 5. Mărimi operaționale pentru expunere externă

1. Monitorizare individuală:

-echivalentul de doză individual  $H_p(d)$ ,  
unde  $d$  reprezintă adâncimea în corp în mm.

2. Monitorizarea zonei:

-echivalentul de doză ambiental  $H^*(d)$ ,

-echivalentul de doză direcțional  $H(d, \Omega)$ , unde

$d$  reprezintă adâncimea în mm sub suprafața sferei definite la par. III-1, iar



$\Omega$  reprezintă direcția specificată (potrivit publicației ICRU Report 51/1993).

3. Se recomandă o adâncime de 10 mm pentru radiația puternic penetrantă și o adâncime de 0,07 mm pentru radiația slab penetrantă pentru piele și 3 mm pentru ochi.

## VERIFICAREA CONFORMITĂȚII CU LIMITELE DOZEI

1. Cu excepția cazurilor anume menționate în prezentele norme, limitele pentru doze sunt aplicabile sumei dozelor de interes din expunerea externă pe o perioadă de un an, și a dozelor de interes angajate pe 50 de ani (până la vârsta de 70 de ani pentru copii) datorate [ncorporării din aceeași perioadă de timp.

În general, doza efectivă  $E$  [ncasată de o persoană din grupul de vârstă,  $g$ , se va determina cu ajutorul formulei:

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

unde  $E_{\text{externa}}$  reprezintă doza efectivă de interes din expunerea externă;  $h(g)_{j,\text{inh}}$  și  $h(g)_{j,\text{ing}}$  sunt dozele efective angajate pe unitatea de [ncorporare a unui radionuclid  $j$ , (Sv/Bq), prin inhalare, respectiv prin ingestie de o persoană din grupul de vârstă  $g$ ;  $J_{j,\text{ing}}$  și  $J_{j,\text{inh}}$  reprezintă [ncorporarea de radionuclid  $j$ , (Bq), prin ingestie, respectiv inhalare.

2. Valorile dozei efective angajate pentru unitatea de [ncorporare prin ingestie sau inhalare, pentru persoane din populație și pentru persoane în curs de sarcină cu vârsta între 16 și 18 ani, cu excepția celor datorate descendenților radonului și toronului, sunt date în Tabelele 4-A și 4-B ale acestei anexe. Valorile dozei efective angajate pentru unitatea de [ncorporare prin ingestie sau inhalare, pentru persoane expuse profesional și pentru persoane în curs de sarcină cu vârsta de 18 ani sau peste, cu excepția celor datorate descendenților radonului și toronului, sunt date în Tabelul 4-C1 al acestei anexe.

Pentru expunerea persoanelor din populație, Tabelul 4-A pentru ingestie conține valorile corespunzătoare diferiților factori de transfer intestinal  $f_1$  pentru copii mici și persoane mai în vârstă. De asemenea, pentru expunerea persoanelor din populație, Tabelul 4-B pentru inhalare conține valorile corespunzătoare diferitelor tipuri de absorbție pulmonară cu valori adecvate  $f_1$  pentru componenta din [ncorporare eliberată în tractul gastrointestinal. Dacă există informații cu privire la acești parametri atunci trebuie să fie utilizate valorile corespunzătoare; dacă nu există informații, atunci trebuie să fie utilizate valorile cele mai restrictive.

Pentru expunerea profesională, Tabelul 4-C1 conține valorile pentru ingestie corespunzătoare diferiților factori de transfer intestinal  $f_1$  și valorile pentru inhalare corespunzătoare diferitelor tipuri de absorbție pulmonară cu valori adecvate  $f_1$  pentru componenta din [ncorporare eliberată în tractul gastrointestinal.

Tabelul 4-D conține factorii  $f_1$  de transfer intestinal pentru [ncorporarea prin ingestie atât pentru elementul și pentru compușii săi, pentru persoane expuse profesional și acolo unde este potrivit și pentru persoane din populație. Tabelul 4-E conține tipurile de absorbție pulmonară și factorii de transfer intestinal  $f_1$  pentru [ncorporarea prin inhalare, de asemenea pe element și compuși și de asemenea pentru persoane expuse profesional și pentru persoane în curs de sarcină cu vârsta de 18 ani sau peste.

Tipurile de absorbție pulmonară și factorii de transfer intestinal  $f_1$  pentru persoane din populație trebuie să ia în considerare forma chimică a elementului pe baza evaluărilor internaționale disponibile. În general, dacă nu sunt disponibile informații referitoare la acești parametri, trebuie să fie utilizată valoarea cea mai restrictivă.

3. Pentru descendenții radonului și toronului se utilizează următorii factori de conversie convenționali exprimați în doză efectivă pe unitatea de expunere la energie alfa potențială (Sv/Jhm<sup>-3</sup>):

Radon în locuință: 1,1

Radon la locul de muncă: 1,4

Toron la locul de muncă: 0,5

Energia alfa potențială (a descendenților radonului și toronului) reprezintă energia alfa totală emisă prin dezintegrarea descendenților radonului și toronului din lanțul de dezintegrare respectiv, până la, dar fără să includă <sup>210</sup>Pb pentru descendenții <sup>222</sup>Rn și până la izotopul stabil <sup>208</sup>Pb pentru descendenții <sup>220</sup>Rn. Unitatea de măsură pentru energie în SI este Joule, cu simbolul J. Pentru expunere la o concentrație dată și un timp dat unitatea este Jhm<sup>-3</sup>.

