

1 **DRAFT 2 07/31/2020**

2 **DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT**

3 **Hazardous Materials and Waste Management Division**

4 **RADIATION CONTROL - TRANSPORTATION OF RADIOACTIVE MATERIALS**

5 **6 CCR 1007-1 Part 17**

6 *[Editor's Notes follow the text of the rules at the end of this CCR Document.]*

7 _____
8 **Adopted by the Board of Health September 20, 2017August 19, 2020, effective date November 14,**
9 **2017October 15, 2020.**

10 **PART 17: TRANSPORTATION OF RADIOACTIVE MATERIALS**

11 **GENERAL PROVISIONS**

12 [* * * INDICATES NO CHANGES TO THIS PORTION OF THE RULE]

13 * * *

14 17.1.4 Applicability.

15 17.1.4.1 This part applies to any person who transports radioactive material or delivers
16 radioactive material to a carrier for transport.

17 (1) This part applies in particular to any licensee authorized by specific or general
18 license to receive, possess, use, or transfer licensed material, if the licensee
19 delivers that material to a carrier for transport, transports the material outside the
20 site of usage as specified in the license, or transports that material on a public
21 highway.

22 (2) The transport of licensed material or delivery of licensed material to a carrier for
23 transport is subject to the:

24 (a) General provisions of 17.1 through 17.5, including referenced DOT
25 regulations;

26 (b) Quality assurance requirements of 10 CFR Part 71; and

27 (c) Operating controls and procedures requirements of 17.11 through 17.17.

28 * * *

29 **17.1.5 Published Material Incorporated by Reference.**

30 ~~In accordance with Section 24-4-103(12.5)(c), CRS, <https://www.colorado.gov/cdphe/radregs>~~
31 ~~identifies where incorporated material is available to the public on the internet at no cost. If the~~
32 ~~incorporated material is not available on the internet at no cost to the public, copies of the~~
33 ~~incorporated material has been provided to the State Publications Depository and Distribution~~
34 ~~Center, also known as the State Publications Library. The State Librarian at the State Publication~~
35 ~~Library retains a copy of the material and will make the copy available to the public.~~

36 **17.1.5.1 Throughout this Part 17, federal regulations, state regulations, and**
37 **standards or guidelines of outside organizations have been adopted and**

Commented [JSJ1]:
Editorial note 1: All comments (such as this one) shown in the right side margin of this draft document are for information only to assist the reader in understanding the proposed rule change during the review and comment process.

These side margin notes are **not** part of the rule and all comments will be deleted prior to publication of the final rule.

Editorial note 2: Alignment and formatting corrections and minor typographical adjustments may be made in the rule and may not be specifically identified with a side margin comment.

Editorial note 3: The acronym "RATS-20##-#" refers to the U.S. Nuclear Regulatory Commission (NRC) regulatory action tracking system. This system is used to identify and summarize changes to federal regulations that may be required for adoption by an NRC agreement state. To maintain agreement state status, Colorado's radiation regulations must be compatible with federal regulations of the NRC.
NRC RATS items may be found online at https://scp.nrc.gov/rss_regamendents.html.

Colorado statute also prescribes that the radiation control regulations must be consistent with the model regulations of the Conference of Radiation Control Program Directors, Inc. (CRCPD). To date, the CRCPD model regulation equivalent to part 17 has not been updated for consistency with the 2018 federal rule changes.

Commented [JSJ2]: These dates reflect anticipated adoption and effective dates based on the current rulemaking schedule. Dates are subject to change pending additional review, approvals, and department rulemaking and Board of Health schedule.

Commented [JSJ3]: Provisions are added and revised for this section for consistency with the Colorado Administrative Procedure Act (24-4-103(12.5)(a)(2), CRS).

38 incorporated by reference. Unless a prior version of the incorporated
39 material is otherwise specifically indicated, the materials incorporated by
40 reference cited herein include only those versions that were in effect as of
41 the most recent effective date of this Part 17 (October 2020), and not later
42 amendments or editions of the incorporated material.

43 **17.1.5.2** Materials incorporated by reference are available for public inspection, and
44 copies (including certified copies) can be obtained at reasonable cost,
45 during normal business hours from the Colorado Department of Public
46 Health and Environment, Hazardous Materials and Waste Management
47 Division, 4300 Cherry Creek Drive South, Denver, Colorado 80246.
48 Additionally, <https://www.colorado.gov/cdphe/radregs> identifies where the
49 incorporated material is available to the public on the internet at no cost.
50 Due to copyright restrictions, certain materials incorporated in this Part are
51 available for public inspection at the state publications depository and
52 distribution center.

