

放射性物質の数量等に関する基準（平成十二年十二月二十六日）（厚生省告示第三百九十九号）

Standards for Activities of Radioactive Materials (December 26, 2000) (Public Notice of the Ministry of Health and Welfare No. 399)*

薬事法施行規則（昭和三十六年厚生省令第一号）、薬局等構造設備規則（昭和三十六年厚生省令第二号）及び放射性医薬品の製造及び取扱規則（昭和三十六年厚生省令第四号）の規定に基づき、放射性物質の数量等に関する基準（平成元年三月厚生省告示第五十八号）の全部を次のように改正し、平成十三年四月一日から適用する。ただし、この告示の適用の際現に薬事法（昭和三十五年法律第百四十五号）第五条第一項、第十二条第一項、第二十二條第一項又は第二十六條第一項の許可を受けている者又は許可を申請している者の当該許可又は当該申請に係る薬局、製造所、営業所又は店舗については、第二条、第五条、第七条及び第十二条の規定にかかわらず、平成十五年三月三十一日までの間は、なお従前の例によることができる。

Based on the provisions of the Regulation for Enforcement of the Pharmaceutical Affairs Act[†] (Order of the Ministry of Health and Welfare No. 1 of 1961), the Regulation on Structure and Equipment for Pharmacies (Order of the Ministry of Health and Welfare No. 2 of 1961), and the Regulation on Manufacture and Handling of Radiopharmaceuticals (Order of the Ministry of Health and Welfare No. 4 of 1961), the Standards for Activities of Radioactive Materials (Public Notice of the Ministry of Health and Welfare No. 58 of March 1989) is amended in full as follows and becomes applicable as of April 1, 2001; provided, however, that with regard to a person who has obtained permission or has applied for permission as set forth in Article 5, paragraph (1), Article 12, paragraph (1), Article 22, paragraph (1), or Article 26, paragraph (1) of the Pharmaceutical Affairs Act (Act No. 145 of 1960) as of the time of the commencement of the application of this Public Notice, the pharmacy, manufacturing facility, business office, or store of the relevant person pertaining to that permission or application may be governed by prior laws until March 31, 2003, notwithstanding the provisions of Article 2, Article 5, Article 7 and Article 12.

放射性物質の数量等に関する基準

Standards for Activities of Radioactive Materials

(放射線障害防止に関する規制の適用除外に係る放射性物質の数量又は濃度)

* Last amendment by Public Notice of Ministry of Health, Labour and Welfare No. 109 of 2016, applied from March 28, 2016

[†] Currently, the Regulation for Enforcement of the Act on Securing Quality, Efficacy and Safety of Products Including Pharmaceuticals and Medical Devices

(Activities or Concentrations of Radioactive Materials Exempted from Application of the Regulation on Prevention of Radiation Hazards)

第一条 医薬品、医療機器等の品質、有効性及び安全性の確保等に関する法律施行規則（昭和三十六年厚生省令第一号）第一条第五項第七号、第二十五条第二項第七号及び第三十五条第二項第五号、薬局等構造設備規則（昭和三十六年厚生省令第二号。以下「設備規則」という。）第一条第二項ただし書並びに第九条第一項第二号へただし書及び第四号ニただし書並びに同条第二項、医療機器及び体外診断用医薬品の製造管理及び品質管理の基準に関する省令（平成十六年厚生労働省令第百六十九号。以下「製造管理等基準省令」という。）第八十条第一項第二号へただし書及び第四号ニただし書並びに同条第三項並びに放射性医薬品の製造及び取扱規則（昭和三十六年厚生省令第四号。以下「製造及び取扱規則」という。）第三条の二第三項第四号ただし書及び第十四条に規定する数量又は濃度は、次に掲げる数量又は濃度とする。

Article 1 (1) The activities or concentrations prescribed in Article 1, paragraph (5), item (vii), Article 25, paragraph (2), item (vii), and Article 35, paragraph (2), item (v) of the Regulation for Enforcement of the Act on Securing Quality, Efficacy and Safety of Products Including Pharmaceuticals and Medical Devices (Order of the Ministry of Health and Welfare No. 1 of 1961), in the proviso to Article 1, paragraph (2), the provisos to item (ii), (f) and item (iv), (d) of Article 9, paragraph (1), and paragraph (2) of the same Article of the Regulation on Structure and Equipment for Pharmacies (Order of the Ministry of Health and Welfare No. 2 of 1961; hereinafter referred to as the "Regulation on Equipment"), in the provisos to item (ii), (f) and item (iv), (d) of Article 80, paragraph (1), and paragraph (3) of the same Article of the Ministerial Order on the Standards for Manufacturing Control and Quality Control for Medical Devices and In-Vitro Diagnostics (Order of the Ministry of Health, Labour and Welfare No. 169 of 2004; hereinafter referred to as the "Ministerial Order on the Standards for Manufacturing Control, etc."), and in the proviso to Article 3-2, paragraph (3), item (iv) and Article 14 of the Regulation on Manufacture and Handling of Radiopharmaceuticals (Order of the Ministry of Health and Welfare No. 4 of 1961; hereinafter referred to as the "Regulation on Manufacture and Handling") are to be the following activities or concentrations:

一 別表第一の第一欄に掲げる放射性物質の種類が一種類のものについては、その種類に応じて、同表の第二欄に掲げる数量又は同表の第三欄に掲げる濃度

(i) regarding any single type of radioactive materials set forth in column 1 of Appended Table 1, the activity set forth in column 2 of the same table or the concentration set forth in column 3 of the same table, depending on the type of radioactive materials;

二 別表第一の第一欄に掲げる放射性物質の種類が二種類以上のものについては、放射性物質のそれぞれの数量の同表の第二欄に掲げる数量に対する割合の和が一とな

るようなそれらの数量、又は放射性物質のそれぞれの濃度の同表の第三欄に掲げる濃度に対する割合の和が一となるようなそれらの濃度

(ii) regarding two or more types of radioactive materials as set forth in column 1 of Appended Table 1, the activities of respective types, the total of whose activity ratios against the activities respectively set forth in column 2 of the same table comes to 1, or the concentrations of respective types, the total of whose concentration ratios against the concentrations respectively set forth in column 3 of the same table comes to 1.

2 前項の数量又は濃度は、数量については薬局、製造所又は店舗に存する放射性物質の数量とし、濃度については容器一個に入っている放射性物質の濃度とする。

(2) The activities or concentrations set forth in the preceding paragraph are the activities of radioactive materials existing in a pharmacy, manufacturing facility or store, or the concentrations of radioactive materials contained respectively in a single container.

(平一三厚労告三二一・平一七厚労告二四九・平二六厚労告二五七・平二六厚労告四三九・一部改正)

(Partial amendments by Public Notice of the Ministry of Health, Labour and Welfare No. 321 of 2001, Public Notice of the Ministry of Health, Labour and Welfare No. 249 of 2005, Public Notice of the Ministry of Health, Labour and Welfare No. 257 of 2014, and Public Notice of the Ministry of Health, Labour and Welfare No. 439 of 2014)

(管理区域に係る線量等)

(Doses Pertaining to Controlled Areas)

第二条 製造及び取扱規則第一条第三号に規定する管理区域に係る外部放射線の線量、空気中の放射性物質の濃度及び放射性物質によって汚染される物の表面の放射性物質の密度は、次のとおりとする。

Article 2 The doses of external radiation, the concentrations of radioactive materials in the air, and the densities of radioactive materials on the surface of articles contaminated with radioactive materials in the controlled areas prescribed in Article 1, item (iii) of the Regulation on Manufacture and Handling are to be as follows:

一 外部放射線の線量については、実効線量が三月間につき一・三ミリシーベルト

(i) doses of external radiation: the effective dose is to be 1.3 mSv per three months;

二 空気中の放射性物質の濃度については、三月間についての平均濃度が第五条各号に規定する濃度の十分の一

(ii) concentrations of radioactive materials in the air: the three-month average concentrations are to be one-tenth of the concentrations prescribed in the items

of Article 5;

三 放射性物質によって汚染される物の表面の放射性物質の密度については、第六条に規定する密度の十分の一

(iii) densities of radioactive materials on the surface of articles contaminated with radioactive materials: the densities are to be one-tenth of the densities prescribed in Article 6;

四 第一号及び第二号の規定にかかわらず、外部放射線に被ばくするおそれがあり、かつ、空気中の放射性物質を吸入摂取するおそれがあるときは、実効線量の第一号に規定する線量に対する割合と空気中の放射性物質の濃度の第二号に規定する濃度に対する割合の和が一となるような実効線量及び空気中の放射性物質の濃度

(iv) notwithstanding the provisions of item (i) and item (ii), when there is a likeliness of exposure to external radiation or inhalation of radioactive materials in the air, the effective doses and the concentrations of radioactive materials in the air are to be such that the total of the ratio of the effective doses against the doses prescribed in item (i) and the ratio of the concentrations of radioactive materials in the air against the concentrations prescribed in item (ii) comes to 1.

(実効線量限度)

(Effective Dose Limits)

第三条 製造及び取扱規則第一条第五号に規定する放射線作業者の一定期間内における実効線量限度は、次のとおりとする。

Article 3 The effective dose limits during a certain period of time for radiation workers prescribed in Article 1, item (v) of the Regulation on Manufacture and Handling are to be as follows:

一 平成十三年四月一日以後五年ごとに区分した各期間につき百ミリシーベルト

(i) 100 mSv for each five-year period after April 1, 2001;

二 四月一日を始期とする一年間につき五十ミリシーベルト

(ii) 50 mSv for a period of one year starting from April 1;

三 女子（妊娠する可能性がないと診断された者、妊娠する意思がない旨を製造業者等に書面で申し出た者及び次号に規定する者を除く。）については、前二号に規定するほか、四月一日、七月一日、十月一日及び一月一日を始期とする各三月間につき五ミリシーベルト

(iii) regarding female workers (excluding those diagnosed as being unable to conceive, those who have reported in writing to the relevant manufacturer, etc. that they have no intention to get pregnant, and those prescribed in the following item), as prescribed in the preceding two items, and 5 mSv for each three-month period starting from April 1, July 1, October 1, and January 1;

四 妊娠中である女子については、第一号及び第二号に規定するほか、本人の申出等

により製造業者等が妊娠の事実を知った時から出産までの間につき、内部被ばくについて一ミリシーベルト

- (iv) regarding pregnant female workers, as prescribed in item (i) and item (ii), and 1 mSv of internal exposure from the time when the relevant manufacturer, etc. comes to know of their pregnancy up to the time of delivery.