Mai sunt utilizate următoarele unități tolerate:

Nivel de lucru (WL): O unitate de măsură pentru concentrația energiei alfa potențiale rezultate ca urmare a prezenței descendenților radonului sau toronului și care reprezintă emisia a  $1,3 \times 10^5$  MeV de energie alfa pe litrul de aer. În SI un WL corespunde la  $2,1 \times 10^{-5} \text{ Jm}^{-3}$ .

Nivel de lucru lună (WLM):  $1 \text{ WLM} = 170 \text{ WLh}$  ceea ce corespunde în SI la  $3,54 \text{ mJhm}^{-3}$ .

#### 4. Tabele:

(4-A) Doza efectivă angajată pe unitatea de încorporare prin ingestie ( $\text{Sv Bq}^{-1}$ ) pentru persoane din populație.

(4-B) Doza efectivă angajată pe unitatea de încorporare prin inhalare ( $\text{Sv Bq}^{-1}$ ) pentru persoane din populație.

(4-C1) Coeficienții de doză efectivă ( $\text{Sv Bq}^{-1}$ ).

(4-C2) Coeficienții de doză efectivă pentru gazele solubile sau chimic active.

(4-D) Compușii și valorile pentru factorii  $f_1$  care au fost utilizate în calculul coeficienților de doză pentru ingestie.

(4-E) Compușii, tipurile de absorbție pulmonară și valorile pentru factorii  $f_1$  care au fost utilizate în calculul coeficienților de doză pentru inhalare.

TABELUL 4-A

Doza efectiv` angajat` pe unitatea de [ncorporare prin ingestie (Sv Bq<sup>-1</sup>) pentru persoane din popula'ie

Nucleu	Timp de [njum`- t`vire	V@rsta g ≤ 1 a		f <sub>i</sub> pentru g > 1 a	V@rsta 1-2 a	V@rsta 2-7 a	V@rsta 7-12 a	V@rsta 12-17a	V@rsta >17 a
		f <sub>i</sub>	h(g)		h(g)	h(g)	h(g)	h(g)	h(g)
<b>Hidrogen</b>									
Ap` tritiat`	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
Tritiu legat organic	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
<b>Beriliu</b>									
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
<b>Carbon</b>									
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
<b>Fluor</b>									
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
<b>Sodiu</b>									
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
<b>Magneziu</b>									
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
<b>Aluminiu</b>									
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
<b>Siliciu</b>									
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
<b>Fosfor</b>									
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
<b>Sulf</b>									
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
<b>Clor</b>									
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
<b>Potasiu</b>									
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
<b>Calciu (*)</b>									
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
<b>Scandiu</b>									
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
<b>Titan</b>									
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
<b>Vanadiu</b>									
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
<b>Crom</b>									
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
<b>Mangan</b>									
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
<b>Fier (*)</b>									
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
<b>Cobalt (*)</b>									
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
<b>Nichel</b>									
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
<b>Cupru</b>									
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
<b>Zinc</b>									
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
<b>Galiu</b>									
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
<b>Germaniu</b>									
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
<b>Arsen</b>									
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

<b>Seleniu</b>									
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

<b>Brom</b>									
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

<b>Rubidiu</b>									
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

<b>Stroniu (*)</b>									
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

<b>Ytriu</b>									
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
<b>Zirconiu</b>									
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
<b>Niobiu</b>									
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
<b>Molibden</b>									
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
<b>Tehneiu</b>									
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
<b>Ruteniu</b>									
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
<b>Rodiu</b>									
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
<b>Paladiu</b>									
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
<b>Argint</b>									
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
<b>Cadmiu</b>									
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
<b>Indiu</b>									
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
<b>Staniu</b>									
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
<b>Stibiu</b>									
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
<b>Telur</b>									
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
<b>Iod</b>									
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
<b>Cesiu</b>									
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
<b>Bariu (*)</b>									
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
<b>Lantan</b>									
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
<b>Ceriu</b>									
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
<b>Praseodim</b>									
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
<b>Neodim</b>									
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
<b>Promeiu</b>									
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
<b>Samariu</b>									
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

<b>Europiu</b>									
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

<b>Gadoliniu</b>									
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

<b>Terbiu</b>									
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

<b>Disprosiu</b>									
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

<b>Holmiu</b>									
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
<b>Erbiu</b>									
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
<b>Tuliu</b>									
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
<b>Yterbiu</b>									
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
<b>Lute\iu</b>									
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

<b>Hafniu</b>									
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
<b>Tantal</b>									
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
<b>Wolfram</b>									
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
<b>Reniu</b>									
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
<b>Osmiu</b>									
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
<b>Iridiu</b>									
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
<b>Platin'</b>									
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
<b>Aur</b>									
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