53 **17.1.5.3** Availability from Source Agencies or Organizations.

54 (1) All federal agency regulations incorporated by reference herein are
55 available at no cost in the online edition of the Code of Federal
56 Regulations (CFR) hosted by the U.S. Government Printing Office,
57 online at www.govinfo.gov.

58 (2) All state regulations incorporated by reference herein are available
59 at no cost in the online edition of the Code of Colorado Regulations
60 (CCR) hosted by the Colorado Secretary of State's Office, online at
61 <https://www.sos.state.co.us/CCR/RegisterHome.do>.

62 **17.2** Definitions.

63 17.2.1 Definitions of general applicability to these regulations are in Part 1, Section 1.2.2.

64 17.2.2 Terms used in Part 17 have the definitions set forth as follows.

65 "Certificate holder" means a person who has been issued a Certificate of Compliance or other
66 package approval by the NRC.

67 "Certificate of Compliance" (COC) means the certificate issued by the NRC under subpart D of 10
68 CFR **Part** 71 which approves the design of a package for the transportation of radioactive
69 material.

70 * * *

71 Criticality Safety Index (CSI)" means the dimensionless number (rounded up to the next tenth)
72 assigned to and placed on the label of a fissile material package, to designate the degree of
73 control of accumulation of packages, overpacks, or freight containers containing fissile material
74 during transportation. Determination of the criticality safety index is described in 10 CFR **Part**
75 71.22, 71.23, and 71.59. The criticality safety index for an overpack, freight container,
76 consignment or conveyance containing fissile material packages is the arithmetic sum of the
77 criticality safety indices of all the fissile material packages contained within the overpack, freight
78 container, consignment or conveyance.

79 * * *

80 "Low specific activity material" (LSA material) means radioactive material with limited specific
81 activity which is nonfissile or is excepted under Part 17 and which satisfies the descriptions and

82 limits set forth in the following section. Shielding materials surrounding the LSA material may not
 83 be considered in determining the estimated average specific activity of the package contents. The
 84 LSA material must be in one of three groups:

85 * * *

86 (3) LSA-III. Solids (e.g., consolidated wastes, activated materials), excluding
 87 powders, that satisfy the requirements of 10 CFR **Part** 71.77, in which:

88 * * *

89 "Packaging" means the assembly of components necessary to ensure compliance with the
 90 packaging requirements of 10 CFR **Part** 71. It may consist of one or more receptacles, absorbent
 91 materials, spacing structures, thermal insulation, radiation shielding, and devices for cooling or
 92 absorbing mechanical shocks. The vehicle, tie-down system, and auxiliary equipment may be
 93 designated as part of the packaging.

94 * * *

95 "Regulations of the DOT" means the regulations in 49 CFR Parts 100-189 and Parts 390-397
 96 (~~October 1, 2016~~).

97 "Regulations of the NRC" means the regulations in 10 CFR **Part** 71 (~~January 1, 2016~~) for
 98 purposes of Part 17.

99 * * *

100 LICENSE-RELATED REGULATORY REQUIREMENTS

101 **17.3 Requirement for License.**

102 No person shall transport radioactive material or deliver radioactive material to a carrier for
 103 transport except as authorized in a general or specific license issued by the Department, an
 104 Agreement State, a Licensing State, or NRC, or as exempted in 17.4

Commented [JSJ4]:
 This change removes a term no longer used in the current
 state or national regulatory scheme.

105 **17.4 Exemptions.**

106 17.4.1 Common and contract carriers, freight forwarders, and warehouse workers which are subject to
 107 the requirements of the DOT in 49 CFR **Part** 170 through 189, or the U.S. Postal Service in the
 108 Postal Service Manual (Domestic Mail Manual), are exempt from the requirements of Part 17 to
 109 the extent that they transport or store radioactive material in the regular course of their carriage
 110 for others or storage incident thereto. Common and contract carriers who are not subject to the
 111 requirements of the DOT or U.S. Postal Service are subject to 17.3 and other applicable
 112 requirements of these regulations.