(等価線量限度)

(Equivalent Dose Limits)

第四条 製造及び取扱規則第一条第六号に規定する放射線作業者の各組織の一定期間内における等価線量限度は、次のとおりとする。

Article 4 The equivalent dose limits during a certain period of time in respective tissues of radiation workers prescribed in Article 1, item (vi) of the Regulation on Manufacture and Handling are to be as follows:

一 眼の水晶体については、四月一日を始期とする一年間につき百五十ミリシーベルト

(i) regarding eye lens, 150 mSv for a period of one year starting from April 1;

二 皮膚については、四月一日を始期とする一年間につき五百ミリシーベルト

(ii) regarding skin, 500 mSv for a period of one year starting from April 1;

三 妊娠中である女子の腹部表面については、前条第四号に規定する期間につき二ミリシーベルト

(iii) regarding abdominal surface of pregnant female workers, 2 mSv for a period prescribed in item (iv) of the preceding Article.

(空气中濃度限度)

(Concentration Limits in the Air)

第五条 設備規則第九条第一項第四号ニ(4)、製造管理等基準省令第八十条第一項第四号ニ(4)並びに製造及び取扱規則第一条第七号及び第三条の二第三項第四号ニに規定する空气中の放射性物質の濃度限度は、一週間についての平均濃度が次の各号に規定する濃度とする。

Article 5 The concentration limits of radioactive materials in the air prescribed in Article 9, paragraph (1), item (iv), (d), 4. of the Regulation on Equipment, Article 80, paragraph (1), item (iv), (d), 4. of the Ministerial Order on the Standards for Manufacturing Control, etc., and Article 1, item (vii) and Article 3-2, paragraph (3), item (iv), (d) of the Regulation on Manufacture and Handling are to all be the concentrations whose weekly averages are as prescribed in the following items:

一 放射性物質の種類（別表第二に掲げるものをいう。次号において同じ。）が明らかで、かつ、一種類である場合にあっては、別表第二の第一欄に掲げる放射性物質の種類に応じて第四欄に掲げる濃度

(i) when the type of the radioactive materials (meaning any of the types set forth in Appended Table 2; the same applies in the following item) is clear and in the case of a single type of radioactive materials, the concentration set forth in column 4 of Appended Table 2, depending on the type of the radioactive materials set forth in column 1 of the same table;

二 放射性物質の種類が明らかで、かつ、空気中に二種類以上の放射性物質がある場合にあつては、それらの放射性物質の濃度のそれぞれの放射性物質についての前号の濃度に対する割合の和が一となるようなそれらの放射性物質の濃度

(ii) when the types of the radioactive materials are clear and there are two or more types of radioactive materials in the air, the concentrations of those radioactive materials, the total of whose concentration ratios against the concentrations respectively set forth in the preceding item comes to 1;

三 放射性物質の種類が明らかでない場合にあつては、別表第二の第四欄に掲げる濃度（当該空気中に含まれていないことが明らかである放射性物質の種類に係るものを除く。）のうち、最も低いもの

(iii) when the types of the radioactive materials are not clear, the lowest concentration among those set forth in column 4 of Appended Table 2 (excluding concentrations for types of radioactive materials that are not evidently contained in the air);

四 放射性物質の種類が明らかで、かつ、当該放射性物質の種類が別表第二に掲げられていない場合にあつては、別表第三の第一欄に掲げる放射性物質の区分に応じて第二欄に掲げる濃度

(iv) when the types of the radioactive materials are clear but those types are not included in Appended Table 2, the concentrations respectively set forth in column 2 of Appended Table 3, depending on the categories of radioactive materials set forth in column 1 of the same table.

(平一三厚労告三二一・平二六厚労告四三九・一部改正)

(Partial amendments by Public Notice of the Ministry of Health, Labour and Welfare No. 321 of 2001 and Public Notice of the Ministry of Health, Labour and Welfare No. 439 of 2014)

(表面密度限度)

(Surface Density Limits)

第六条 製造及び取扱規則第一条第八号に規定する人が触れる物の表面の放射性物質の密度限度は、別表第四の左欄に掲げる放射性物質の区分に応じて右欄に掲げる密度とする。

Article 6 The density limits of radioactive materials on the surface of articles touched by people as prescribed in Article 1, item (viii) of the Regulation on Manufacture

and Handling are to be the densities set forth in the right-hand column of Appended Table 4, depending on the categories of radioactive materials set forth in the left-hand column of the same table.

(遮蔽物の設置に係る線量限度)

(Dose Limits Pertaining to Installation of Radiation Shield)

第七条 設備規則第一条第二項第三号イ及び第九条第一項第二号ハ(1)、製造管理等基準省令第八十条第一項第二号ハ(1)並びに製造及び取扱規則第三条の二第一項第三号イに掲げる線量に係る線量限度は、実効線量が一週間につき一ミリシーベルトとする。

Article 7 (1) The dose limits set forth in Article 1, paragraph (2), item (iii), (a) and Article 9, paragraph (1), item (ii), (c), 1. of the Regulation on Equipment, Article 80, paragraph (1), item (ii), (c), 1. of the Ministerial Order on the Standards for Manufacturing Control, etc., and Article 3-2, paragraph (1), item (iii), (a) of the Regulation on Manufacture and Handling are to all be the effective dose of 1 mSv per week.

2 設備規則第一条第二項第三号ロ及び第九条第一項第二号ハ(2)、製造管理等基準省令第八十条第一項第二号ハ(2)並びに製造及び取扱規則第三条の二第一項第三号ロに掲げる線量に係る線量限度は、実効線量が三月間につき二百五十マイクロシーベルトとする。

(2) The dose limits set forth in Article 1, paragraph (2), item (iii), (b) and Article 9, paragraph (1), item (ii), (c), 2. of the Regulation on Equipment, Article 80, paragraph (1), item (ii), (c), 2. of the Ministerial Order on the Standards for Manufacturing Control, etc., and Article 3-2, paragraph (1), item (iii), (b) of the Regulation on Manufacture and Handling are to all be the effective dose of 250 μ Sv per three months.

(平一三厚労告三二一・平二六厚労告四三九・一部改正)

(Partial amendments by Public Notice of the Ministry of Health, Labour and Welfare No. 321 of 2001 and Public Notice of the Ministry of Health, Labour and Welfare No. 439 of 2014)

(放射性物質等の廃棄に従事する者に係る線量限度)

(Dose Limits Pertaining to Persons Engaging in Disposal of Radioactive Materials, etc.)

第八条 製造及び取扱規則第二条第一項第五号に規定する放射線作業員以外の者であつて、放射性物質等の廃棄に従事するものに係る線量限度については、第三条及び第四条の規定を準用する。

Article 8 With regard to the dose limits for persons other than radiation workers prescribed in Article 2, paragraph (1), item (v) of the Regulation on Manufacture

and Handling who engage in disposal of radioactive materials, etc., the provisions of Article 3 and Article 4 are applied mutatis mutandis.

(放射性物質等の運搬に従事する者に係る線量限度)

(Dose Limits Pertaining to Persons Engaging in Transport of Radioactive Materials)

第九条 製造及び取扱規則第二条第一項第五号に規定する放射線作業員以外の者であつて、放射性物質等の運搬に従事するものに係る線量限度は、実効線量が四月一日を始期とする一年間につき一ミリシーベルトとする。

Article 9 The dose limits pertaining to persons other than the radiation workers prescribed in Article 2, paragraph (1), item (v) of the Regulation on Manufacture and Handling who engage in transport of radioactive materials, etc. are to all be the effective dose of 1 mSv for a period of one year starting from April 1.

(管理区域から持ち出す物に係る表面密度)

(Surface Densities for Articles Taken out of Controlled Areas)

第十条 製造及び取扱規則第二条第一項第十二号に規定する放射性物質によって汚染された物の表面の放射性物質の密度は、表面密度限度の十分の一とする。

Article 10 The densities of radioactive materials on the surface of articles contaminated with radioactive materials prescribed in Article 2, paragraph (1), item (xii) of the Regulation on Manufacture and Handling are to be one-tenth of the surface density limits.

(平一七厚労告四九二・一部改正)

(Partial amendments by Public Notice of the Ministry of Health, Labour and Welfare No. 492 of 2005)

(容器又は被包の表面に係る線量率)

(Dose Rates Pertaining to Surface of Containers or Wrappers)

第十一条 設備規則第一条第四項及び製造及び取扱規則第二条第三項第一号ただし書に規定する線量率は、一センチメートル線量当量率が百マイクロシーベルト毎時とする。

Article 11 Regarding the dose rates prescribed in Article 1, paragraph (4) of the Regulation on Equipment, and in the proviso to Article 2, paragraph (3), item (i) of the Regulation on Manufacture and Handling, the 1-cm dose equivalent rate is to be 100 μ Sv per hour.

(陽電子断層撮影用放射性物質の種類及び数量)

(Types and Activities of Radioactive Materials for Positron Emission Tomography)

第十一条の二 製造及び取扱規則第二条第五項第四号ニに規定する陽電子断層撮影用放射性物質の種類及び数量は、次の表の上欄に掲げる種類に応じて、それぞれ同表の下

欄に掲げる数量とする。

Article 11-2 The types and activities of radioactive materials to be used for positron emission tomography prescribed in Article 2, paragraph (5), item (iv), (d) of the Regulation on Manufacture and Handling are to be the activities set forth in the right-hand column of the following table, depending on the types set forth in the left-hand column of the same table.

種類 Type	数量 Activity
炭素十一 ^{11}C	一テラベクレル 1 TBq
窒素十三 ^{13}N	一テラベクレル 1 TBq
酸素十五 ^{15}O	一テラベクレル 1 TBq
ふっ素十八 ^{18}F	五テラベクレル 5 TBq

(平二〇厚労告三三八・追加)

(Addition by Public Notice of the Ministry of Health, Labour and Welfare No. 338 of 2008)

(陽電子断層撮影用放射性物質の原子の数が一を下回ることが確実な期間)

(Period during which the Number of Atoms of the Radioactive Materials for Positron Emission Tomography Surely Becomes below 1)

第十一条の三 製造及び取扱規則第二条第五項第四号ニに規定する期間は、封をした日から起算して七日間とする。

Article 11-3 The period of time prescribed in Article 2, paragraph (5), item (iv), (d) of the Regulation on Manufacture and Handling is to be seven days from the day of sealing the relevant radioactive materials.