<b>Mercur</b>									
Hg-193 (organic)	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
		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 (anorganic)	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
Hg-193m (organic)	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
		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 (anorganic)	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
Hg-194 (organic)	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
		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 (anorganic)	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
Hg-195 (organic)	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
		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 (anorganic)	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
Hg-195m (organic)	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
		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 (anorganic)	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
Hg-197 (organic)	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
		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 (anorganic)	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
Hg-197m (organic)	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
		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 (anorganic)	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
Hg-199m (organic)	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
		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 (anorganic)	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
Hg-203 (organic)	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
		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 (anorganic)	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

<b>Taliu</b>									
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

<b>Plumb (*)</b>									
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
<b>Bismut</b>									
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
<b>Poloniu</b>									
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
<b>Astatin</b>									
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
<b>Franciu</b>									
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
<b>Radiu (*)</b>									
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
<b>Actiniu</b>									
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

<b>Toriu</b>									
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
<b>Protactiniu</b>									
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
<b>Uranu</b>									
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
<b>Neptuniu</b>									
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
<b>Plutoniu</b>									
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
<b>Americiu</b>									
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
<b>Curiu</b>									
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
<b>Berkeliu</b>									
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
<b>Californiu</b>									
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
<b>Einsteiniu</b>									
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

<b>Fermiu</b>									
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
<b>Mendeleviu</b>									
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

Not' (\*): Valorile lui  $f_1$  pentru grupa de v@rste de la 1 an la 15 ani pentru nuclizii nota'i cu "\*" sunt urm'toarele:

pentru calciu este 0,4;  
 pentru fier este 0,2;  
 pentru cobalt este 0,3;  
 pentru ston'iu este 0,4;  
 pentru bariu este 0,3;  
 pentru plumb este 0,4;  
 pentru radiu este 0,3.

TABELUL 4-B

Doza efectiv` angajat` pe unitatea de [ncorporare prin inhalare (Sv Bq<sup>-1</sup>) pentru persoane din popula\ie

Nucleu	Timp de [njum`ta\ire	Tip	V@rsta		f <sub>i</sub>	V@rsta	V@rsta	V@rsta	V@rsta	V@rsta
			g ≤ 1 a		pentru	1-2 a	2-7 a	7-12 a	12-17 a	>17 a
			f <sub>1</sub>	h(g)	g > 1 a	h(g)	h(g)	h(g)	h(g)	h(g)
<b>Hidrogen</b>										
Ap` tritiat`	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
<b>Beriliu</b>										
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
<b>Carbon</b>										
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
<b>Fluor</b>										
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
<b>Sodiu</b>										
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
<b>Magneziu</b>										
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
<b>Aluminiu</b>										
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
<b>Siliciu</b>										
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
<b>Fosfor</b>										
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

<b>Sulf</b>										
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
<b>Clor</b>										
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
<b>Potasiu</b>										
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
<b>Calciu (*)</b>										
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
<b>Scandiu</b>										
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
<b>Titan</b>										
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
<b>Vanadiu</b>										
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

<b>Crom</b>										
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
<b>Mangan</b>										
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
<b>Fier (*)</b>										
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
<b>Cobalt (*)</b>										
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

### Nichel

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

### Cupru

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
<b>Galiu</b>										
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
<b>Germaniu</b>										
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
<b>Arsen</b>										
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
<b>Seleniu</b>										
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
<b>Brom</b>										
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

<b>Rubidiu</b>										
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
<b>Stron\iu(*)</b>										
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
<b>Ytriu</b>										
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
<b>Zirconiu</b>										
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
<b>Niobiu</b>										
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
<b>Molibden</b>										
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
<b>Tehneviu</b>										
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
<b>Ruteniu</b>										
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

<b>Rodiu</b>										
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
<b>Paladiu</b>										
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



<b>Argent</b>										
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
<b>Cadmiu</b>										
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
<b>Indiu</b>										
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
<b>Staniu</b>										
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
<b>Stibiu</b>										
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
<b>Telur</b>										
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
<b>Iod</b>										
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
<b>Cesiu</b>										
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
<b>Bariu (*)</b>										
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
<b>Lantan</b>										
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
<b>Ceriu</b>										
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
<b>Praseodim</b>										
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
<b>Neodim</b>										
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
<b>Promeliu</b>										
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
<b>Samariu</b>										
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
<b>Europiu</b>										
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
<b>Gadoliniu</b>										
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
<b>Terbiu</b>										
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
<b>Disprosiu</b>										
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
<b>Holmiu</b>										
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
<b>Erbiu</b>										
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
<b>Tuliu</b>										
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
<b>Yterbiu</b>										
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

<b>Lute/iu</b>										
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
<b>Hafniu</b>										
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
<b>Tantal</b>										
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
<b>Wolfram</b>										
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
<b>Reniu</b>										
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
<b>Osmiu</b>										
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

<b>Iridiu</b>										
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
<b>Platin`</b>										
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
<b>Aur</b>										
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
<b>Mercur</b>										
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
<b>Taliu</b>										
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
<b>Plumb (*)</b>										
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
<b>Bismut</b>										
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
<b>Poloniu</b>										
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
<b>Astatin</b>										
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
<b>Franciu</b>										
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
<b>Radiu (*)</b>										
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
<b>Actiniu</b>										
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
<b>Toruu</b>										
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
<b>Protactiniu</b>										
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

<b>Uraniu</b>										
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
<b>Neptuniu</b>										
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
<b>Plutoni</b>										
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
<b>Americiu</b>										
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
<b>Curium</b>										
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
<b>Berkelium</b>										
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



<b>Californiu</b>										
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
<b>Einsteiniu</b>										
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
<b>Fermiu</b>										
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
<b>Mendeleviu</b>										
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

NOT~:

(1). Coloana "Tip" conține caracterizarea vitezei de absorbție din pl'm@ni, literele F, M și S au respectiv semnificația de viteză de absorbție rapidă, moderată și lentă.

