RONAN
Measurements Division

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FAX

Date: 05/17/94
From: Bon Cahill
Number of Pages: 9

To: NRC
Attention: John Lubinski
Fax Number: 301-415-5369

Mr. Lubinski:

The application where the exempt sources could be applied is shown conceptually in the attached figure, D-9523-K.

By using a highly sensitive detector, we can do this application with CS-137 or CO-60 exempt sources in a source tube (rod) (see B-9392-K) and inserting the rod into a source well.

We would advise the customer to purchase exempt sources and place into a protective stainless steel tube B-9392-K and insert into a well inside the mold housing. The sources can be removed as required and the labeling on the sources is protected by the source tube or rod.

The customer would buy the detector, source rod, well and electronics from us. We would not only provide instructions on how to load the sources, but also provide safety instructions for handling, storage, and use, in addition to those supplied by the source supplier. (additional safety information, we would provide, is enclosed with this fax).

We believe that this procedure is in compliance with all the pertinent NRC regulations and need your verfication.

If you have any questions or need further information, please let me know.

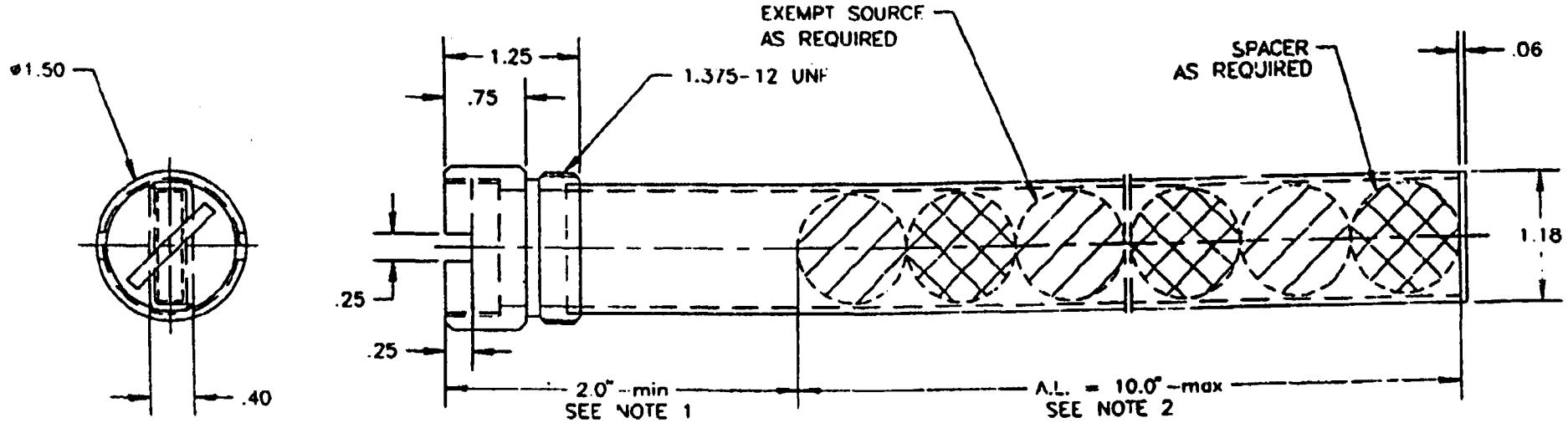
Thanks for your assistance,

Bon Cahill

Bon Cahill
General Manager
Senior Physicist

OK

DATE	SYM	REVISION RECORD	DR	CK
5/17/94	1	ADDED INFORMATION PER BC	YSP	-

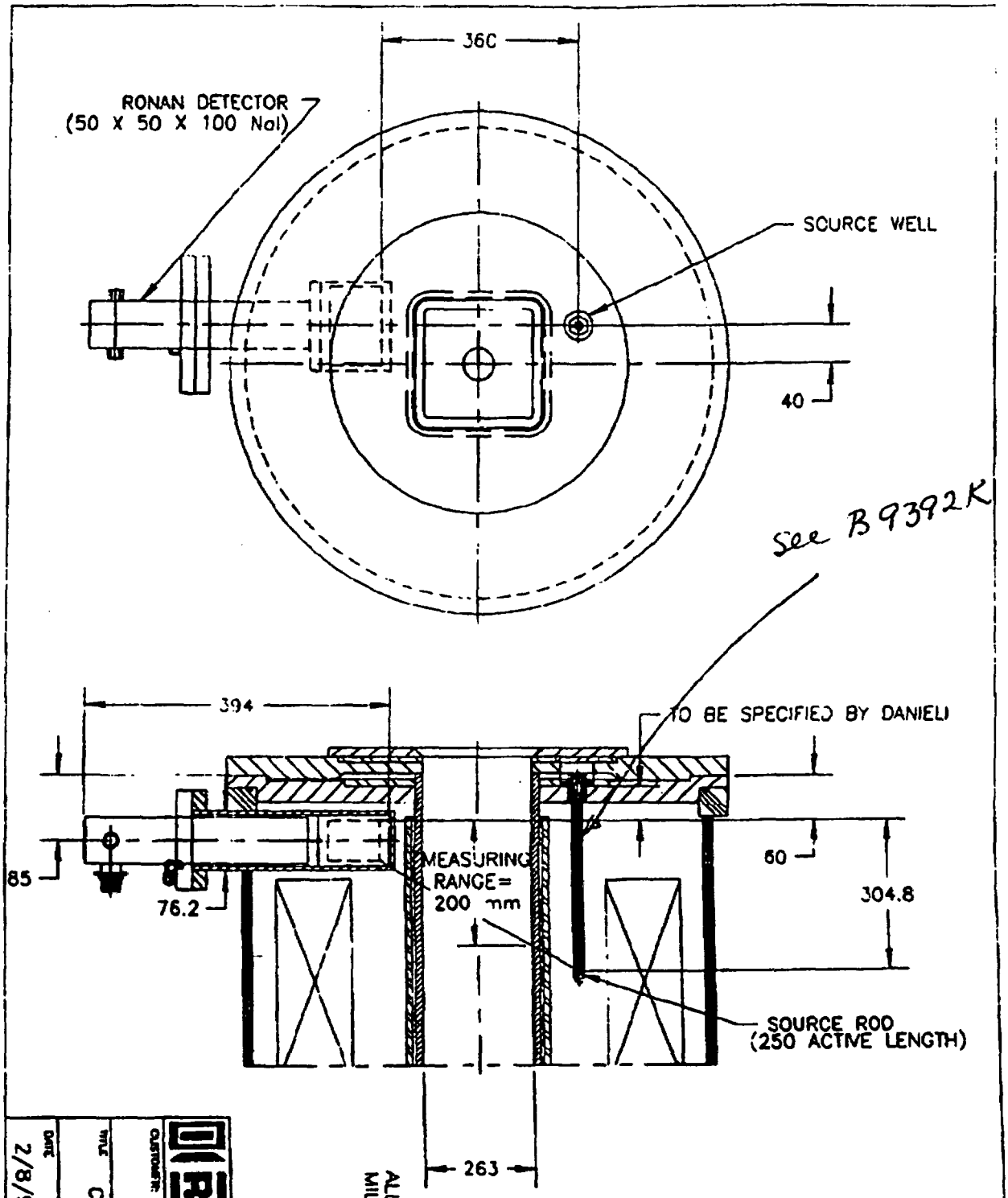


NOTES:

1. THIS DISTANCE IS TO BE SPECIFIED BY CUSTOMER.
2. A.L. – ACTIVE LENGTH, MAXIMUM NUMBER OF EXEMPT SOURCES ARE TEN.

RONAN MEASUREMENTS DIVISION

CUSTOMER:	SCALE: NTS	DR. BY YSP / APPR. BY
TITLE: OUTLINE: EXEMPT SOURCE ROD		
DATE: 1/11/94	DRAWING NUMBER: B-9392-K	REV: 1



ALL DIMENSIONS ARE IN MILLIMETERS.