(平二〇厚労告三三八・追加)

(Addition by Public Notice of the Ministry of Health, Labour and Welfare No. 338 of 2008)

(排気又は排水に係る放射性物質の濃度限度等)

(Concentration Limits of Radioactive Materials Pertaining to the Exhaust or Drainage)

第十二条 設備規則第九条第一項第四号ニ(1)及びホ(1)、製造管理等基準省令第八十条第一項第四号ニ(1)及びホ(1)並びに製造及び取扱規則第三条の二第三項第四号イ及び第五号イに規定する排気中若しくは空気中又は排液中若しくは排水中の濃度限度は、排液中若しくは排水中又は排気中若しくは空気中の放射性物質の三月間についての平

均濃度が次の各号に規定する濃度とする。

Article 12 (1) The concentration limits of radioactive materials in the exhaust or air, or in liquid discharge or drainage prescribed in Article 9, paragraph (1), item (iv), (d), 1. and (e), 1. of the Regulation on Equipment, Article 80, paragraph (1), item (iv), (d) 1. and (e), 1. of the Ministerial Order on the Standards for Manufacturing Control, etc., Article 3-2, paragraph (3), item (iv), (a) and item (v), (a) of the Regulation on Manufacture and Handling are to all be the concentrations whose three-month average concentrations of the radioactive materials in the exhaust or air, or in liquid discharge or drainage are as prescribed in the following items:

一 放射性物質の種類（別表第二に掲げるものをいう。次号において同じ。）が明らかで、かつ、一種類である場合にあっては、別表第二の第一欄に掲げる放射性物質の種類に応じて、排気中又は空気中の濃度にあつては第五欄、排液中又は排水中の濃度にあつては第六欄に掲げる濃度

(i) when the type of the radioactive materials (meaning any of the types set forth in Appended Table 2; the same applies in the following item) is clear and in the case of a single type of radioactive materials, the concentration of the radioactive materials in the exhaust or air set forth in column 5 of Appended Table 2, and the concentration of the radioactive materials in the liquid discharge or drainage set forth in column 6 of the same table, depending on the type of the radioactive materials set forth in column 1 of the same table;

二 放射性物質の種類が明らかで、かつ、排気中若しくは空気中又は排液中若しくは排水中にそれぞれ二種類以上の放射性物質がある場合にあっては、それらの放射性物質の濃度とそれぞれの放射性物質についての前号の濃度に対する割合の和が一となるようなそれらの放射性物質の濃度

(ii) when the types of the radioactive materials are clear and there are two or more types of radioactive materials respectively in the exhaust or air, or in the liquid discharge or drainage, the concentrations of those radioactive materials, the total of whose concentration ratios against the concentrations respectively set forth in the preceding item comes to 1;

三 放射性物質の種類が明らかでない場合にあっては、別表第二の第五欄又は第六欄に掲げる排気中若しくは空気中の濃度又は排液中若しくは排水中の濃度（それぞれ当該排気中又は排水中に含まれていないことが明らかである放射性物質の種類に係るものを除く。）のうち、それぞれ最も低いもの

(iii) when the types of the radioactive materials are not clear, the lowest concentration respectively among the concentrations of the radioactive materials in the exhaust or air, or in the liquid discharge or drainage respectively set forth in column 5 or column 6 of Appended Table 2 (excluding concentrations for types of radioactive materials that are not evidently contained in the exhaust or

drainage);

四 放射性物質の種類が明らかで、かつ、当該放射性物質の種類が別表第二に掲げられていない場合にあつては、別表第三の第一欄に掲げる放射性物質の区分に応じて、排気中又は空気中の濃度にあつては第三欄、排液中又は排水中の濃度にあつては第四欄に掲げる濃度

(iv) when the types of the radioactive materials are clear but those types are not included in Appended Table 2, the concentrations of the radioactive materials in the exhaust or air set forth in column 3 of Appended Table 3, or the concentrations of the radioactive materials in the liquid discharge or drainage set forth in column 4 of the same table, depending on the categories of radioactive materials set forth in column 1 of the same table.

2 設備規則第九条第一項第四号へ、製造管理等基準省令第八十条第一項第四号へ及び製造及び取扱規則第三条の二第四項に規定する線量限度は、実効線量が一年間につき一ミリシーベルトとする。

(2) The dose limits prescribed in Article 9, paragraph (1), item (iv), (f) of the Regulation on Equipment, Article 80, paragraph (1), item (iv), (f) of the Ministerial Order on the Standards for Manufacturing Control, etc., and Article 3-2, paragraph (4) of the Regulation on Manufacture and Handling are to all be the effective dose of 1 mSv per year.

3 製造及び取扱規則第二条第五項第五号及び第六号に規定する排気中若しくは空気中又は排液中若しくは排水中の放射性物質の濃度限度は、四月一日、七月一日、十月一日及び一月一日を始期とする各三月間についての平均濃度が第一項各号に規定する濃度とする。

(3) The concentration limits of radioactive materials in the exhaust or air, or in the liquid discharge or drainage prescribed in Article 2, paragraph (5), item (v) and item (vi) of the Regulation on Manufacture and Handling are to be the concentrations whose averages are as prescribed in the items of paragraph (1) for each three-month period starting from April 1, July 1, October 1, and January 1.

4 製造及び取扱規則第二条第五項第七号に規定する線量限度は、実効線量が四月一日を始期とする一年間につき一ミリシーベルトとする。

(4) The dose limits prescribed in Article 2, paragraph (5), item (vii) of the Regulation on Manufacture and Handling are to all be the effective dose of 1 mSv for a period of one year starting from April 1.

(平一三厚労告三二一・平二六厚労告四三九・一部改正)

(Partial amendments by Public Notice of the Ministry of Health, Labour and Welfare No. 321 of 2001 and Public Notice of the Ministry of Health, Labour and Welfare No. 439 of 2014)

(一時的立入者の測定に係る線量)

(Doses Pertaining to Measurements for Persons Who Temporarily Enter Controlled Areas)

第十三条 製造及び取扱規則第五条第二項第一号ホに規定する一時的に立ち入る者であつて、放射線作業員でないものの測定に係る線量は、実効線量が百マイクロシーベルトとする。

Article 13 (1) The doses in measurements for persons other than radiation workers who temporarily enter controlled areas as prescribed in Article 5, paragraph (2), item (i), (e) of the Regulation on Manufacture and Handling are to all be the effective dose of 100 μ Sv.

2 製造及び取扱規則第五条第二項第一号へに規定する一時的に立ち入る者であつて、放射線作業員でないものの測定に係る線量は、実効線量が百マイクロシーベルトとする。

(2) The doses in measurements for persons other than radiation workers who temporarily enter relevant places as prescribed in Article 5, paragraph (2), item (i), (f) of the Regulation on Manufacture and Handling are to all be the effective dose of 100 μ Sv.

(平一七厚労告四九二・旧第十四条繰上)

(Moving up from former Article 14 by Public Notice of the Ministry of Health, Labour and Welfare No. 492 of 2005)

(線量並びに空気中及び水中の濃度の複合)

(Combination of Doses and Concentrations in the Air and in Water)

第十四条 第五条及び第七条第一項の規定については、外部放射線に被ばくするおそれがあり、かつ、空気中の放射性物質を吸入摂取するおそれがあるときは、それぞれの線量限度又は濃度限度に対する割合の和が一となるようなその線量又は空気中の濃度をもって、その線量限度又は濃度限度とする。

Article 14 (1) With regard to the provisions of Article 5 and Article 7, paragraph (1), when there is a likeliness of exposure to external radiation or inhalation of radioactive materials in the air, the doses or concentrations in the air, the total of whose ratios respectively against the dose limits or concentration limits comes to 1, are to be the relevant dose limits or concentration limits.

2 第七条第二項及び第十二条の規定については、同時に外部放射線に被ばくするおそれがあり、又は空気中の放射性物質を吸入摂取若しくは水中の放射性物質を経口摂取するおそれがあるときは、それぞれの線量限度又は濃度限度に対する割合の和が一となるようなその線量又は空気中若しくは水中の濃度をもって、その線量限度又は濃度限度とする。

(2) With regard to the provisions of Article 7, paragraph (2), and Article 12, when

there is a likeliness of simultaneous exposure to external radiation or inhalation of radioactive materials in the air or oral ingestion of radioactive materials in water, the doses or concentrations in the air or in water, the total of whose ratios respectively against the dose limits or concentration limits comes to 1, are to be the relevant dose limits or concentration limits.

(平一七厚労告四九二・旧第十五条繰上)

(Moving up from former Article 15 by Public Notice of the Ministry of Health, Labour and Welfare No. 492 of 2005)

(内部被ばくによる線量の測定)

(Measurements of Internal Exposure Doses)

第十五条 製造及び取扱規則第五条第二項第一号へに規定する内部被ばくによる線量の測定は、吸入摂取し、又は経口摂取した放射性物質について別表第二の第一欄に掲げる放射性物質の種類ごとに吸入摂取し、又は経口摂取した放射性物質の摂取量を計算し、次項の規定により算出することにより行うものとする。ただし、厚生労働大臣が認めた方法により測定する場合は、この限りでない。

Article 15 (1) Measurements of internal exposure doses prescribed in Article 5, paragraph (2), item (i), (f) of the Regulation on Manufacture and Handling are to be conducted by calculating the amount of each type of radioactive materials set forth in column 1 of Appended Table 2 that have been inhaled or orally ingested and making a calculation as prescribed in the following paragraph; provided, however, that this does not apply when the measurement is conducted by the method approved by the Minister of Health, Labour and Welfare.

2 内部被ばくによる実効線量の算出は、別表第二の第一欄に掲げる放射性物質の種類ごとに次の式により行うものとする。この場合において、二種類以上の放射性物質を吸入摂取し、又は経口摂取したときは、それぞれの種類につき算出した実効線量の和を内部被ばくによる実効線量とする。

$$E_i = e \times I$$

この式において、 E_i 、 e 及び I は、それぞれ次の値を表すものとする。

E_i 内部被ばくによる実効線量 (単位 ミリシーベルト)

e 別表第二の第一欄に掲げる放射性物質の種類に応じて、それぞれ、吸入摂取した場合にあっては同表の第二欄、経口摂取した場合にあっては同表の第三欄に掲げる実効線量係数 (単位 ミリシーベルト毎ベクレル)

I 吸入摂取し、又は経口摂取した放射性物質の摂取量 (単位 ベクレル)

(2) An effective dose due to internal exposure is to be calculated for each type of radioactive materials set forth in column 1 of Appended Table 2 using the following formula. In this case, when two or more types of radioactive materials are inhaled or orally ingested, the total summing up effective doses calculated for

respective types is to be the effective dose due to internal exposure.

$$E_i = e \times I$$

In this formula, E_i , e , and I represent the following values, respectively:

E_i : the effective dose due to internal exposure (unit: mSv);

e : the effective dose coefficient (unit: mSv/Bq) as set forth in column 2 of Appended Table 2 in the case of inhalation or as set forth in column 3 of the same table in the case of oral ingestion, depending on the types of radioactive materials set forth in column 1 of the same table;

I : the amount of radioactive materials inhaled or orally ingested (unit: Bq).