- (2). Pentru radionuclizii marcați (\*) și pentru intervalul de v@rstă de la 1 an la 15 ani și tipul F, coeficientul  $f_1$  are următoarele valori:
- pentru calciu este 0,4;
  - pentru fier este 0,2;
  - pentru cobalt este 0,3;
  - pentru stronțiu este 0,4;
  - pentru bariu este 0,3;
  - pentru plumb este 0,4;
  - pentru radium este 0,3.

TABELUL 4-C1

Coeficienții de doză efectivă (Sv Bq<sup>-1</sup>)

Nucleu	Timp de jumătate vie	Inhalare				Ingestie	
		Tip	f <sub>1</sub>	h(g) <sub>1μm</sub>	h(g) <sub>5μm</sub>	f <sub>1</sub>	h(g)
<b>Hidrogen</b>							
Ap` tritiat`	12.3 a		Vezi Tabelul C2			1.000	1.8 E-11
Tritiu legat organic	12.3 a		Vezi Tabelul C2			1.000	4.2 E-11
<b>Beriliu</b>							
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		
<b>Carbon</b>							
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
<b>Fluor</b>							
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		
<b>Sodiu</b>							
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
<b>Magneziu</b>							
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		
<b>Aluminiu</b>							
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		
<b>Siliciu</b>							
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		
<b>Fosfor</b>							
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		
<b>Sulf</b>							
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
<b>Clor</b>							
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		
<b>Potasiu</b>							
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
<b>Calciu</b>							
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
<b>Scandiu</b>							
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
<b>Titan</b>							
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		
<b>Vanadiu</b>							
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		
<b>Crom</b>							
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		
<b>Mangan</b>							
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		
<b>Fier</b>							
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		
<b>Cobalt</b>							
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
<b>Nichel</b>							
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		
<b>Cupru</b>							
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		
<b>Zinc</b>							
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
<b>Galiu</b>							
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		
<b>Germaniu</b>							
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		
<b>Arsen</b>							
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
<b>Seleniu</b>							
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
<b>Brom</b>							
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		
<b>Rubidiu</b>							
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
<b>Stron\iu</b>							
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
<b>Ytriu</b>							
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		
<b>Zirconiu</b>							
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		
<b>Niobiu</b>							
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		
<b>Molibden</b>							
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
<b>Tehneiu</b>							
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		
<b>Ruteniu</b>							
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		
<b>Rodiu</b>							
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		
<b>Paladiu</b>							
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		
<b>Argint</b>							
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		
<b>Cadmium</b>							
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		
<b>Indiu</b>							
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		
<b>Staniu</b>							
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		
<b>Stibiu</b>							
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		

<b>Telur</b>							
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		
<b>Iod</b>							
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

<b>Cesiu</b>							
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
<b>Bariu</b>							
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
<b>Lantan</b>							
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		
<b>Ceriu</b>							
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		
<b>Praseodim</b>							
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		
<b>Neodim</b>							
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		
<b>Promētijs</b>							
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		
<b>Samarijs</b>							
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
<b>Europijs</b>							
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
<b>Gadolinium</b>							
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		
<b>Terbiu</b>							
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
<b>Disprosiu</b>							
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
<b>Holmiu</b>							
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
<b>Erbium</b>							
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
<b>Tuliu</b>							
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
<b>Yterbiu</b>							
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		
<b>Luteviu</b>							
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		
<b>Hafniu</b>							
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		
<b>Tantal</b>							
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		
<b>Wolfрам</b>							
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
<b>Рениу</b>							
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		
<b>Osmiu</b>							
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		
<b>Iridiu</b>							
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		
<b>Platin`</b>							
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
<b>Aur</b>							
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		

<b>Mercur</b>							
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
(anorganic)		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
(anorganic)		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
(anorganic)		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
(anorganic)		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
(anorganic)		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
(anorganic)		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
(anorganic)		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
(anorganic)		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
(anorganic)		M	0.020	2.3 E-09	1.9 E-09		
<b>Taliu</b>							
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

<b>Plumb</b>							
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
<b>Bismut</b>							
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		
<b>Poloniu</b>							
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		

<b>Astatin</b>							
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		
<b>Franciu</b>							
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
<b>Radiu</b>							
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
<b>Actiniu</b>							
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		
<b>Toriu</b>							
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

<b>Protactiniu</b>							
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		
<b>Uranu</b>							
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		

<b>Neptuniu</b>							
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
<b>Plutoniu</b>							
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
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

<b>Americiu</b>							
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
<b>Curium</b>							
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
<b>Berkelium</b>							
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
<b>Californium</b>							
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
<b>Einsteinium</b>							
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
<b>Fermiu</b>							
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
<b>Mendeleviu</b>							
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

NOT~:

(1). Coloana "Tip" conține caracterizarea vitezei de absorbție din pl'm@ni, literele F, M și S au respectiv semnificația de viteză de absorbție rapidă, moderată și lentă.