113 * * *

114 17.4.3 Fissile materials meeting the requirements of one of the paragraphs (a) through (f) in 10 CFR
 115 **Part** 71.15 are exempt from classification as fissile material, and from the fissile material package
 116 standards of 10 CFR **Part** 71.55 and 10 CFR **Part** 71.59, but are subject to all other requirements
 117 of 10 CFR **Part** 71, except as noted in paragraphs (a) through (f) in 10 CFR **Part** 71.15.

118 * * *

119 **17.7 General License: NRC-Approved Packages.**

120 17.7.1 A general license is hereby issued to any licensee of the Department to transport, or to deliver to
 121 a carrier for transport, licensed material in a package for which a license, ~~NRC-issued~~ Certificate
 122 of Compliance, or other approval has been issued by the ~~NRC~~ Department.

123 17.7.2 This general license applies only to a licensee who has a quality assurance program approved by
 124 the Department as satisfying the provisions of Subpart H (excluding 71.101(c)(2), (d), and (e) and
 125 71.107 through 71.125) of 10 CFR **Part** 71.

126 17.7.3 Each licensee issued a general license under Section 17.7.1 shall:

127 17.7.3.1 Maintain a copy of the ~~NRC-issued~~ Certificate of Compliance, or other approval
 128 of the package, and the drawings and other documents referenced in the
 129 approval relating to the use and maintenance of the packaging and to the actions
 130 to be taken before shipment;

131 17.7.3.2 Comply with the terms and conditions of the license, ~~NRC-issued~~ Certificate of
 132 Compliance, or other approval **issued** by the ~~Department~~ NRC, as applicable,
 133 and the applicable requirements of Subparts A (excluding 71.11), G (excluding
 134 71.85(a)-(c), and 71.91(b)), and H (excluding 71.101(c)(2), (d), and (e) and
 135 71.107 through 71.125) of 10 CFR **Part** 71; **and**

136 17.7.3.3 ~~Prior to the licensee's first use of the package, submit to the Department in~~
 137 ~~writing: Submit in writing before the first use of the package to: ATTN:~~
 138 ~~Document Control Desk, Director, Division of Fuel Management, Office of~~
 139 ~~Nuclear Material Safety and Safeguards, using an appropriate method~~
 140 ~~listed in 10 CFR Part 71.1(a), the licensee's name and license number and~~
 141 ~~the package identification number specified in the package approval.~~

142 ~~(1) The licensee's name and license number; and~~

143 ~~(2) The package identification number specified in the package approval.~~

144 17.7.4 The general license in 17.7.1 applies only when the package approval authorizes use of the
 145 package under this general license.

146 17.7.5 For a Type B or fissile material package, the design of which was approved by NRC before April
 147 1, 1996, the general license in 17.7.1 is subject to additional restrictions of 10 CFR **Part** 71.19.

148 17.8 General Licenses: Use of Foreign-Approved and Other Approved Packages

149 17.8.1 A general license is issued to any licensee of the Department to transport, or to deliver to a
 150 carrier for transport, licensed material in a package, the design of which has been approved in a
 151 foreign national competent authority certificate, that has been revalidated by the DOT as meeting
 152 the applicable requirements of 49 CFR **Part** 171.23.

153 17.8.2 Except as otherwise provided in this section, the general license applies only to a licensee who
 154 has a quality assurance program approved by the Department as satisfying the applicable
 155 provisions of 10 CFR **Part** 71.101 through 71.137, excluding 71.101(c)(2), (d), and (e) and 71.107
 156 through 71.125.

157 17.8.3 This general license applies only to shipments made to or from locations outside the United
 158 States.

159 17.8.4 Each licensee issued a general license under Section 17.8.1 shall:

160 (1) Maintain a copy of the applicable certificate, the revalidation, and the drawings
 161 and other documents referenced in the certificate, relating to the use and

Commented [JSJ5]: Language is updated in 17.7 based on a prior NRC comment in correspondence dated March 8, 2018 associated with [RATS 2015-3](#), for consistency with the current [10 CFR Part 71.17](#).

The proposed language clarifies that only NRC issues the Certificate of Compliance document and grants the general license for transportation.

Provision 17.7 is also formatted for alignment.

NRC Compatibility B.

Commented [JSJ6]: Based on NRC comments in correspondence dated [April 24, 2020](#) received during the 2020 comment period, the current rule language is retained to continue to require that the Department reviews the (package) quality assurance program for a Colorado licensee.

NRC Compatibility B.