(平一七厚労告四九二・旧第十六条線上)

(Moving up from former Article 16 by Public Notice of the Ministry of Health, Labour and Welfare No. 492 of 2005)

(実効線量への換算)

(Conversion to Effective Doses)

第十六条 第二条及び第七条に規定する実効線量については、放射線（一メガ電子ボルト未満のエネルギーを有する電子線及びエックス線を含む。以下この条において同じ。）の種類に応じて次の式により計算することができる。

Article 16 (1) The effective doses prescribed in Article 2 and Article 7 may be calculated using the following formulae, depending on the types of radiation (including electron beams and X-rays with energy less than 1 MeV; hereinafter the same apply in this Article):

一 放射線がエックス線又はガンマ線である場合

$$E = f \times D$$

この式において、 E 、 f_x 及び D は、それぞれ次の値を表すものとする。

E 実効線量（単位 シーベルト）

f_x 別表第五の第一欄に掲げる放射線のエネルギーの強さに応じて、第二欄に掲げる値

D 自由空気中の空気カーマ（単位 グレイ）

(i) when the radiation is an X-ray or gamma ray:

$$E = f \times D$$

In this formula, E , f_x , and D represent the following values, respectively:

E : the effective dose (unit: Sv);

f_x : the value as set forth in column 2 of Appended Table 5, depending on the energy strength of radiation set forth in column 1 of the same table;

D : the air kerma in free air (unit: Gy);

二 放射線が中性子線である場合

$$E = f_n \Phi$$

この式において、E、fn 及び Φ は、それぞれ次の値を表すものとする。

E 実効線量 (単位 シーベルト)

fn 別表第六の第一欄に掲げる放射線のエネルギーの強さに応じて、第二欄に掲げる値

Φ 自由空気中の中性子フルエンス (単位 個毎平方センチメートル)

(ii) when the radiation is a neutron ray:

$$E=fn\Phi$$

In this formula, E, fn, and Φ represent the following values, respectively:

E: the effective dose (unit: Sv);

fn: the value as set forth in column 2 of Appended Table 6, depending on the energy strength of radiation set forth in column 1 of the same table;

Φ : the neutron fluence in free air (unit: pieces/cm²)

2 放射線の種類が二種類以上ある場合にあっては、放射線の種類ごとに計算した実効線量の和をもって、第一項に規定する実効線量とする。

(2) When there are two or more types of radiation, the total summing up effective doses calculated for respective types of radiation is to be the relevant effective dose prescribed in paragraph (1).

(平一七厚労告四九二・旧第十七条線上)

(Moving up from former Article 17 by Public Notice of the Ministry of Health, Labour and Welfare No. 492 of 2005)

(実効線量及び等価線量の算定)

(Calculation of Effective Doses and Equivalent Doses)

第十七条 製造及び取扱規則第五条第三項第五号に規定する実効線量は、次に掲げる外部被ばくによる実効線量と内部被ばくによる実効線量の和とする。

Article 17 (1) The effective doses prescribed in Article 5, paragraph (3), item (v) of the Regulation on Manufacture and Handling are to all be the total of the effective dose due to external exposure and the effective dose due to internal exposure as set forth in the following items:

一 外部被ばくによる実効線量 一センチメートル線量当量 (製造及び取扱規則第五条第二項第一号ロの規定により測定を行った場合は、適切な方法により算出した値)

(i) effective dose due to external exposure: 1-cm dose equivalent (when the measurement is conducted pursuant to the provisions of Article 5, paragraph (2), item (i), (b) of the Regulation on Manufacture and Handling, the value calculated by an appropriate method);

二 内部被ばくによる実効線量 第十五条第二項の規定により算出した値

(ii) effective dose due to internal exposure: the value calculated pursuant to the provisions of Article 15, paragraph (2).

- 2 製造及び取扱規則第五条第三項第五号に規定する等価線量は、次のとおりとする。
- (2) The equivalent doses prescribed in Article 5, paragraph (3), item (v) of the Regulation on Manufacture and Handling are to be as follows:
- 一 皮膚の等価線量は、七十マイクロメートル線量当量（中性子線については、一センチメートル線量当量）とすること。
 - (i) the equivalent dose for skin is to be 70- μ m dose equivalent (for neutron rays, 1-cm dose equivalent);
 - 二 眼の水晶体の等価線量は、一センチメートル線量当量又は七十マイクロメートル線量当量のうち、適切な方とすること。
 - (ii) the equivalent dose for eye lens is to be 1-cm dose equivalent or 70- μ m dose equivalent, whichever is appropriate;
 - 三 第四条第三号に規定する妊娠中である女子の腹部表面の等価線量は、一センチメートル線量当量とすること。
 - (iii) the equivalent dose for abdominal surface of pregnant female workers prescribed in Article 4, item (iii) is to be 1-cm dose equivalent.
- 3 製造及び取扱規則第五条第三項第五号の二に規定する期間は、平成十三年四月一日以後五年ごとに区分した各期間とする。
- (3) The period of time prescribed in Article 5, paragraph (3), item (v)-2 of the Regulation on Manufacture and Handling is to be each five-year period after April 1, 2001.

(平一七厚労告四九二・旧第十八条繰上・一部改正)

(Moving up from former Article 18 and partial amendments by Public Notice of the Ministry of Health, Labour and Welfare No. 492 of 2005)

(緊急作業に係る線量限度)

(Dose Limits Pertaining to Emergency Work)

第十八条 製造及び取扱規則第十条第二項に規定する緊急作業に係る線量限度は、実効線量にあつては百ミリシーベルト、眼の水晶体の等価線量にあつては三百ミリシーベルト、皮膚の等価線量にあつては一シーベルトとする。

Article 18 The dose limits for emergency work prescribed in Article 10, paragraph (2) of the Regulation on Manufacture and Handling are to be the effective dose of 100 mSv, the equivalent dose of 300 mSv for eye lens, and the equivalent dose of 1 Sv for skin.

(平一七厚労告四九二・旧第十九条繰上)

(Moving up from former Article 19 by Public Notice of the Ministry of Health, Labour and Welfare No. 492 of 2005)

(診療上の被ばくの除外等)

(Exclusion of Therapeutic Radiation Exposure)

第十九条 第二条から第五条まで、第七条から第九条まで、第十二条、第十三条及び第十五条から前条までの規定については、線量、実効線量又は等価線量を算出する場合には、一メガ電子ボルト未満のエネルギーを有する電子線及びエックス線による被ばくを含め、かつ、診療を受けるための被ばく及び自然放射線による被ばくを除くものとし、空气中又は水中の放射性物質の濃度を算出する場合には、空気又は水中に自然に含まれている放射性物質の濃度を除くものとする。

Article 19 With regard to the provisions of Article 2 to Article 5, Article 7 to Article 9, Article 12, Article 13, and Article 15 to the preceding Article, calculations of doses, effective doses, or equivalent doses are to be made while excluding radiation exposure for medical purposes and exposure from naturally occurring radiation, including exposure from electron beams and X-rays with energy less than 1 MeV, and calculations of concentrations of radioactive materials in the air or in water are to be made while excluding concentrations of radioactive materials naturally contained in the air or in water.

(平一七厚労告四九二・旧第二十条繰上・一部改正)

(Moving up from former Article 20 and partial amendments by Public Notice of the Ministry of Health, Labour and Welfare No. 492 of 2005)

改正文（平成一七年六月一日厚生労働省告示第二四九号）抄

Amended Text (Public Notice of the Ministry of Health, Labour and Welfare No. 249 of June 1, 2005) [Extract]

平成十七年六月一日から適用する。

To be applicable from June 1, 2005

改正文（平成一七年十一月二四日厚生労働省告示第四九二号）抄

Amended Text (Public Notice of the Ministry of Health, Labour and Welfare No. 492 of November 24, 2005) [Extract]

平成十七年十二月一日より適用する。

To be applicable from December 1, 2005

改正文（平成二六年六月一二日厚生労働省告示第二五七号）抄

Amended Text (Public Notice of the Ministry of Health, Labour and Welfare No. 257 of June 12, 2014) [Extract]

薬事法及び薬剤師法の一部を改正する法律の施行の日（平成二十六年六月十二日）から適用する。

To be applicable from the date on which the Act Partially Amending the Pharmaceutical Affairs Act and the Pharmacists Act comes into effect (June 12,

2014)

改正文（平成二六年一一月二一日厚生労働省告示第四三九号）抄

Amended Text (Public Notice of the Ministry of Health, Labour and Welfare No. 439 of November 21, 2014) [Extract]

薬事法等の一部を改正する法律の施行の日（平成二十六年十一月二十五日）から適用する。

To be applicable from the date on which the Act Partially Amending the Pharmaceutical Affairs Act, etc. comes into effect (November 25, 2014)

Appended Table 1 (related to Article 1)

(Full amendment by Public Notice of the Ministry of Health, Labour and Welfare No. 249 of 2005; partial amendment by Public Notice of the Ministry of Health, Labour and Welfare No. 109 of 2016)

Activities and Concentrations of Radioactive Materials

Column 1		Column 2	Column 3
Type		Activity (Bq)	Concentration (Bq/g)
Nuclide	Chemical form, etc.		
³ H		1×10 ⁹	1×10 ⁶
¹¹ C	Monoxide and dioxide	1×10 ⁹	1×10 ¹
¹¹ C	Other than monoxide and dioxide	1×10 ⁶	1×10 ¹
¹⁴ C	Monoxide	1×10 ¹¹	1×10 ⁸
¹⁴ C	Dioxide	1×10 ¹¹	1×10 ⁷
¹⁴ C	Other than monoxide and dioxide	1×10 ⁷	1×10 ⁴
¹³ N		1×10 ⁹	1×10 ²
¹⁵ O		1×10 ⁹	1×10 ²
¹⁸ F		1×10 ⁶	1×10 ¹
²² Na		1×10 ⁶	1×10 ¹
²⁴ Na		1×10 ⁵	1×10 ¹
³² P		1×10 ⁵	1×10 ³
³³ P		1×10 ⁸	1×10 ⁵
³⁵ S	Other than vapor	1×10 ⁸	1×10 ⁵
⁴² K		1×10 ⁶	1×10 ²
⁴³ K		1×10 ⁶	1×10 ¹
⁴⁵ Ca		1×10 ⁷	1×10 ⁴
⁴⁷ Ca		1×10 ⁶	1×10 ¹
⁵¹ Cr		1×10 ⁷	1×10 ³
⁵² Mn		1×10 ⁵	1×10 ¹
⁵² Fe		1×10 ⁶	1×10 ¹
⁵⁵ Fe		1×10 ⁶	1×10 ⁴
⁵⁹ Fe		1×10 ⁶	1×10 ¹
⁵⁷ Co		1×10 ⁶	1×10 ²
⁵⁸ Co		1×10 ⁶	1×10 ¹
⁶⁰ Co		1×10 ⁵	1×10 ¹
⁶³ Ni		1×10 ⁸	1×10 ⁵
⁶⁴ Cu		1×10 ⁶	1×10 ²
⁶⁵ Zn		1×10 ⁶	1×10 ¹