TABELUL 4-C2  
Coeficienții de doz` efectiv` pentru gazele solubile sau chimic active

Nucleu/ Forma chimic`	$t_{1/2}$	$h(g)$ (Sv Bq <sup>-1</sup> )
Tritiu gaz	12,3a	1,8 E-15
Ap` tritiat`	12,3a	1,8 E-11
Tritiu legat organic	12,3a	4,1 E-11
Carbon – 11 vapori	0,34h	3,2 E-12
Carbon – 11 dioxid	0,34h	2,2 E-12
Carbon – 11 monoxid	0,34h	1,2 E-12
Carbon – 14 vapori	5,73E+3a	5,8 E-10
Carbon – 14 dioxid	5,73E+3a	6,5 E-12
Carbon – 14 monoxid	5,73E+3a	8,0 E-13
Sulf – 35 vapori	87,4d	1,2 E-10
Nichel – 56 carbur`	6,10d	1,2 E-9
Nichel – 57 carbur`	1,50d	5,6 E-10
Nichel – 59 carbur`	7,50 E+4d	8,3 E-10
Nichel – 63 carbur`	96,0a	2,0 E-9
Nichel – 65 carbur`	2,52h	3,6 E-10
Nichel – 66 carbur`	2,27d	1,6 E-9
Iod – 120 vapori	1,35h	3,0 E-10
Iod – 120m vapori	0,88h	1,8 E-10
Iod – 121 vapori	2,12h	8,6 E-11
Iod – 123 vapori	13,2h	2,1 E-10
Iod – 124 vapori	4,18d	1,2 E-8
Iod – 125 vapori	60,1d	1,4 E-8
Iod – 126 vapori	13,0d	2,6 E-8
Iod – 128 vapori	0,42h	6,5 E-11
Iod – 129 vapori	1,57 E+7a	9,6 E-8
Iod – 130 vapori	12,4h	1,9 E-9
Iod – 131 vapori	8,04d	2,0 E-8
Iod – 132 vapori	2,30h	3,1 E-10
Iod – 132m vapori	1,39h	2,7 E-10
Iod – 133 vapori	20,8h	4,0 E-9
Iod – 134 vapori	0,88h	1,5 E-10
Iod – 135 vapori	6,61h	9,2 E-10
Mercur – 193 vapori	3,50h	1,1 E-9
Mercur – 193m vapori	11,1h	3,1 E-9
Mercur – 194 vapori	2,60E+2a	4,0 E-8
Mercur – 195 vapori	9,90h	1,4 E-9
Mercur – 195m vapori	1,73d	8,2 E-9
Mercur – 197 vapori	2,67d	4,4 E-9
Mercur – 197m vapori	2,38h	5,8 E-9
Mercur – 199m vapori	0,71h	1,8 E-10
Mercur – 203 vapori	46,60d	7,0 E-9

TABELUL 4-D

Compu]ii ]i valorile pentru factorii  $f_i$  care au fost utilizate [n calculul coeficien\ilor de doz' pentru ingestie

Element	$f_i$	Compu]i
Hidrogen	1.000	Ap' tritiat' (ingestie)
	1.000	Tritiu legat organic
Carbon	1.000	Compu]i organici marca\i
Fluor	1.000	To\i compu]ii
Sodiu	1.000	To\i compu]ii
Magneziu	0.500	To\i compu]ii
Aluminiu	0.010	To\i compu]ii
Siliciu	0.010	To\i compu]ii
Fosfor	0.800	To\i compu]ii
Sulf	0.800	Compu]ii anorganici
	0.100	Sulf elemental
	1.000	Sulf organic
Clor	1.000	To\i compu]ii
Potasiu	1.000	To\i compu]ii
Calciu	0.300	To\i compu]ii
Scandiu	1.0 E-04	To\i compu]ii
Titan	0.010	To\i compu]ii
Vanadiu	0.010	To\i compu]ii
Crom	0.100	Compu]ii hexavalen\i
	0.010	Compu]ii trivalen\i
Mangan	0.100	To\i compu]ii
Fier	0.100	To\i compu]ii
Cobalt	0.100	To\i compu]ii nespecifica\i
	0.050	Oxizii, hidroxizii ]i compu]ii anorganici
Nichel	0.050	To\i compu]ii
Cupru	0.500	To\i compu]ii
Zinc	0.500	To\i compu]ii
Galiu	0.001	To\i compu]ii