Commented [JSJ7]: For consistency with 10 CFR 71.17(c)(3), NRC comments dated [March 8, 2018](#) rescind a prior (2017) comment indicating the licensee should submit documentation to the Department before the first use of an NRC approved package. As indicated in the proposed draft language, this documentation should instead be submitted to appropriate NRC Division for review.

NRC [RATS 2019-2](#)
NRC Compatibility B.

Commented [JSJ8]:
The text of provisions (1) and (2) are incorporated into 17.7.3.3 above, following the format and flow of the federal rule.

Commented [JSJ9]:
Based on NRC comments in correspondence dated [April 24, 2020](#) received during the 2020 comment period, the current rule language is retained to continue to require that the Department reviews the (package) quality assurance program for a Colorado licensee.

NRC Compatibility B.

162 maintenance of the packaging and to the actions to be taken before shipment;
 163 and

164 (2) Comply with the terms and conditions of the certificate and revalidation, and with
 165 the applicable requirements of Part 17, sections 17.1 through 17.5, 17.10 through
 166 17.17, and Subparts A (excluding 71.11), G (excluding 71.85(a)-(c), and
 167 71.91(b)), and H (excluding 71.101(c)(2), (d), and (e) and 71.107 through 71.125)
 168 of 10 CFR **Part 71**.

169 17.9 General Licenses: Fissile Material Transport

170 17.9.1 A general license is hereby issued to any licensee to transport fissile material, or to deliver fissile
 171 material to a carrier for transport, if the licensee meets the requirements of 10 CFR **Part 71.22**
 172 and the material is shipped in accordance with 10 CFR **Part 71.22** and each applicable
 173 requirement of Part 17.

174 17.9.2 A general license is hereby issued to any licensee to transport fissile material in the form of
 175 plutonium-beryllium (Pu-Be) special form sealed sources, or to deliver fissile material in the form
 176 of plutonium-beryllium (Pu-Be) special form sealed sources to a carrier for transport, if the
 177 licensee meets the requirements of 10 CFR **Part 71.23** and the material is shipped in accordance
 178 with 10 CFR **Part 71.23** and each applicable requirement of Part 17.

179 QUALITY ASSURANCE

180 17.10 Quality Assurance Requirements.

181 **17.10.1** Subpart H of 10 CFR **Part 71** describes quality assurance requirements applying to design,
 182 purchase, fabrication, handling, shipping, storing, cleaning, assembly, inspection, testing,
 183 operation, maintenance, repair, and modification of components of packaging that are important
 184 to safety. As used in Subpart H of 10 CFR **Part 71**, "quality assurance" comprises all those
 185 planned and systematic actions necessary to provide adequate confidence that a system or
 186 component will perform satisfactorily in service. Quality assurance includes quality control, which
 187 comprises those quality assurance actions related to control of the physical characteristics and
 188 quality of the material or component to predetermined requirements.

Commented [JSJ10]: Language is updated in 17.10.1 to address editorial comments in NRC correspondence dated [March 8, 2018](#).

189 **17.10.2** Each licensee is responsible for satisfying the **applicable** quality assurance requirements that
 190 apply to its use of a packaging for the shipment of licensed material subject to the applicable
 191 requirements **of set forth in** Subpart H of 10 CFR **Part 71** (excluding **10 CFR 71.101(c)(2), (d),**
 192 and (e) and **10 CFR 71.107** through 71.125).

Commented [JSJ11]: Provision is numbered and language is updated in 17.10.2 to address editorial comments in NRC correspondence dated [March 8, 2018](#).

193 **17.10.3** **Before the use of any package for the shipment of licensed material subject to Subpart H**
 194 **of 10 CFR Part 71, each licensee shall obtain Department approval of its quality assurance**
 195 **program. Each licensee shall file with the Department, a description of its quality**
 196 **assurance program, including a discussion of which requirements of Subpart H of 10 CFR**
 197 **Part 71 are applicable and how they will be satisfied.**

Commented [JSJ12]: Provision added for consistency with 10 CFR Part 71.101(c)(1).

As annotated by NRC in [RATS 2019-2](#), the proposed language clarifies that for Agreement State (Colorado) licensees, the Department rather than NRC is to approve the quality assurance program before the use of a package for shipment of licensed material that is subject to the requirements of Subpart H of 10 CFR Part 71.

NRC Compatibility C.

198 17.10.24 Radiography containers.