⁶⁷ Ga		1×10 ⁶	1×10 ²
⁶⁸ Ga		1×10 ⁵	1×10 ¹
⁷² Ga		1×10 ⁵	1×10 ¹
⁶⁸ Ge	Including progeny nuclides in radiative equilibrium	1×10 ⁵	1×10 ¹
⁷⁴ As		1×10 ⁶	1×10 ¹
⁷⁶ As		1×10 ⁵	1×10 ²
⁷⁵ Se		1×10 ⁶	1×10 ²
⁸² Br		1×10 ⁶	1×10 ¹
^{81m} Kr		1×10 ¹⁰	1×10 ³
⁸⁵ Kr		1×10 ⁴	1×10 ⁵
⁸¹ Rb		1×10 ⁶	1×10 ¹
⁸⁶ Rb		1×10 ⁵	1×10 ²
⁸⁵ Sr		1×10 ⁶	1×10 ²
^{87m} Sr		1×10 ⁶	1×10 ²
⁸⁹ Sr		1×10 ⁶	1×10 ³
⁹⁰ Sr	Including progeny nuclides in radiative equilibrium	1×10 ⁴	1×10 ²
⁸⁷ Y	Including progeny nuclides in radiative equilibrium	1×10 ⁶	1×10 ¹
⁹⁰ Y		1×10 ⁵	1×10 ³
⁹⁹ Mo		1×10 ⁶	1×10 ²
^{99m} Tc		1×10 ⁷	1×10 ²
¹⁰⁶ Ru	Including progeny nuclides in radiative equilibrium	1×10 ⁵	1×10 ²
¹⁰³ Pd		1×10 ⁸	1×10 ³
¹¹¹ Ag		1×10 ⁶	1×10 ³
¹¹¹ In		1×10 ⁶	1×10 ²
^{113m} In		1×10 ⁶	1×10 ²
¹¹³ Sn		1×10 ⁷	1×10 ³
^{117m} Sn		1×10 ⁶	1×10 ²
¹³² Te		1×10 ⁷	1×10 ²
¹²³ I		1×10 ⁷	1×10 ²
¹²⁵ I		1×10 ⁶	1×10 ³
¹³¹ I		1×10 ⁶	1×10 ²
¹³² I		1×10 ⁵	1×10 ¹
¹³³ Xe		1×10 ⁴	1×10 ³
¹³¹ Cs		1×10 ⁶	1×10 ³
¹³⁷ Cs	Including progeny nuclides in	1×10 ⁴	1×10 ¹

	radiative equilibrium		
¹³³ Ba		1×10 ⁶	1×10 ²
^{137m} Ba		1×10 ⁶	1×10 ¹
¹⁵³ Sm		1×10 ⁶	1×10 ²
¹⁵³ Gd		1×10 ⁷	1×10 ²
¹⁵⁷ Dy		1×10 ⁶	1×10 ²
¹⁶⁹ Yb		1×10 ⁷	1×10 ²
¹⁷⁷ Lu		1×10 ⁷	1×10 ³
¹⁸² Ta		1×10 ⁴	1×10 ¹
¹⁸⁶ Re		1×10 ⁶	1×10 ³
¹⁹² Ir		1×10 ⁴	1×10 ¹
¹⁹⁸ Au		1×10 ⁶	1×10 ²
¹⁹⁹ Au		1×10 ⁶	1×10 ²
¹⁹⁷ Hg		1×10 ⁷	1×10 ²
²⁰³ Hg		1×10 ⁵	1×10 ²
²⁰¹ Tl		1×10 ⁶	1×10 ²
²²² Rn	Including progeny nuclides in radiative equilibrium	1×10 ⁸	1×10 ¹
²²³ Ra	Including progeny nuclides in radiative equilibrium	1×10 ⁵	1×10 ²
²²⁶ Ra	Including progeny nuclides in radiative equilibrium	1×10 ⁴	1×10 ¹

(Remarks) Regarding the activities and concentrations set forth in Column 2 and Column 3, parent nuclides and progeny nuclides to be included in radiative equilibrium are as set forth in the following table.

Parent nuclide	Progeny nuclide
⁶⁸ Ge	⁶⁸ Ga
⁹⁰ Sr	⁹⁰ Y
⁸⁷ Y	^{87m} Sr
¹⁰⁶ Ru	¹⁰⁶ Rh
¹³⁷ Cs	^{137m} Ba
²²² Rn	²¹⁸ Po, ²¹⁴ Pb, ²¹⁴ Bi, ²¹⁴ Po
²²³ Ra	²¹⁹ Rn, ²¹⁵ Po, ²¹¹ Pb, ²¹¹ Bi, ²⁰⁷ Tl
²²⁶ Ra	²²² Rn, ²¹⁸ Po, ²¹⁴ Pb, ²¹⁴ Bi, ²¹⁴ Po, ²¹⁰ Pb, ²¹⁰ Bi, ²¹⁰ Po

Appended Table 2 (related to Article 5, Article 12 and Article 15)

(Partial amendments by Public Notice of the Ministry of Health, Labour and Welfare No. 492 of 2005 and Public Notice of the Ministry of Health, Labour and Welfare No. 109 of 2016)

Concentration Limits in the Air, etc. when the Single Type that Constitutes the Radioactive Materials is Clear

Column 1		Column 2	Column 3	Column 4	Column 5	Column 6
Type		Effective dose coefficient in the case of inhalation (mSv/Bq)	Effective dose coefficient in the case of oral ingestion (mSv/Bq)	Concentration limit in the air (Bq/cm ³)	Concentration limit in the exhaust air or the air (Bq/cm ³)	Concentration limit in the waste liquid or drainage (Bq/cm ³)
Nuclide	Chemical form, etc.					
³ H	Elemental hydrogen	1.8×10 ⁻¹²		1×10 ⁴	7×10 ¹	
³ H	Methane	1.8×10 ⁻¹⁰		1×10 ²	7×10 ⁻¹	
³ H	Water	1.8×10 ⁻⁸	1.8×10 ⁻⁸	8×10 ⁻¹	5×10 ⁻³	6×10 ¹
³ H	Organic substances (excluding methane)	4.1×10 ⁻⁸	4.2×10 ⁻⁸	5×10 ⁻¹	3×10 ⁻³	2×10 ¹
³ H	Compounds excluding the above	2.8×10 ⁻⁸	1.9×10 ⁻⁸	7×10 ⁻¹	3×10 ⁻³	4×10 ¹
¹¹ C	[Submersion]			2×10 ⁻¹	7×10 ⁻⁴	
¹¹ C	Vapor	3.2×10 ⁻⁹		7×10 ⁰	4×10 ⁻²	
¹¹ C	Labeled organic compounds [oral ingestion]		2.4×10 ⁻⁸			4×10 ¹
¹¹ C	Monoxide	1.2×10 ⁻⁹		2×10 ¹	1×10 ⁻¹	
¹¹ C	Dioxide	2.2×10 ⁻⁹		9×10 ⁰	5×10 ⁻²	
¹¹ C	Methane	2.7×10 ⁻¹¹		8×10 ²	4×10 ⁰	
¹⁴ C	Vapor	5.8×10 ⁻⁷		4×10 ⁻²	2×10 ⁻⁴	
¹⁴ C	Labeled organic compounds [oral ingestion]		5.8×10 ⁻⁷			2×10 ⁰
¹⁴ C	Monoxide	8.0×10 ⁻¹⁰		3×10 ¹	1×10 ⁻¹	
¹⁴ C	Dioxide	6.5×10 ⁻⁹		3×10 ⁰	2×10 ⁻²	
¹⁴ C	Methane	2.9×10 ⁻⁹		7×10 ⁰	5×10 ⁻²	
¹³ N	[Submersion]			2×10 ⁻¹	7×10 ⁻⁴	
¹⁵ O	[Submersion]			2×10 ⁻¹	7×10 ⁻⁴	
¹⁸ F	Fluorides of H, Li, Na, Si, P, K, Ni, Rb, Sr, Mo, Ag, Te, I, Cs, Ba, La, W,	5.4×10 ⁻⁸	4.9×10 ⁻⁸	4×10 ⁻¹	4×10 ⁻³	2×10 ¹

	Pt, Tl, Pb, Po and Fr; fluorides of inorganic compounds of Se; fluorides of organic compounds of Hg; and fluorides of most hexavalent uranium compounds (uranium hexafluoride and uranyl fluoride, etc.)					
¹⁸ F	Fluorides of Mg, Al, Ca, Ti, V, Cr, Mn, Fe, Cu, Ga, Ge, As, Y, Zr, Nb, Tc, Ru, Rh, Pd, Cd, In, Sn, Sb, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Hf, Re, Os, Ir, Au, Bi, Ra, Ac, Th, Pa, Np, Pu, Am, Cm, Bk, Cf, Es, Fm and Md; fluorides of inorganic compounds of Hg; and fluorides of poorly-soluble uranium compounds (uranium tetrafluoride, etc.)	8.9×10^{-8}	4.9×10^{-8}	2×10^{-1}	2×10^{-3}	2×10^1
¹⁸ F	Fluorides of Be, Sc, Co, Zn, Ce, Pr, Nd, Pm, Yb, Lu and Ta; and fluorides of insoluble uranium compounds	9.3×10^{-8}	4.9×10^{-8}	2×10^{-1}	2×10^{-3}	2×10^1
²² Na	All compounds	2.0×10^{-6}	3.2×10^{-6}	1×10^{-2}	9×10^{-5}	3×10^{-1}
²⁴ Na	All compounds	5.3×10^{-7}	4.3×10^{-7}	4×10^{-2}	4×10^{-4}	2×10^0
³² P	Compounds other than Sn phosphate	1.1×10^{-6}	2.4×10^{-6}	2×10^{-2}	1×10^{-4}	3×10^{-1}
³² P	Sn phosphate	2.9×10^{-6}	2.4×10^{-6}	7×10^{-3}	4×10^{-5}	3×10^{-1}
³³ P	Compounds other than Sn phosphate	1.4×10^{-7}	2.4×10^{-7}	1×10^{-1}	1×10^{-3}	3×10^0
³³ P	Sn phosphate	1.3×10^{-6}	2.4×10^{-7}	2×10^{-2}	8×10^{-5}	3×10^0
³⁵ S	Vapor (including sulfur dioxide)	1.2×10^{-7}		2×10^{-1}	1×10^{-3}	
³⁵ S	Carbon disulfide	7.0×10^{-7}		3×10^{-2}	2×10^{-4}	
³⁵ S	Elemental sulfur [oral ingestion]		1.9×10^{-7}			6×10^0
³⁵ S	Inorganic compounds other than elemental sulfur [oral ingestion]		1.4×10^{-7}			6×10^0
³⁵ S	Sulfur in food [oral ingestion]		7.7×10^{-7}			1×10^0
³⁵ S	Sulfide and sulfate of H, Li, Na, Mg, Al, Si, P, K, Ti, V, Cr, Mn, Fe, Ni, Ga,	8.0×10^{-8}		3×10^{-1}	2×10^{-3}	