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CUSTOMER:

TITLE: CONFIGURATION: MOLD LEVEL GAGE

SCALE: NTS

DRAWN BY: VSP

CHKD BY:

DRAWING NUMBER: B-9523-K

DATE: 2/8/94

REVISION RECORD				DATE

INFORMATION REGARDING RADIOACTIVE SOURCES OF EXEMPT QUANTITIES OF BY PRODUCT MATERIAL

General: The federal regulations pertaining to the licensing for ownership, and use of byproduct radioactive material is found in CFR.10 part 30.

In paragraph 30.19, titled **"Exempt Quantities"**, it states that any person is exempt from the requirements for license if they possess the byproduct in individual quantities that does not exceed the applicable quantity set forth in paragraph 30.71 Schedule B.

For Cs-137, that quantity is 10 microCuries(μCi) and for C0-60, that quantity is 1 microCurie(μCi). For gaging these are the primary high energy isotopes used.

For simplicity, a user may receive possess and use an exempt quantity source without a license because it qualifies as **"Unlicensed Material"**.

The manufacturers of the exempt quantity source must possess a specific license and meet the requirements for the license under paragraph 32.18.

Under the condition of the license, the manufacturer must supply the exempt source quantity to the user individually packaged and no more than 10 such packaged quantities in a single transaction. The immediate container of each quantity shall bear a durable legible label which identifies the isotope and quantity of radioactivity and the words **Radioactive Material.**

In addition an accompanying brochure or label on the container states that the product is **Radioactive Material/Not for Human Use - Introduction into Foods, Beverages, Cosmetics, Drugs or Medicinals for Introduction into Products**

Manufactured for Commercial Distribution is Prohibited. Exempt quantities should not be combined. Also the accompanying brochure should contain radiation safety instructions pertaining to the safe handling, use, storage and disposal.

User Responsibilities:

A) Proper Storage: When not used, the exempt sources should be stored in a shielded container to prevent accidental damage to the sources and keep the radiation exposure as low as possible.

B) Proper Handling: The sources must be kept intact. The are not to be combined with each other or altered in any way so as to lose their identity as an individual exempt quantity. The label should be kept intact on the source and the sources preferably stored in separate individual containers. If multiple exempt sources are stored, they should be placed into a shielded container to keep the levels under 0.5mR/h on the surface.

C) Proper Use: The sources are intended to be used to provide ionizing radiation for gaging the level of steel.

The sources may also be used to test radiation detection instruments including survey meters.

The sources are not to be modified or broken apart. Nor may they be combined with each other to alter the exempt source content of the package.

When using several of the sources to provide ionizing radiation to a distributed or elongated detector, the sources should be kept sufficiently separated or shielded to

reduce the exposure to personnel.

D) Unshielded Radiation Exposure from Exempt Sources: Each exempt quantity source will provide a max radiation of 1mR/h on the surface (2") or 0.03mR/h at 1 foot away. At one meter or 39" the radiation is 0.003mR/h.

Normal background levels are 0.015 mR/h to 0.030mR/h so that the radiation from an exempt source is very difficult to detect, unless you get less than one foot from the source.

E) Recommended Shielding: Ronan recommends that based on personnel receiving a radiation exposure of no more than 100mR in a year, which is comparable to background exposure, that the sources be stored in a shield which limits the field to less than 0.5mR/h on the surface.

F) Disposal: A single exempt quantity may be disposed of safely through normal refuse disposal methods but is not meant to be incinerated. Exempt quantities should not be accumulated and lumped together for disposal.

"IMPORTANT"

INSTRUCTIONS FOR POSSESSION AND USE OF EXEMPT RADIOACTIVE MATERIAL

Certain quantities (30.71 B) of Radioactive Material are exempt from NRC or Agreement State licensing requirements.