199 A program for transport container inspection and maintenance limited to radiographic exposure
 200 devices, source changers, or packages transporting these devices and meeting the requirements
 201 of Part 5, sections 5.12(4).4 through 5.12(6).6 or equivalent Agreement State or NRC
 202 requirement, is deemed to satisfy the requirements of 17.7.2 and 10 CFR **Part 71.101(b)**.

203 **17.11 Advance Notification of Shipment of Nuclear Waste.**

Commented [JSJ13]: Section 17.11 formatted for alignment.

204 17.11.1 As specified in 17.11.3, 17.11.4, and 17.11.5, each licensee shall provide advance notification to
 205 the governor of a state, or the governor's designee, of the shipment of licensed material (nuclear

- 206 waste), within or across the boundary of the state, before the transport, or delivery to a carrier, for
 207 transport, of licensed material outside the confines of the licensee's plant or other place of use or
 208 storage.
- 209 17.11.2 As specified in 17.11.3, 17.11.4, and 17.11.5 of this section, after June 11, 2013, each licensee
 210 shall provide advance notification to the Tribal official of participating Tribes referenced in
 211 17.11.4.3(3), or the official's designee, of the shipment of licensed material, within or across the
 212 boundary of the Tribe's reservation, before the transport, or delivery to a carrier, for transport, of
 213 licensed material outside the confines of the licensee's plant or other place of use or storage.
- 214 17.11.3 Advance notification is also required under this section for the shipment of licensed material,
 215 other than irradiated fuel, meeting the following three conditions:
- 216 17.11.3.1 The licensed material is required by this part to be in Type B packaging for
 217 transportation;
- 218 17.11.3.2 The licensed material is being transported to or across a state boundary en route
 219 to a disposal facility or to a collection point for transport to a disposal facility; and
- 220 17.11.3.3 The quantity of licensed material in a single package exceeds the least of the
 221 following:
- 222 (1) 3000 times the A_1 value of the radionuclides as specified in Appendix 17A, Table
 223 A1 for special form radioactive material; or
- 224 (2) 3000 times the A_2 value of the radionuclides as specified in Appendix 17A, Table
 225 A1 for normal form radioactive material; or
- 226 (3) 1000 TBq (27,000 Ci).
- 227 17.11.4 Procedures for submitting advance notification
- 228 17.11.4.1 The notification must be made in writing to:
- 229 (1) The office of each appropriate governor or governor's designee;
- 230 (2) The office of each appropriate Tribal official or Tribal official's designee;
- 231 (3) The Department; **and**
- 232 **(4) The NRC's Director, Office of Nuclear Security and Incident Response.**
- 233 17.11.4.2 A notification delivered by mail must be postmarked at least 7 days before the
 234 beginning of the 7 day period during which departure of the shipment is
 235 estimated to occur.
- 236 17.11.4.3 A notification delivered by any other means than mail must reach the office of the
 237 governor or of the governor's designee or the Tribal official, or Tribal official's
 238 designee at least 4 days before the beginning of the 7-day period during which
 239 departure of the shipment is estimated to occur.
- 240 (1) A list of the names and mailing addresses of the governors' designees receiving
 241 advance notification of transportation of nuclear waste was published in the
 242 Federal Register on June 30, 1995 (60 FR 34306)
- 243 (2) Contact information for each State, including telephone and mailing addresses of
 244 governors and governors' designees, and participating Tribes, including

Commented [JSJ14]:

Based on NRC comments dated [April 24, 2020](#), language is modified and added to ensure the appropriate NRC office is notified of these shipments, and for consistency with 10 CFR Part 71.97.

NRC Compatibility B.
 NRC RATS 2018-2.

245 telephone and mailing addresses of Tribal officials and Tribal official's designees,
246 is available on the NRC Web site at: <https://scp.nrc.gov/special/designee.pdf>.

247 (3) A list of the names and mailing addresses of the governor's designees and Tribal
248 official's designees of participating Tribes is available on request from the
249 Director, Division of ~~Material Safety, State, Tribal, and Rulemaking~~**Materials**
250 **Safety, Security, State, and Tribal** Programs, Office of Nuclear Material Safety
251 and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-
252 0001.

Commented [JSJ15]: Due to an NRC organizational change, the Division title is updated, consistent with the 2018 changes to [10 CFR 71.97\(c\)\(3\)\(iii\)](#).