	Rb, Sr, Zr, Tc, Ru, Rh, Pd, In, Te, I, Cs, Ba, La, Gd, Hf, W, Re, Os, Ir, Pt, Au, Tl, Pb, Po, Fr and Ac; sulfate of inorganic compounds of Cu; sulfate of Ge, Mo, Ag, Cd and Sn; sulfide and sulfate of inorganic compounds of Se; sulfate of inorganic compounds of Hg; sulfide and sulfate of organic compounds of Hg; and sulfide and sulfate of most hexavalent uranium compounds					
³⁵ S	Elemental sulfur [inhalation]; sulfide and sulfate of Be, Ca, Sc, Co, Zn, As, Y, Nb, Sb, Ce, Pr, Nd, Pm, Sm, Eu, Tb, Dy, Ho, Er, Tm, Yb, Lu, Ta, Bi, Ra, Th, Pa, Np, Pu, Am, Cm, Bk, Cf, Es, Fm and Md; sulfide of inorganic compounds of Cu; sulfide of Ge, Mo, Ag, Cd and Sn; sulfide of inorganic compounds of Hg; and sulfide and sulfate of poorly-soluble and insoluble uranium compounds	1.1×10 ⁻⁶		2×10 ⁻²	9×10 ⁻⁵	
⁴² K	All compounds	2.0×10 ⁻⁷	4.3×10 ⁻⁷	1×10 ⁻¹	9×10 ⁻⁴	2×10 ⁰
⁴³ K	All compounds	2.6×10 ⁻⁷	2.5×10 ⁻⁷	8×10 ⁻²	8×10 ⁻⁴	3×10 ⁰
⁴⁵ Ca	All compounds	2.3×10 ⁻⁶	7.6×10 ⁻⁷	9×10 ⁻³	5×10 ⁻⁵	1×10 ⁰
⁴⁷ Ca	All compounds	2.1×10 ⁻⁶	1.6×10 ⁻⁶	1×10 ⁻²	7×10 ⁻⁵	5×10 ⁻¹
⁵¹ Cr	Hexavalent compounds [oral ingestion]		3.8×10 ⁻⁸			2×10 ¹
⁵¹ Cr	Trivalent compounds [oral ingestion]		3.7×10 ⁻⁸			2×10 ¹
⁵¹ Cr	Compounds other than halides, nitrates, oxides and hydroxides	3.0×10 ⁻⁸		7×10 ⁻¹	6×10 ⁻³	
⁵¹ Cr	Halides and nitrates	3.4×10 ⁻⁸		6×10 ⁻¹	4×10 ⁻³	
⁵¹ Cr	Oxides and hydroxides	3.6×10 ⁻⁸		6×10 ⁻¹	3×10 ⁻³	
⁵² Mn	Compounds other than oxides, hydroxides, halides and nitrates	1.6×10 ⁻⁶	1.8×10 ⁻⁶	1×10 ⁻²	1×10 ⁻⁴	5×10 ⁻¹
⁵² Mn	Oxides, hydroxides,	1.8×10 ⁻⁶	1.8×10 ⁻⁶	1×10 ⁻²	9×10 ⁻⁵	5×10 ⁻¹

	halides and nitrates					
⁵² Fe	Compounds other than oxides, hydroxides and halides	6.9×10 ⁻⁷	1.4×10 ⁻⁶	3×10 ⁻²	3×10 ⁻⁴	6×10 ⁻¹
⁵² Fe	Oxides, hydroxides and halides	9.5×10 ⁻⁷	1.4×10 ⁻⁶	2×10 ⁻²	2×10 ⁻⁴	6×10 ⁻¹
⁵⁵ Fe	Compounds other than oxides, hydroxides and halides	9.2×10 ⁻⁷	3.3×10 ⁻⁷	2×10 ⁻²	2×10 ⁻⁴	2×10 ⁰
⁵⁵ Fe	Oxides, hydroxides and halides	3.3×10 ⁻⁷	3.3×10 ⁻⁷	6×10 ⁻²	3×10 ⁻⁴	2×10 ⁰
⁵⁹ Fe	Compounds other than oxides, hydroxides and halides	3.0×10 ⁻⁶	1.8×10 ⁻⁶	7×10 ⁻³	5×10 ⁻⁵	4×10 ⁻¹
⁵⁹ Fe	Oxides, hydroxides and halides	3.2×10 ⁻⁶	1.8×10 ⁻⁶	7×10 ⁻³	3×10 ⁻⁵	4×10 ⁻¹
⁵⁷ Co	Compounds other than oxides, hydroxides and inorganic compounds [oral ingestion]		2.1×10 ⁻⁷			4×10 ⁰
⁵⁷ Co	Oxides, hydroxides and inorganic compounds [oral ingestion]		1.9×10 ⁻⁷			4×10 ⁰
⁵⁷ Co	Compounds other than oxides, hydroxides, halides and nitrates	3.9×10 ⁻⁷		5×10 ⁻²	2×10 ⁻⁴	
⁵⁷ Co	Oxides, hydroxides, halides and nitrates	6.0×10 ⁻⁷		3×10 ⁻²	1×10 ⁻⁴	
⁵⁸ Co	Compounds other than oxides, hydroxides and inorganic compounds [oral ingestion]		7.4×10 ⁻⁷			1×10 ⁰
⁵⁸ Co	Oxides, hydroxides and inorganic compounds [oral ingestion]		7.0×10 ⁻⁷			1×10 ⁰
⁵⁸ Co	Compounds other than oxides, hydroxides, halides and nitrates	1.4×10 ⁻⁶		1×10 ⁻²	8×10 ⁻⁵	
⁵⁸ Co	Oxides, hydroxides, halides and nitrates	1.7×10 ⁻⁶		1×10 ⁻²	6×10 ⁻⁵	
⁶⁰ Co	Compounds other than oxides, hydroxides and inorganic compounds [oral ingestion]		3.4×10 ⁻⁶			2×10 ⁻¹
⁶⁰ Co	Oxides, hydroxides and inorganic compounds [oral ingestion]		2.5×10 ⁻⁶			2×10 ⁻¹
⁶⁰ Co	Compounds other than oxides, hydroxides,	7.1×10 ⁻⁶		3×10 ⁻³	1×10 ⁻⁵	

	halides and nitrates					
⁶⁰ Co	Oxides, hydroxides, halides and nitrates	1.7×10^{-5}		1×10^{-3}	4×10^{-6}	
⁶³ Ni	Oxides, hydroxides and carbides	3.1×10^{-7}	1.5×10^{-7}	7×10^{-2}	3×10^{-4}	6×10^0
⁶⁴ Cu	Inorganic compounds other than sulfide, halides, nitrates, oxides and hydroxides	6.8×10^{-8}	1.2×10^{-7}	3×10^{-1}	3×10^{-3}	7×10^0
⁶⁴ Cu	Sulfide, halides and nitrates	1.5×10^{-7}	1.2×10^{-7}	1×10^{-1}	1×10^{-3}	7×10^0
⁶⁴ Cu	Oxides and hydroxides	1.5×10^{-7}	1.2×10^{-7}	1×10^{-1}	1×10^{-3}	7×10^0
⁶⁵ Zn	All compounds	2.8×10^{-6}	3.9×10^{-6}	7×10^{-3}	6×10^{-5}	2×10^{-1}
⁶⁷ Ga	Compounds other than oxides, hydroxides, carbides, halides and nitrates	1.1×10^{-7}	1.9×10^{-7}	2×10^{-1}	2×10^{-3}	4×10^0
⁶⁷ Ga	Oxides, hydroxides, carbides, halides and nitrates	2.8×10^{-7}	1.9×10^{-7}	7×10^{-2}	5×10^{-4}	4×10^0
⁶⁸ Ga	Compounds other than oxides, hydroxides, carbides, halides and nitrates	4.9×10^{-8}	1.0×10^{-7}	4×10^{-1}	4×10^{-3}	8×10^0
⁶⁸ Ga	Oxides, hydroxides, carbides, halides and nitrates	8.1×10^{-8}	1.0×10^{-7}	3×10^{-1}	2×10^{-3}	8×10^0
⁷² Ga	Compounds other than oxides, hydroxides, carbides, halides and nitrates	5.6×10^{-7}	1.1×10^{-6}	4×10^{-2}	4×10^{-4}	8×10^{-1}
⁷² Ga	Oxides, hydroxides, carbides, halides and nitrates	8.4×10^{-7}	1.1×10^{-6}	2×10^{-2}	2×10^{-4}	8×10^{-1}
⁶⁸ Ge	Compounds other than oxides, sulfide and halides	8.3×10^{-7}	1.3×10^{-6}	3×10^{-2}	2×10^{-4}	7×10^{-1}
⁶⁸ Ge	Oxides, sulfide and halides	7.9×10^{-6}	1.3×10^{-6}	3×10^{-3}	9×10^{-6}	7×10^{-1}
⁷⁴ As	All compounds	1.8×10^{-6}	1.3×10^{-6}	1×10^{-2}	6×10^{-5}	7×10^{-1}
⁷⁶ As	All compounds	9.2×10^{-7}	1.6×10^{-6}	2×10^{-2}	2×10^{-4}	5×10^{-1}
⁷⁵ Se	Compounds other than elemental selenium and selenides [oral ingestion]		2.6×10^{-6}			3×10^{-1}
⁷⁵ Se	Elemental selenium and selenides [oral ingestion]		4.1×10^{-7}			3×10^{-1}
⁷⁵ Se	Inorganic compounds other than elemental	1.4×10^{-6}		1×10^{-2}	1×10^{-4}	

	selenium, oxides, hydroxides and carbides					
⁷⁵ Se	Elemental selenium, oxides, hydroxides and carbides	1.7×10 ⁻⁶		1×10 ⁻²	1×10 ⁻⁴	
⁸² Br	Bromides of H, Li, Na, Si, P, K, Ni, Rb, Sr, Mo, Ag, Te, I, Cs, Ba, La, Gd, W, Pt, Tl, Pb, Po and Fr; bromides of inorganic compounds of Se; bromides of organic compounds of Hg; and bromides of most hexavalent uranium compounds	6.4×10 ⁻⁷	5.4×10 ⁻⁷	3×10 ⁻²	3×10 ⁻⁴	2×10 ⁰
⁸² Br	Bromides of Be, Mg, Al, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Cu, Zn, Ga, Ge, As, Y, Zr, Nb, Tc, Ru, Rh, Pd, Cd, In, Sn, Sb, Ce, Pr, Nd, Pm, Sm, Eu, Tb, Dy, Ho, Er, Tm, Yb, Lu, Hf, Ta, Re, Os, Ir, Au, Bi, Ra, Ac, Th, Pa, Np, Pu, Am, Cm, Bk, Cf, Es, Fm and Md; bromides of inorganic compounds of Hg; and bromides of poorly-soluble and insoluble uranium compounds	8.8×10 ⁻⁷	5.4×10 ⁻⁷	2×10 ⁻²	2×10 ⁻⁴	2×10 ⁰
^{81m} Kr	[Submersion]			1×10 ⁰	6×10 ⁻³	
⁸⁵ Kr	[Submersion]			3×10 ¹	1×10 ⁻¹	
⁸¹ Rb	All compounds	6.8×10 ⁻⁸	5.4×10 ⁻⁸	3×10 ⁻¹	3×10 ⁻³	2×10 ¹
⁸⁶ Rb	All compounds	1.3×10 ⁻⁶	2.8×10 ⁻⁶	2×10 ⁻²	1×10 ⁻⁴	3×10 ⁻¹
⁸⁵ Sr	Compounds other than strontium titanate	5.6×10 ⁻⁷	5.6×10 ⁻⁷	4×10 ⁻²	3×10 ⁻⁴	1×10 ⁰
⁸⁵ Sr	Strontium titanate	6.4×10 ⁻⁷	3.3×10 ⁻⁷	3×10 ⁻²	1×10 ⁻⁴	1×10 ⁰
^{87m} Sr	Compounds other than strontium titanate	2.2×10 ⁻⁸	3.0×10 ⁻⁸	9×10 ⁻¹	1×10 ⁻²	3×10 ¹
^{87m} Sr	Strontium titanate	3.5×10 ⁻⁸	3.3×10 ⁻⁸	6×10 ⁻¹	6×10 ⁻³	3×10 ¹
⁸⁹ Sr	Compounds other than strontium titanate	1.4×10 ⁻⁶	2.6×10 ⁻⁶	1×10 ⁻²	1×10 ⁻⁴	3×10 ⁻¹
⁸⁹ Sr	Strontium titanate	5.6×10 ⁻⁶	2.3×10 ⁻⁶	4×10 ⁻³	2×10 ⁻⁵	3×10 ⁻¹
⁹⁰ Sr	Compounds other than strontium titanate	3.0×10 ⁻⁵	2.8×10 ⁻⁵	7×10 ⁻⁴	5×10 ⁻⁶	3×10 ⁻²
⁹⁰ Sr	Strontium titanate	7.7×10 ⁻⁵	2.7×10 ⁻⁶	3×10 ⁻⁴	8×10 ⁻⁷	3×10 ⁻²