Exempt radioactive material is not for Human use...introduction into foods, beverages, cosmetics, drugs or medicinals, or into products manufactured for commercial distribution...These quantities should not be combined.

HANDLING

Disc Sources should be held by the metal or plastic sides or back. Be careful not to damage any foil used to cover the radioactive material.

Solid rod sources should be held at the end opposite the activity.

Never place radioactive material in the mouth, nor any items in contact with radioactive material in the mouth without first washing well to insure that the are free of contamination.

CONTAMINATION

Loose radioactive material may be cleaned up with small quantities of detergent in water and absorbent materials.

STORAGE

Store all sources in a secured container with visible identification. Always protect exempt sources when not in use.

INSTRUCTIONS FOR DISPOSAL OF EXEMPT RADIOACTIVE MATERIAL

INCINERATION

Never dispose of any exempt radioactive material or waste by incineration.

NORMAL REFUSE

Exempt radioactive material should be placed in a plastic or metal container, marked as waste, and placed in normal refuse.

These instructions apply only to the exempt material approved by the NRC [redacted] and are meant as guides for your safe handling of the sources. Radioactive material possessed under a specific license from the NRC or Agreement state must be handled in accordance with those specific license requirements.

§ 30.71 Schedule B.

Byproduct material	Microcuries
Antimony 122 (Sb 122)	100
Antimony 124 (Sb 124)	10
Antimony 125 (Sb 125)	10
Arsenic 73 (As 73)	100
Arsenic 74 (As 74)	10
Arsenic 76 (As 76)	10
Arsenic 77 (As 77)	100
Barium 131 (Ba 131)	10
Barium 133 (Ba 133)	10
Barium 140 (Ba 140)	10
Bismuth 210 (Bi 210)	1
Bromine 82 (Br 82)	10
Cadmium 109 (Cd 109)	10
Cadmium 115m (Cd 115m)	10
Cadmium 115 (Cd 115)	100
Calcium 45 (Ca 45)	10
Calcium 47 (Ca 47)	10
Carbon 14 (C 14)	100
Cerium 141 (Ce 141)	100
Cerium 143 (Ce 143)	100
Cerium 144 (Ce 144)	1
Cesium 131 (Cs 131)	1,000
Cesium 134m (Cs 134m)	100
Cesium 134 (Cs 134)	1
Cesium 135 (Cs 135)	10
Cesium 136 (Cs 136)	10
Cesium 137 (Cs 137)	10
Chlorine 36 (Cl 36)	10
Chlorine 38 (Cl 38)	10
Chromium 51 (Cr 51)	1,000
Cobalt 58m (Co 58m)	10
Cobalt 58 (Co 58)	10
Cobalt 60 (Co 60)	1
Copper 64 (Cu 64)	100
Dysprosium 165 (Dy 165)	10
Dysprosium 166 (Dy 166)	100
Erbium 169 (Er 169)	100
Erbium 171 (Er 171)	100
Europium 152 9.2 h (Eu 152 9.2 h)	100
Europium 152 13 yr (Eu 152 13 yr)	1
Europium 154 (Eu 154)	1
Europium 155 (Eu 155)	10
Fluorine 18 (F 18)	1,000
Gadolinium 153 (Gd 153)	10
Gadolinium 159 (Gd 159)	100
Gallium 72 (Ga 72)	10
Germanium 71 (Ge 71)	100
Gold 198 (Au 198)	100
Gold 199 (Au 199)	100
Hafnium 181 (Hf 181)	10