NRC Compatibility B
NRC [RATS 2018-3](#)

253 17.11.4.4 The licensee shall retain a copy of the notification as a record for 3 years.

254 17.11.5 Information to be furnished in advance notification of shipment.

255 17.11.5.1 Each advance notification of nuclear waste shall contain the following
256 information:

257 (1) The name, address, and telephone number of the shipper, carrier, and receiver
258 of the nuclear waste shipment;

259 (2) A description of the nuclear waste contained in the shipment, as required by 49
260 CFR **Part** 172.202 and 172.203(d);

261 (3) The point of origin of the shipment and the 7-day period during which departure
262 of the shipment is estimated to occur;

263 (4) The 7-day period during which arrival of the shipment at state boundaries or
264 Tribal reservation boundaries is estimated to occur;

265 (5) The destination of the shipment, and the 7-day period during which arrival of the
266 shipment is estimated to occur; and

267 (6) A point of contact with a telephone number for current shipment information.

268 17.11.6 Revision notice

269 17.11.6.1 A licensee who finds that schedule information previously furnished to a governor
270 or governor's designee or a Tribal official or Tribal official's designee, in
271 accordance with this section, will not be met, shall:

272 (1) Telephone a responsible individual in the office of the governor of the state or of
273 the governor's designee or the Tribal official or Tribal official's designee an inform
274 that individual of the extent of the delay beyond the schedule originally reported;
275 and

276 (2) Maintain a record of the name of the individual contacted for 3 years.

277 17.11.7 Cancellation notice

278 17.11.7.1 Each licensee who cancels a nuclear waste shipment, for which advance
279 notification has been sent, shall:

280 (1) Send a cancellation notice to the governor of each state, or governor's designee
281 previously notified, each Tribal official or Tribal official's designee previously
282 notified, **the NRC's Director, Office of Nuclear Security and Incident**
283 **Response**, and to the Department;

Commented [JSJ16]: Following additional clarification from NRC this language is updated, consistent with a similar change made to 17.11.4.1(4).

284 (2) State in the notice that it is a cancellation and identify the advance notification
285 that is being cancelled; and

286 (3) Retain a copy of the notice for 3 years.
287 * * *

288 **17.14 Preliminary Determinations.**

289 Before the first use of any packaging for the shipment of radioactive material the licensee shall ascertain
290 that the determinations in paragraphs (a) through (c) of 10 CFR **Part** 71.85 have been made by the
291 certificate holder.

292 **17.15 Routine Determinations.**

293 * * *

294 17.15.7 Any structural part of the package which could be used to lift or tie down the package during
295 transport is rendered inoperable for the purpose unless it satisfies design requirements specified
296 in 10 CFR **Part** 71.45;

297 17.15.8 The level of non-fixed (removable) radioactive contamination on the external surfaces of each
298 package offered for shipment is as low as reasonably achievable and within the limits specified in
299 49 CFR **Part** 173.443.

300 17.15.8.1 Determination of the level of non-fixed (removable) contamination shall be based
301 upon wiping an area of 300 square centimeters of the surface concerned with an
302 absorbent material, using moderate pressure, and measuring the activity on the wiping
303 material.

304 (1) The number and location of measurements shall be sufficient to yield a
305 representative assessment of the removable contamination levels.

306 (2) Other methods of assessment of equal or greater detection efficiency may be
307 used.

308 17.15.8.2 In the case of packages transported as exclusive use shipments by rail or
309 highway only, the non-fixed (removable) radioactive contamination:

310 (1) At the beginning of transport shall not exceed the levels specified in 49 CFR **Part**
311 173.443; and

312 (2) At any time during transport shall not exceed 10 times the levels specified in 49
313 CFR **Part** 173.443.

314 **17.15.9** External radiation levels around the package and around the vehicle, if applicable, shall not
315 exceed:

316 17.15.9.1 2 mSv/h (200 millirem per hour) at any point on the external surface of the
317 package at any time during transportation;

318 17.15.9.2 A transport index of 10.0.

319 17.15.10 For a package transported in exclusive use by rail, highway or water, radiation levels
320 external to the package may exceed the limits specified in 17.15.9 but shall not exceed
321 any of the following:

Commented [JSJ17]:
Sections 17.15.9 through 7.15.15 are formatted for alignment
of text.