⁸⁷ Y	Compounds other than oxides and hydroxides	5.2×10 ⁻⁷	5.5×10 ⁻⁷	4×10 ⁻²	3×10 ⁻⁴	2×10 ⁰
⁸⁷ Y	Oxides and hydroxides	5.3×10 ⁻⁷	5.5×10 ⁻⁷	4×10 ⁻²	3×10 ⁻⁴	2×10 ⁰
⁹⁰ Y	Compounds other than oxides and hydroxides	1.6×10 ⁻⁶	2.7×10 ⁻⁶	1×10 ⁻²	8×10 ⁻⁵	3×10 ⁻¹
⁹⁰ Y	Oxides and hydroxides	1.7×10 ⁻⁶	2.7×10 ⁻⁶	1×10 ⁻²	8×10 ⁻⁵	3×10 ⁻¹
⁹⁹ Mo	Compounds other than molybdenum disulfide [oral ingestion]		7.4×10 ⁻⁷			1×10 ⁰
⁹⁹ Mo	Molybdenum disulfide [oral ingestion]		1.2×10 ⁻⁶			1×10 ⁰
⁹⁹ Mo	Compounds other than molybdenum disulfide, oxides and hydroxides	3.6×10 ⁻⁷		6×10 ⁻²	5×10 ⁻⁴	
⁹⁹ Mo	Molybdenum disulfide, oxides and hydroxides	1.1×10 ⁻⁶		2×10 ⁻²	1×10 ⁻⁴	
^{99m} Tc	Compounds other than oxides, hydroxides, halides and nitrates	2.0×10 ⁻⁸	2.2×10 ⁻⁸	1×10 ⁰	9×10 ⁻³	4×10 ¹
^{99m} Tc	Oxides, hydroxides, halides and nitrates	2.9×10 ⁻⁸	2.2×10 ⁻⁸	7×10 ⁻¹	6×10 ⁻³	4×10 ¹
¹⁰⁶ Ru	Ruthenium tetroxide	1.8×10 ⁻⁵		1×10 ⁻³	6×10 ⁻⁶	
¹⁰⁶ Ru	Compounds other than halides, oxides, hydroxides and ruthenium tetroxide	9.8×10 ⁻⁶	7.0×10 ⁻⁶	2×10 ⁻³	1×10 ⁻⁵	1×10 ⁻¹
¹⁰⁶ Ru	Halides	1.7×10 ⁻⁵	7.0×10 ⁻⁶	1×10 ⁻³	4×10 ⁻⁶	1×10 ⁻¹
¹⁰³ Pd	Compounds other than nitrates, halides, oxides and hydroxides	1.2×10 ⁻⁷	1.9×10 ⁻⁷	2×10 ⁻¹	1×10 ⁻³	4×10 ⁰
¹⁰³ Pd	Nitrates and halides	3.0×10 ⁻⁷	1.9×10 ⁻⁷	7×10 ⁻²	3×10 ⁻⁴	4×10 ⁰
¹⁰³ Pd	Oxides and hydroxides	2.9×10 ⁻⁷	1.9×10 ⁻⁷	7×10 ⁻²	3×10 ⁻⁴	4×10 ⁰
¹¹¹ Ag	Nitrates, sulfide, oxides, hydroxides and silver-metal	5.7×10 ⁻⁷	1.3×10 ⁻⁶	4×10 ⁻²	3×10 ⁻⁴	6×10 ⁻¹
¹¹¹ Ag	Nitrates and sulfide	1.5×10 ⁻⁶	1.3×10 ⁻⁶	1×10 ⁻²	8×10 ⁻⁵	6×10 ⁻¹
¹¹¹ Ag	Oxides and hydroxides	1.6×10 ⁻⁶	1.3×10 ⁻⁶	1×10 ⁻²	7×10 ⁻⁵	6×10 ⁻¹
¹¹¹ In	Compounds other than oxides, hydroxides, halides and nitrates	2.2×10 ⁻⁷	2.9×10 ⁻⁷	9×10 ⁻²	9×10 ⁻⁴	3×10 ⁰
¹¹¹ In	Oxides, hydroxides, halides and nitrates	3.1×10 ⁻⁷	2.9×10 ⁻⁷	7×10 ⁻²	5×10 ⁻⁴	3×10 ⁰
^{113m} In	Oxides, hydroxides, halides and nitrates	3.2×10 ⁻⁸	2.8×10 ⁻⁸	7×10 ⁻¹	6×10 ⁻³	3×10 ¹
¹¹³ Sn	Compounds other than phosphate, sulfide,	7.9×10 ⁻⁷	7.3×10 ⁻⁷	3×10 ⁻²	2×10 ⁻⁴	1×10 ⁰

	oxides, hydroxides, halides and nitrates of tetravalent tin					
¹¹³ Sn	Phosphate, sulfide, oxides, hydroxides, halides and nitrates of tetravalent tin	1.9×10 ⁻⁶	7.3×10 ⁻⁷	1×10 ⁻²	5×10 ⁻⁵	1×10 ⁰
^{117m} Sn	Compounds other than phosphate, sulfide, oxides, hydroxides, halides and nitrates of tetravalent tin	3.9×10 ⁻⁷	7.1×10 ⁻⁷	5×10 ⁻²	4×10 ⁻⁴	1×10 ⁰
^{117m} Sn	Phosphate, sulfide, oxides, hydroxides, halides and nitrates of tetravalent tin	2.2×10 ⁻⁶	7.1×10 ⁻⁷	9×10 ⁻³	5×10 ⁻⁵	1×10 ⁰
¹³² Te	Vapor	5.1×10 ⁻⁶		4×10 ⁻³	2×10 ⁻⁵	
¹³² Te	Compounds other than oxides, hydroxides and nitrates	2.4×10 ⁻⁶	3.7×10 ⁻⁶	9×10 ⁻³	6×10 ⁻⁵	2×10 ⁻¹
¹³² Te	Oxides, hydroxides and nitrates	3.0×10 ⁻⁶	3.7×10 ⁻⁶	7×10 ⁻³	6×10 ⁻⁵	2×10 ⁻¹
¹²³ I	Vapor	2.1×10 ⁻⁷		1×10 ⁻¹	5×10 ⁻⁴	
¹²³ I	Methyl iodide	1.5×10 ⁻⁷		1×10 ⁻¹	7×10 ⁻⁴	
¹²³ I	Compounds other than methyl iodide	1.1×10 ⁻⁷	2.1×10 ⁻⁷	2×10 ⁻¹	1×10 ⁻³	4×10 ⁰
¹²⁵ I	Vapor	1.4×10 ⁻⁵		1×10 ⁻³	8×10 ⁻⁶	
¹²⁵ I	Methyl iodide	1.1×10 ⁻⁵		2×10 ⁻³	1×10 ⁻⁵	
¹²⁵ I	Compounds other than methyl iodide	7.3×10 ⁻⁶	1.5×10 ⁻⁵	3×10 ⁻³	2×10 ⁻⁵	6×10 ⁻²
¹³¹ I	Vapor	2.0×10 ⁻⁵		1×10 ⁻³	5×10 ⁻⁶	
¹³¹ I	Methyl iodide	1.5×10 ⁻⁵		1×10 ⁻³	7×10 ⁻⁶	
¹³¹ I	Compounds other than methyl iodide	1.1×10 ⁻⁵	2.2×10 ⁻⁵	2×10 ⁻³	1×10 ⁻⁵	4×10 ⁻²
¹³² I	Vapor	3.1×10 ⁻⁷		7×10 ⁻²	4×10 ⁻⁴	
¹³² I	Methyl iodide	1.9×10 ⁻⁷		1×10 ⁻¹	6×10 ⁻⁴	
¹³² I	Compounds other than methyl iodide	2.0×10 ⁻⁷	2.9×10 ⁻⁷	1×10 ⁻¹	1×10 ⁻³	3×10 ⁰
¹³³ Xe	[Submersion]			5×10 ⁰	2×10 ⁻²	
¹³¹ Cs	All compounds	4.5×10 ⁻⁸	5.8×10 ⁻⁸	5×10 ⁻¹	4×10 ⁻³	2×10 ¹
¹³⁷ Cs	All compounds	6.7×10 ⁻⁶	1.3×10 ⁻⁵	3×10 ⁻³	3×10 ⁻⁵	9×10 ⁻²
¹³³ Ba	All compounds	1.8×10 ⁻⁶	1.0×10 ⁻⁶	1×10 ⁻²	7×10 ⁻⁵	5×10 ⁻¹
^{137m} Ba	All compounds	1.0×10 ⁻⁹	1.0×10 ⁻⁹	2×10 ¹	2×10 ⁻¹	8×10 ²
¹⁵³ Sm	All compounds	6.8×10 ⁻⁷	7.4×10 ⁻⁷	3×10 ⁻²	2×10 ⁻⁴	1×10 ⁰
¹⁵³ Gd	Compounds other than	2.5×10 ⁻⁶	2.7×10 ⁻⁷	8×10 ⁻³	6×10 ⁻⁵	3×10 ⁰