Germaniu	1.000	To\i compu]ii
Arsenic	0.500	To\i compu]ii
Seleniu	0.800 0.050	To\i compu]ii nespecifica\i Seleniu elemental ]i selenuri
Brom	1.000	To\i compu]ii
Rubidiu	1.000	To\i compu]ii
Stron\iu	0.300 0.010	To\i compu]ii nespecifica\i Titanat de stron\iu (SrTiO3)
Ytriu	1.0 E-04	To\i compu]ii
Zirconiu	0.002	To\i compu]ii
Niobiu	0.010	To\i compu]ii
Molibden	0.800 0.050	To\i compu]ii nespecifica\i Sulfur` de molibden
Tehne\iu	0.800	To\i compu]ii
Ruteniu	0.050	To\i compu]ii
Rodiu	0.050	To\i compu]ii
Paladiu	0.005	To\i compu]ii
Argint	0.050	To\i compu]ii
Cadmiu	0.050	To\i compu]ii anorganici
Indiu	0.020	To\i compu]ii
Staniu	0.020	To\i compu]ii
Stibliu	0.100	To\i compu]ii
Telur	0.300	To\i compu]ii
Iod	1.000	To\i compu]ii
Cesiu	1.000	To\i compu]ii
Bariu	0.100	To\i compu]ii
Lantan	5.0 E-04	To\i compu]ii
Ceriu	5.0 E-04	To\i compu]ii
Praseodim	5.0 E-04	To\i compu]ii
Neodim	5.0 E-04	To\i compu]ii
Prome\iu	5.0 E-04	To\i compu]ii
Samariu	5.0 E-04	To\i compu]ii

Europiu	5.0 E-04	To\i compu]ii
Gadoliniu	5.0 E-04	To\i compu]ii
Terbiu	5.0 E-04	To\i compu]ii
Disprosiu	5.0 E-04	To\i compu]ii
Holmiu	5.0 E-04	To\i compu]ii
Erbiu	5.0 E-04	To\i compu]ii
Tuliu	5.0 E-04	To\i compu]ii
Yterbiu	5.0 E-04	To\i compu]ii
Lute\iu	5.0 E-04	To\i compu]ii
Hafniu	0.002	To\i compu]ii
Tantal	0.001	To\i compu]ii
Wolfram	0.300 0.010	To\i compu]ii nespecifica\i Acidul tungstic
Reniu	0.800	To\i compu]ii
Osmiu	0.010	To\i compu]ii
Iridiu	0.010	To\i compu]ii
Platin`	0.010	To\i compu]ii
Aur	0.100	To\i compu]ii
Mercur	0.020	To\i compu]ii anorganici
Mercur	1.000 0.400	Metil mercur To\i compu]ii organici nespecifica\i
Taliu	1.000	To\i compu]ii
Plumb	0.200	To\i compu]ii
Bismut	0.050	To\i compu]ii
Poloniu	0.100	To\i compu]ii
Astatin	1.000	To\i compu]ii
Franciu	1.000	To\i compu]ii
Radiu	0.200	To\i compu]ii
Actiniu	5.0 E-04	To\i compu]ii
Toriu	5.0 E-04 2.0 E-04	To\i compu]ii nespecifica\i Oxizi ]i hidroxizi
Protactiniu	5.0 E-04	To\i compu]ii

Uraniu	0.020 0.002	To\i compu\jii nespecifica\i Cei mai mul\i compu\ji tetravalen\i,ca de ex.:, UO <sub>2</sub> , U <sub>3</sub> O <sub>8</sub> , UF <sub>4</sub>
Neptuniu	5.0 E-04	To\i compu\jii
Plutoniu	5.0 E-04 1.0 E-04 1.0 E-05	To\i compu\jii nespecifica\i Nitra\i Oxizi insolubili
Americiu	5.0 E-04	To\i compu\jii
Curiu	5.0 E-04	To\i compu\jii
Berkeliu	5.0 E-04	To\i compu\jii
Californiu	5.0 E-04	To\i compu\jii
Einsteiniu	5.0 E-04	To\i compu\jii
Fermiu	5.0 E-04	To\i compu\jii
Mendeleviu	5.0 E-04	To\i compu\jii

TABELUL 4-E

Compu]ii, tipurile de absorb]ie pulmonar` ]i valorile pentru factorii  $f_1$  care au fost utilizate [n calculul coeficien]ilor de doz` pentru inhalare

Element	Tip	$f_1$	Compu]i
Beriliu	M	0.005	To]i compu]ii nespecifica]i Oxizi, halogenuri ]i nitra]i
	S	0.005	
Fluor	F	1.000	Determinat prin combinarea cationilor
	M	1.000	Determinat prin combinarea cationilor
	S	1.000	Determinat prin combinarea cationilor
Sodiu	F	1.000	To]i compu]ii
Magneziu	F	0.500	To]i compu]ii nespecifica]i Oxizi, hidroxizi, carburi, halogenuri ]i nitra]i
	M	0.500	
Aluminiu	F	0.010	To]i compu]ii nespecifica]i Oxizi, hidroxizi, carburi, halogenuri, nitra]i ]i aluminiu metalic
	M	0.010	
Siliciu	F	0.010	To]i compu]ii nespecifica]i Oxizi, hidroxizi, carburi, halogenuri ]i nitra]i Aerosoli de sticl` cu aluminosilica]i
	M	0.010	
	S	0.010	
Fosfor	F	0.800	To]i compu]ii nespecifica]i C@]iva fosfa]i: determina]i prin combinarea cationilor
	M	0.800	
Sulf	F	0.800	Sulfuri ]i sulfa]i: determinate prin combinarea cationilor Sulf elemental. Sulfuri ]i sulfa]i: determinate prin combinarea cationilor
	M	0.800	
Clor	F	1.000	Determinat prin combinarea cationilor Determinat prin combinarea cationilor
	M	1.000	
Potasiu	F	1.000	To]i compu]ii
Calciu	M	0.300	To]i compu]ii
Scandiu	S	1.0 E-04	To]i compu]ii
Titan	F	0.010	To]i compu]ii nespecifica]i Oxizi, hidroxizi, carburi, halogenuri ]i nitra]i Titanat de stron]iu ( $SrTiO_3$ )
	M	0.010	
	S	0.010	
Vanadiu	F	0.010	To]i compu]ii nespecifica]i Oxizi, hidroxizi, carburi ]i halogenuri
	M	0.010	
Crom	F	0.100	To]i compu]ii nespecifica]i Halogenuri ]i nitra]i Oxizi ]i hidroxizi
	M	0.100	
	S	0.100	
Mangan	F	0.100	To]i compu]ii nespecifica]i Oxizi, hidroxizi, carburi, halogenuri ]i nitra]i