Holmium 166 (Ho 166)	100
Hydrogen 3 (H 3)	1,000
Indium 113m (In 113m)	100
Indium 114m (In 114m)	10
Indium 115m (In 115m)	100
Indium 115 (In 115)	10
Iodine 125 (I 125)	1
Iodine 126 (I 126)	1
Iodine 129 (I 129)	0.1
Iodine 131 (I 131)	1
Iodine 132 (I 132)	10
Iodine 133 (I 133)	1
Iodine 134 (I 134)	10
Iodine 135 (I 135)	10
Iridium 192 (Ir 192)	100
Iridium 194 (Ir 194)	100
Iron 55 (Fe 55)	10
Iron 59 (Fe 59)	100
Krypton 85 (Kr 85)	10
Krypton 87 (Kr 87)	10
Lanthanum 140 (La 140)	10
Lutetium 177 (Lu 177)	100
Manganese 52 (Mn 52)	10
Manganese 54 (Mn 54)	10
Manganese 56 (Mn 56)	10
Mercury 197m (Hg 197m)	100
Mercury 197 (Hg 197)	100
Mercury 203 (Hg 203)	10
Molybdenum 99 (Mo 99)	100
Neodymium 147 (Nd 147)	100
Neodymium 149 (Nd 149)	100
Nickel 59 (Ni 59)	100
Nickel 63 (Ni 63)	10
Nickel 65 (Ni 65)	100
Niobium 93m (Nb 93m)	10
Niobium 95 (Nb 95)	10
Niobium 97 (Nb 97)	10
Osmium 185 (Os 185)	10
Osmium 191m (Os 191m)	100
Osmium 191 (Os 191)	100
Osmium 193 (Os 193)	100
Palladium 103 (Pd 103)	100
Palladium 109 (Pd 109)	100
Phosphorus 32 (P 32)	10
Platinum 191 (Pt 191)	100
Platinum 193m (Pt 193m)	100
Platinum 193 (Pt 193)	100
Platinum 197m (Pt 197m)	100
Platinum 197 (Pt 197)	100
Polonium 210 (Po 210)	0.1
Potassium 42 (K 42)	10
Praseodymium 142 (Pr 142)	100
Praseodymium 143 (Pr 143)	100
Promethium 147 (Pm 147)	10
Promethium 149 (Pm 149)	10
Rhenium 186 (Re 186)	100
Rhenium 188 (Re 188)	100
Rhodium 103m (Rh 103m)	100
Rhodium 105 (Rh 105)	100
Rubidium 86 (Rb 86)	10
Rubidium 87 (Rb 87)	10
Ruthenium 97 (Ru 97)	100
Ruthenium 103 (Ru 103)	10
Ruthenium 105 (Ru 105)	10
Ruthenium 106 (Ru 106)	1
Samarium 151 (Sm 151)	10
Samarium 153 (Sm 153)	100
Scandium 46 (Sc 46)	10
Scandium 47 (Sc 47)	100
Scandium 48 (Sc 48)	10
Selenium 75 (Se 75)	10
Silicon 31 (Si 31)	100
Silver 105 (Ag 105)	10
Silver 110m (Ag 110m)	1
Silver 111 (Ag 111)	100
Sodium 24 (Na 24)	10
Strontium 85 (Sr 85)	10
Strontium 89 (Sr 89)	1
Strontium 90 (Sr 90)	0.1
Strontium 91 (Sr 91)	10
Strontium 92 (Sr 92)	10
Sulphur 35 (S 35)	100
Tantalum 182 (Ta 182)	10
Technetium 96 (Tc 96)	10
Technetium 97m (Tc 97m)	100
Technetium 97 (Tc 97)	100
Technetium 99m (Tc 99m)	100
Technetium 99 (Tc 99)	10
Tellurium 125m (Te 125m)	10
Tellurium 127m (Te 127m)	10
Tellurium 127 (Te 127)	100
Tellurium 129m (Te 129m)	10
Tellurium 129 (Te 129)	100

§ 30.14 Exempt quantities.

(a) Except as provided in paragraphs (c) and (d) of this section, any person is exempt from the requirements for a license set forth in section 81 of the Act and from the regulations in Parts 30 through 34 and 39 of this chapter to the extent that such person receives, possesses, uses, transfers, owns, or acquires byproduct material in individual quantities each of which does not exceed the applicable quantity set forth in § 30.71, Schedule B.