	oxides, hydroxides and fluorides					
¹⁵³ Gd	Oxides, hydroxides and fluorides	1.4×10 ⁻⁶	2.7×10 ⁻⁷	1×10 ⁻²	6×10 ⁻⁵	3×10 ⁰
¹⁵⁷ Dy	All compounds	5.5×10 ⁻⁸	6.1×10 ⁻⁸	4×10 ⁻¹	4×10 ⁻³	1×10 ¹
¹⁶⁹ Yb	Compounds other than oxides, hydroxides and fluorides	2.1×10 ⁻⁶	7.1×10 ⁻⁷	1×10 ⁻²	5×10 ⁻⁵	1×10 ⁰
¹⁶⁹ Yb	Oxides, hydroxides and fluorides	2.4×10 ⁻⁶	7.1×10 ⁻⁷	9×10 ⁻³	4×10 ⁻⁵	1×10 ⁰
¹⁷⁷ Lu	Compounds other than oxides, hydroxides and fluorides	1.0×10 ⁻⁶	5.3×10 ⁻⁷	2×10 ⁻²	1×10 ⁻⁴	2×10 ⁰
¹⁷⁷ Lu	Oxides, hydroxides and fluorides	1.1×10 ⁻⁶	5.3×10 ⁻⁷	2×10 ⁻²	1×10 ⁻⁴	2×10 ⁰
¹⁸² Ta	Compounds other than oxides, hydroxides, halides, carbides, nitrates, nitrides and elemental tantalum	5.8×10 ⁻⁶	1.5×10 ⁻⁶	4×10 ⁻³	2×10 ⁻⁵	6×10 ⁻¹
¹⁸² Ta	Oxides, hydroxides, halides, carbides, nitrates, nitrides and elemental tantalum	7.4×10 ⁻⁶	1.5×10 ⁻⁶	3×10 ⁻³	1×10 ⁻⁵	6×10 ⁻¹
¹⁸⁶ Re	Compounds other than oxides, hydroxides, halides and nitrates	7.3×10 ⁻⁷	1.5×10 ⁻⁶	3×10 ⁻²	2×10 ⁻⁴	5×10 ⁻¹
¹⁸⁶ Re	Oxides, hydroxides, halides and nitrates	1.2×10 ⁻⁶	1.5×10 ⁻⁶	2×10 ⁻²	1×10 ⁻⁴	5×10 ⁻¹
¹⁹² Ir	Compounds other than halides, nitrates, oxides, hydroxides and metallic iridium	2.2×10 ⁻⁶	1.4×10 ⁻⁶	9×10 ⁻³	7×10 ⁻⁵	6×10 ⁻¹
¹⁹² Ir	Halides, nitrates and metallic iridium	4.1×10 ⁻⁶	1.4×10 ⁻⁶	5×10 ⁻³	2×10 ⁻⁵	6×10 ⁻¹
¹⁹² Ir	Oxides and hydroxides	4.9×10 ⁻⁶	1.4×10 ⁻⁶	4×10 ⁻³	2×10 ⁻⁵	6×10 ⁻¹
¹⁹⁸ Au	Compounds other than halides, nitrates, oxides and hydroxides	3.9×10 ⁻⁷	1.0×10 ⁻⁶	5×10 ⁻²	5×10 ⁻⁴	8×10 ⁻¹
¹⁹⁸ Au	Halides and nitrates	9.8×10 ⁻⁷	1.0×10 ⁻⁶	2×10 ⁻²	2×10 ⁻⁴	8×10 ⁻¹
¹⁹⁸ Au	Oxides and hydroxides	1.1×10 ⁻⁶	1.0×10 ⁻⁶	2×10 ⁻²	1×10 ⁻⁴	8×10 ⁻¹
¹⁹⁹ Au	Compounds other than halides, nitrates, oxides and hydroxides	1.9×10 ⁻⁷	4.4×10 ⁻⁷	1×10 ⁻¹	1×10 ⁻³	2×10 ⁰
¹⁹⁹ Au	Halides and nitrates	6.8×10 ⁻⁷	4.4×10 ⁻⁷	3×10 ⁻²	2×10 ⁻⁴	2×10 ⁰
¹⁹⁹ Au	Oxides and hydroxides	7.6×10 ⁻⁷	4.4×10 ⁻⁷	3×10 ⁻²	2×10 ⁻⁴	2×10 ⁰
¹⁹⁷ Hg	Vapor	4.4×10 ⁻⁶		5×10 ⁻³	3×10 ⁻⁵	

¹⁹⁷ Hg	All inorganic compounds [oral ingestion]		2.3×10^{-7}			4×10^0
¹⁹⁷ Hg	Sulfate of inorganic compounds	1.0×10^{-7}		2×10^{-1}	2×10^{-3}	
¹⁹⁷ Hg	Oxides, hydroxides, halides, nitrates and sulfide of inorganic compounds	2.8×10^{-7}		7×10^{-2}	4×10^{-4}	
¹⁹⁷ Hg	Methyl mercury [oral ingestion]		9.9×10^{-8}			9×10^0
¹⁹⁷ Hg	Organic compounds other than methyl mercury [oral ingestion]		1.7×10^{-7}			5×10^0
¹⁹⁷ Hg	All organic compounds	8.5×10^{-8}		2×10^{-1}	2×10^{-3}	
²⁰³ Hg	Vapor	7.0×10^{-6}		3×10^{-3}	2×10^{-5}	
²⁰³ Hg	All inorganic compounds [oral ingestion]		5.4×10^{-7}			2×10^0
²⁰³ Hg	Sulfate of inorganic compounds	5.9×10^{-7}		4×10^{-2}	3×10^{-4}	
²⁰³ Hg	Oxides, hydroxides, halides, nitrates and sulfide of inorganic compounds	1.9×10^{-6}		1×10^{-2}	5×10^{-5}	
²⁰³ Hg	Methyl mercury [oral ingestion]		1.9×10^{-6}			5×10^{-1}
²⁰³ Hg	Organic compounds other than methyl mercury [oral ingestion]		1.1×10^{-6}			8×10^{-1}
²⁰³ Hg	All organic compounds	7.5×10^{-7}		3×10^{-2}	2×10^{-4}	
²⁰¹ Tl	All compounds	7.6×10^{-8}	9.5×10^{-8}	3×10^{-1}	3×10^{-3}	9×10^0
²²² Rn	Equilibrium equivalent concentration of radon (concentration of radon when the equilibrium factor is 0.4)	6.5×10^{-6}		3×10^{-3} (8×10^{-3})	2×10^{-5} (5×10^{-5})	
²²³ Ra	All compounds	5.7×10^{-3}	1.0×10^{-4}	4×10^{-6}	2×10^{-8}	5×10^{-3}
²²⁶ Ra	All compounds	2.2×10^{-3}	2.8×10^{-4}	9×10^{-6}	4×10^{-8}	2×10^{-3}

Appended Table 3 (related to Article 5)

Concentration Limits in the Air, etc. when the Types of the Radioactive Materials are Clear but are Not Included in Appended Table 2

Column 1		Column 2	Column 3	Column 4
Category		Concentration limit in the air (Bq/cm ³)	Concentration limit in the exhaust air or the air (Bq/cm ³)	Concentration limit in the waste liquid or drainage (Bq/cm ³)
Category by emission of α rays	Category by physical half-life			
Radioactive materials that emit α rays	With physical half-life shorter than 10 minutes	4×10^{-4}	3×10^{-6}	4×10^0
	With physical half-life of 10 minutes or longer but shorter than 1 day	3×10^{-6}	3×10^{-8}	4×10^{-2}
	With physical half-life of 1 day or longer but shorter than 30 days	2×10^{-6}	8×10^{-9}	5×10^{-3}
	With physical half-life of 30 days or longer	3×10^{-8}	2×10^{-10}	2×10^{-4}
Radioactive materials that do not emit α rays	With physical half-life shorter than 10 minutes	3×10^{-2}	1×10^{-4}	5×10^0
	With physical half-life of 10 minutes or longer but shorter than 1 day	6×10^{-5}	6×10^{-7}	1×10^{-1}
	With physical half-life of 1 day or longer but shorter than 30 days	4×10^{-6}	2×10^{-8}	5×10^{-3}
	With physical half-life of 30 days or longer	1×10^{-5}	4×10^{-8}	7×10^{-4}

Appended Table 4 (related to Article 6)

Surface Density Limits

Category	Surface Density limits (Bq/cm ²)
Radioactive materials that emit α rays	4
Radioactive materials that do not emit α rays	40

Appended Table 5 (related to Article 16)

(Partial amendment by Public Notice of the Ministry of Health, Labour and Welfare No. 492 of 2005)

Effective Doses when the Air Kerma in Free Air is 1 Gy

Column 1	Column 2
Energy strength of an X-ray or γ ray (MeV)	Effective dose (Sv)
0.010	0.00653
0.015	0.0402
0.020	0.122
0.030	0.416
0.040	0.788
0.050	1.106
0.060	1.308
0.070	1.407
0.080	1.433
0.100	1.394
0.150	1.256
0.200	1.173
0.300	1.093
0.400	1.056
0.500	1.036
0.600	1.024
0.800	1.010
1.000	1.003
2.000	0.992
4.000	0.993
6.000	0.993
8.000	0.991
10.000	0.990

(Remarks) When there is no applicable value in this table, the relevant value is to be calculated by an interpolation method.

Appended Table 6 (related to Article 16)

(Partial amendment by Public Notice of the Ministry of Health, Labour and Welfare No. 492 of 2005)

Effective Doses when the Neutron Fluence in Free Air is $10^{12}/\text{cm}^2$

Column 1	Column 2
Energy strength of a neutron (MeV)	Effective dose (Sv)
1.0×10^{-9}	5.24
1.0×10^{-8}	6.55
2.5×10^{-8}	7.60
1.0×10^{-7}	9.95
2.0×10^{-7}	11.2
5.0×10^{-7}	12.8
1.0×10^{-6}	13.8
2.0×10^{-6}	14.5
5.0×10^{-6}	15.0
1.0×10^{-5}	15.1
2.0×10^{-5}	15.1
5.0×10^{-5}	14.8
1.0×10^{-4}	14.6
2.0×10^{-4}	14.4
5.0×10^{-4}	14.2
1.0×10^{-3}	14.2
2.0×10^{-3}	14.4
5.0×10^{-3}	15.7
1.0×10^{-2}	18.3
2.0×10^{-2}	23.8
3.0×10^{-2}	29.0
5.0×10^{-2}	38.5
7.0×10^{-2}	47.2
1.0×10^{-1}	59.8
1.5×10^{-1}	80.2
2.0×10^{-1}	99.0
3.0×10^{-1}	133
5.0×10^{-1}	188
7.0×10^{-1}	231

9.0×10^{-1}	267
1.0×10^0	282
1.2×10^0	310
2.0×10^0	383
3.0×10^0	432
4.0×10^0	458
5.0×10^0	474
6.0×10^0	483
7.0×10^0	490
8.0×10^0	494
9.0×10^0	497
1.0×10^1	499
1.2×10^1	499
1.4×10^1	496
1.5×10^1	494
1.6×10^1	491
1.8×10^1	486
2.0×10^1	480

(Remarks) When there is no applicable value in this table, the relevant value is to be calculated by an interpolation method.