	M	0.100	
Fier	F M	0.100 0.100	To\i compu]ii nespecifica\i Oxizi, hidroxizi ]i halogenuri
Cobalt	M S	0.100 0.050	To\i compu]ii nespecifica\i Oxizi, hidroxizi, halogenuri ]i nitra\i
Nichel	F M	0.050 0.050	To\i compu]ii nespecifica\i Oxizi, hidroxizi ]i carburi
Cupru	F M S	0.500 0.500 0.500	To\i compu]ii anorganici nespecifica\i Sulfuri, halogenuri ]i nitra\i Oxizi ]i hidroxizi
Zinc	S	0.500	To\i compu]ii
Galiu	F M	0.001 0.001	To\i compu]ii nespecifica\i Oxizi, hidroxizi, carburi, halogenuri ]i nitra\i
Germaniu	F M	1.000 1.000	To\i compu]ii nespecifica\i Oxizi, sulfuri ]i halogenuri
Arsenic	M	0.500	To\i compu]ii
Seleniu	F M	0.800 0.800	To\i compu]ii anorganici nespecifica\i Seleniu elemental, oxizi, hidroxizi ]i carburi
Brom	F M	1.000 1.000	Determinat prin combinarea cationilor Determinat prin combinarea cationilor
Rubidiu	F	1.000	To\i compu]ii
Stron\iu	F S	0.300 0.010	To\i compu]ii nespecifica\i Titanat de stron\iu ( $SrTiO_3$ )
Ytriu	M S	1.0 E-04 1.0 E-04	To\i compu]ii nespecifica\i Oxizi ]i hidroxizi
Zirconiu	F M S	0.002 0.002 0.002	To\i compu]ii nespecifica\i Oxizi, hidroxizi, carburi, halogenuri ]i nitra\i Carbur` de zirconiu
Niobiu	M S	0.010 0.010	To\i compu]ii nespecifica\i Oxizi ]i hidroxizi
Molibden	F S	0.800 0.050	To\i compu]ii nespecifica\i Sulfur` de molibden, oxizi ]i hidroxizi
Tehne\iu	F M	0.800 0.800	To\i compu]ii nespecifica\i Oxizi, hidroxizi, halogenuri ]i nitra\i
Ruteniu	F M S	0.050 0.050 0.050	To\i compu]ii nespecifica\i Halogenuri Oxizi ]i hidroxizi
Rodiu	F M	0.050 0.050	To\i compu]ii nespecifica\i Halogenuri

	S	0.050	Oxizi ji hidroxizi
Paladiu	F	0.005	To\i compu]ii nespecifica\i
	M	0.005	Nitra\i ji halogenuri
	S	0.005	Oxizi ji hidroxizi
Argint	F	0.050	To\i compu]ii nespecifica\i ji argintul metalic
	M	0.050	Nitra\i ji sulfuri
	S	0.050	Oxizi, hidroxizi ji carburi
Cadmiu	F	0.050	To\i compu]ii nespecifica\i
	M	0.050	Sulfuri, halogenuri ji nitra\i
	S	0.050	Oxizi ji hidroxizi
Indiu	F	0.020	To\i compu]ii nespecifica\i
	M	0.020	Oxizi, hidroxizi, halogenuri ji nitra\i
Staniu	F	0.020	To\i compu]ii nespecifica\i
	M	0.020	Fosfat de staniu, sulfuri, oxizi, hidroxizi, halogenuri ji nitra\i
Stibiu	F	0.100	To\i compu]ii nespecifica\i
	M	0.010	Oxizi, hidroxizi, halogenuri, nitra\i, sulfuri ji sulfai
Telur	F	0.300	To\i compu]ii nespecifica\i
	M	0.300	Oxizi, hidroxizi ji nitra\i
Iod	F	1.000	To\i compu]ii
Cesiu	F	1.000	To\i compu]ii
Bariu	F	0.100	To\i compu]ii
Lantan	F	5.0 E-04	To\i compu]ii nespecifica\i
	M	5.0 E-04	Oxizi ji hidroxizi
Ceriu	M	5.0 E-04	To\i compu]ii nespecifica\i
	S	5.0 E-04	Oxizi, hidroxizi ji fluoruri
Praseodim	M	5.0 E-04	To\i compu]ii nespecifica\i
	S	5.0 E-04	Oxizi, hidroxizi, carburi ji fluoruri
Neodim	M	5.0 E-04	To\i compu]ii nespecifica\i
	S	5.0 E-04	Oxizi, hidroxizi, carburi ji fluoruri
Prome\iu	M	5.0 E-04	To\i compu]ii nespecifica\i
	S	5.0 E-04	Oxizi, hidroxizi, carburi ji fluoruri
Samariu	M	5.0 E-04	To\i compu]ii
Europiu	M	5.0 E-04	To\i compu]ii
Gadolinu	F	5.0 E-04	To\i compu]ii nespecifica\i
	M	5.0 E-04	Oxizi, hidroxizi ji fluoruri
Terbiu	M	5.0 E-04	To\i compu]ii
Disprosiu	M	5.0 E-04	To\i compu]ii