322	17.15.10.1	2 mSv/h (200 millirem per hour) on the accessible external surface of the
323		package unless the following conditions are met, in which case the limit is 10
324		mSv/h (1000 millirem per hour);
325	(1)	The shipment is made in a closed transport vehicle,
326	(2)	Provisions are made to secure the package so that its position within the vehicle
327		remains fixed during transportation, and
328	(3)	No loading or unloading operation occurs between the beginning and end of the
329		transportation.
330	17.15.10.2	2 mSv/h (200 millirem per hour) at any point on the outer surface of the vehicle,
331		including the upper and lower surfaces, or, in the case of a flat-bed style vehicle,
332		with a personnel barrier, at any point on the vertical planes projected from the
333		outer edges of the vehicle, on the upper surface of the load (or enclosure, if
334		used), and on the lower external surface of the vehicle;
335	(1)	A flat bed style vehicle with a personnel barrier shall have radiation levels
336		determined at vertical planes.
337	(2)	If no personnel barrier is in place, the package cannot exceed 2 mSv/h (200
338		millirem per hour) at any accessible surface.
339	17.15.10.3	0.1 mSv/h (10 millirem per hour) at any point 2 meters from the vertical planes
340		represented by the outer lateral surfaces of the vehicle, or, in the case of a flat-
341		bed style vehicle, at any point 2 meters from the vertical planes projected from
342		the outer edges of the vehicle; and
343	17.15.10.4	0.02 mSv/h (2 millirem per hour) in any normally occupied positions of the
344		vehicle, except that this provision does not apply to private motor carriers when
345		persons occupying these positions are provided with special health supervision,
346		personnel radiation exposure monitoring devices, and training in accordance with
347		10.3; and
348	17.15.11	For shipments made under the provisions of Section 17.15.10, the shipper shall provide
349		specific written instructions to the carrier for maintenance of the exclusive use shipment
350		controls. The instructions must be included with the shipping paper information.
351	17.15.12	The written instructions required for exclusive use shipments must be sufficient so that,
352		when followed, they will cause the carrier to avoid actions that will:
353	17.15.12.1	Unnecessarily delay delivery; or
354	17.15.12.2	Unnecessarily result in increased radiation levels or radiation exposures to
355		transport workers or members of the general public.
356	17.15.13	A package must be prepared for transport so that in still air at 100 degrees Fahrenheit
357		(38 degrees Celsius) and in the shade, no accessible surface of a package would have a
358		temperature exceeding 50 degrees Celsius (122 degrees Fahrenheit) in a nonexclusive
359		use shipment or 82 degrees Celsius (185 degrees Fahrenheit) in an exclusive use
360		shipment. Accessible package surface temperatures shall not exceed these limits at any
361		time during transportation.
362	17.15.14	A package may not incorporate a feature intended to allow continuous venting during
363		transport.

364 17.15.15 Before delivery of a package to a carrier for transport, the licensee shall ensure that any
 365 special instructions needed to safely open the package have been sent to the consignee,
 366 or otherwise made available to the consignee, for the consignee's use in accordance with
 367 4.32.5.2.

368 * * *

369 17.17.1.4 Type and quantity of licensed material in each package, and the total quantity of
 370 each shipment;

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371 * * *

372 17.17.1.10 Results of the determinations required by 17.15 and by the conditions of the
 373 package approval.

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375 **Appendix 17A - Determination of A1 and A2**

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376 17A1 Values of A₁ and A₂ for individual radionuclides, which are the bases for many activity limits
 377 elsewhere in these regulations are given in Table 17A1. The curie (Ci) values specified are
 378 obtained by converting from the Terabecquerel (TBq) value. The Terabecquerel values are the
 379 regulatory standard. The curie values are for information only and are not intended to be the
 380 regulatory standard. Where values of A₁ or A₂ are unlimited, it is for radiation control purposes
 381 only. For nuclear criticality safety, some materials are subject to controls placed on fissile
 382 material.

383 17A2 For individual radionuclides whose identities are known, but which are:

384 17A2.1 Not listed in Table 17A1:

- 385 (1) The A₁ and A₂ values Table 17A3 may be used.
- 386 (2) Otherwise, the licensee shall obtain prior NRC approval of the A₁ and A₂ values
 387 for radionuclides not listed in Table 17A1, before shipping the material. The
 388 licensee shall submit such request for prior approval to NRC in accordance with
 389 10 CFR **Part** 71.1.

390 * * *

391 [NO CHANGES TO REMAINDER OF RULE OR SUBSEQUENT TABLES]
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