(b) Any person who possesses byproduct material received or acquired prior to September 25, 1971 under the general license then provided in § 31.4 of this chapter is exempt from the requirements for a license set forth in section 81 of the Act and from the regulations in Parts 30 through 34 of this chapter to the extent that such person possesses, uses, transfers, or owns such byproduct material.

(c) This section does not authorize for purposes of commercial distribution the production, packaging, repackaging, or transfer of byproduct material or the incorporation of byproduct material into products intended for commercial distribution.

(d) No person may, for purposes of commercial distribution, transfer byproduct material in the individual quantities set forth in § 30.71 Schedule B, knowing or having reason to believe that such quantities of byproduct material will be transferred to persons exempt under this section or equivalent regulations of an Agreement State, except in accordance with a license issued under § 32.18 of this chapter, which license states that the byproduct material may be transferred by the licensee to persons exempt under this section or the equivalent regulations of an Agreement State.

[35 FR 6427, Apr. 22, 1970, as amended at 36 FR 16898, Aug. 26, 1971; 43 FR 6921, Feb. 17, 1978; 52 FR 8241, Mar. 17, 1987]

32.18 Manufacture, distribution and transfer of exempt quantities of byproduct material: Requirements for license.

An application for a specific license to manufacture, process, produce, package, repackage, or transfer quantities of byproduct material for commercial distribution to persons exempt pursuant to § 30.18 of this chapter or the equivalent regulations of an Agreement State will be approved if:

(a) The applicant satisfies the general requirements specified in § 30.33 of this chapter: *Provided, however,* That the requirements of § 30.33(a) (2) and (3) of this chapter do not apply to an application for a license to transfer byproduct material manufactured, processed, produced, packaged, or repackaged pursuant to a license issued by an Agreement State;

(b) The byproduct material is not contained in any food, beverage, cosmetic, drug, or other commodity designed for ingestion or inhalation by, or application to, a human being;

(c) The byproduct material is in the form of processed chemical elements, compounds, or mixtures, tissue samples, bioassay samples, counting standards, plated or encapsulated sources, or similar substances, identified as radioactive and to be used for its radioactive properties, but is not incorporated into any manufactured or assembled commodity, product, or device intended for commercial distribution; and

(d) The applicant submits copies of prototype labels and brochures and the Commission approves such labels and brochures.

[35 FR 6428, Apr. 22, 1970, as amended at 43 FR 6922, Feb. 17, 1978]

§ 32.19 Same: Conditions of licenses.

Each license issued under § 32.18 is subject to the following conditions:

(a) No more than 10 exempt quantities set forth in § 30.71, Schedule B of this chapter shall be sold or transferred in any single transaction. For purposes of this requirement, an individual exempt quantity may be composed of fractional parts of one or more of the exempt quantities in § 30.71, Schedule B of this chapter, provided that the sum of such fractions shall not exceed unity.

(b) Each quantity of byproduct material set forth in § 30.71, Schedule B of this chapter shall be separately and individually packaged. No more than 10 such packaged exempt quantities shall be contained in any outer package for transfer to persons exempt pursuant to § 30.18 of this chapter. The outer package shall be such that the dose rate at the external surface of the package does not exceed 0.5 millirem per hour.

(c) The immediate container of each quantity or separately packaged fractional quantity of byproduct material shall bear a durable, legible label which (1) identifies the radioisotope and the quantity of radioactivity, and (2) bears the words "Radioactive Material."

(d) In addition to the labeling information required by paragraph (c) of this section, the label affixed to the immediate container, or an accompanying brochure, shall also (1) state that the contents are exempt from NRC or Agreement State licensing requirements; (2) bear the words "Radioactive Material—Not for Human Use—Introduction Into Foods, Beverages, Cosmetics, Drugs, or Medicinals, or Into Products Manufactured for Commercial Distribution Is Prohibited—Exempt Quantities Should Not be Combined"; and (3) set forth appropriate additional radiation safety precautions and instructions relating to the handling, use, storage, and disposal of the radioactive material.

[35 FR 6428, Apr. 22, 1970]