Holmiu	M	5.0 E-04	To\i compu]ii nespecifica\i
Erbiu	M	5.0 E-04	To\i compu]ii
Tuliu	M	5.0 E-04	To\i compu]ii
Yterbiu	M S	5.0 E-04 5.0 E-04	To\i compu]ii nespecifica\i Oxizi, hidroxizi ]i fluoruri
Lute\iu	M S	5.0 E-04 5.0 E-04	To\i compu]ii nespecifica\i Oxizi, hidroxizi ]i fluoruri
Hafniu	F M	0.002 0.002	To\i compu]ii nespecifica\i Oxizi, hidroxizi, carburi, halogenuri ]i nitra\i
Tantal	M S	0.001 0.001	To\i compu]ii nespecifica\i Tantal elemental, oxizi, hidroxizi, halogenuri, nitra\i ]i nitri\i
Wolfram	F	0.300	To\i compu]ii
Reniu	F M	0.800 0.800	To\i compu]ii nespecifica\i Oxizi, hidroxizi, halogenuri ]i nitra\i
Osmiu	F M S	0.010 0.010 0.010	To\i compu]ii nespecifica\i Halogenuri ]i nitra\i Oxizi ]i hidroxizi
Iridiu	F M S	0.010 0.010 0.010	To\i compu]ii nespecifica\i Iridiu metalic, halogenuri ]i nitra\i Oxizi ]i hidroxizi
Platin`	F	0.010	To\i compu]ii
Aur	F M S	0.100 0.100 0.100	To\i compu]ii nespecifica\i Halogenuri ]i nitra\i Oxizi ]i hidroxizi
Mercur	F M	0.020 0.020	Sulfa\i Oxizi, hidroxizi, halogenuri, sulfuri ]i nitra\i
Mercur	F	0.400	To\i compu]ii organici
Taliu	F	1.000	To\i compu]ii
Plumb	F	0.200	To\i compu]ii
Bismut	F M	0.050 0.050	Nitrat de bismut To\i compu]ii nespecifica\i
Poloniu	F M	0.100 0.100	To\i compu]ii nespecifica\i Oxizi, hidroxizi ]i nitra\i
Astatin	F M	1.000 1.000	Determinat prin combinarea cationilor Determinat prin combinarea cationilor
Franciu	F	1.000	To\i compu]ii
Radiu	M	0.200	To\i compu]ii

Actiniu	F	5.0 E-04	To\i compu]ii nespecifica\i Halogenuri ]i nitra\i Oxizi ]i hidroxizi
	M	5.0 E-04	
	S	5.0 E-04	
Toriu	M	5.0 E-04	To\i compu]ii nespecifica\i Oxizi ]i hidroxizi
	S	2.0 E-04	
Protactiniu	M	5.0 E-04	To\i compu]ii nespecifica\i Oxizi ]i hidroxizi
	S	5.0 E-04	
Uranu	F	0.020	Cei mai mul\i compu]i hexavalen\i,ca de ex.: UF <sub>6</sub> , UO <sub>2</sub> F <sub>2</sub> ]i UO <sub>2</sub> (NO <sub>3</sub> ) <sub>2</sub> Compu]ii mai pu\in solubili, ca de ex.: UO <sub>3</sub> , UF <sub>4</sub> , UCl <sub>4</sub> ]i cei mai mul\i dintre ceilal\i compu]i hexavalen\i Compu]ii cei mai insolubili,ca de ex.: UO <sub>2</sub> ]i U <sub>3</sub> O <sub>8</sub>
	M	0.020	
	S	0.002	
Neptuniu	M	5.0 E-04	To\i compu]ii
Plutoniu	M	5.0 E-04	To\i compu]ii nespecifica\i Oxizii insolubili
	S	1.0 E-05	
Americiu	M	5.0 E-04	To\i compu]ii
Curiu	M	5.0 E-04	To\i compu]ii
Berkeliu	M	5.0 E-04	To\i compu]ii
Californiu	M	5.0 E-04	To\i compu]ii
Einsteinu	M	5.0 E-04	To\i compu]ii
Fermiu	M	5.0 E-04	To\i compu]ii
Mendeleviu	M	5.0 E-04	To\i compu]ii

Not`:

(1). Coloana "Tip" con\ine caracterizarea vitezei de absorb\ie din pl`m@ni, literele F, M ]i S au respectiv semnifica\ia de vitez` de absorb\ie rapid`, moderat` ]i lent`.

# ANEXA 5

## Simbolul pericol de radiatii

