Not sure how many people this might affect, certainly anyone who has to ship a detector by UPS, FedEx or some other air carrier.


The relevant text on Neutron detectors is below. The rule is retroactive to January 1, 2013.

"The entry for UN1008 Boron trifluoride is assigned new special provision 238. See Section 172.102 Special provisions for a detailed discussion of the addition of special provision 238."

Discussion in the preamble to the rule:

"Special provision 238 is added to address the shipment of neutron radiation detectors. Neutron detection is a key component used in nuclear arms interdiction in addition to other applications such as nuclear reactor monitoring, neutron-based cancer treatments, neutron spallation, nondestructive testing and health physics applications. Most neutron radiation detectors contain boron trifluoride gas, UN1008, which is currently forbidden by passenger and cargo aircraft as noted in Columns (9A) and (9B) of the HMT. Currently, neutron radiation detectors that contain this gas can only be transported by air under a special permit.

"ICAO recently adopted a special provision specifically addressing neutron radiation detectors. The recently adopted special provision A190 permits, under certain conditions the transportation by cargo aircraft of neutron radiation detectors containing boron trifluoride. These conditions include quantity of gas limitations, and construction and packaging specifications. The special provision also provides that under certain conditions these neutron radiation detectors containing not more than 1 gram of boron trifluoride gas are not otherwise subject to the ICAO Technical Instructions.

"PHMSA granted a special permit, for the transportation by all modes, of certain neutron radiation detectors containing boron trifluoride gas. The limitations set forth in Special Provision A190 of the ICAO Technical Instructions do not exceed any limitations of the special permit and, therefore, PHMSA is adopting and applying them to all modes of transportation except passenger-carrying aircraft by incorporating them into Sec. 172.102(c)(1), Special provision 238. Specifically, the special provision provides packaging requirements (including pressure limitations), quantities permitted, and package construction requirements for radiation detectors containing non-pressurized boron trifluoride gas in excess of 1 gram.
"The special provision also provides additional exceptions from the HMR based on the transport mode and other conditions. The special provision will be applicable to the entry "UN1008, Boron trifluoride" in the HMT. PHMSA believes the adoption of this special provision provides an adequate level of safety for the transportation of these items, while providing flexibility in the need to obtain a special permit."

Actual text of the new Special Provision:

238 Neutron radiation detectors:

a. Neutron radiation detectors containing non-pressurized boron trifluoride gas in excess of 1 gram and radiation detection systems containing such neutron radiation detectors as components may be transported by highway, rail, vessel, or cargo aircraft in accordance with the following:
   (1) The pressure in each neutron radiation detector must not exceed 105 kPa absolute at 20 [deg]C;
   (2) The amount of gas must not exceed 12.8 grams per detector and the amount per outer packaging or per radiation detection system must not exceed 51.2 grams;
   (3) Each neutron radiation detector must be of welded metal construction with brazed metal to ceramic feed through assemblies. They must have a minimum burst pressure of 1800 kPa; and
   (4) Each neutron radiation detector must be packed in a sealed intermediate plastic liner with sufficient absorbent material to absorb the entire gas contents. Neutron radiation detectors must be packed in strong outer packagings that are capable of withstanding a 1.8 meter (6-foot) drop without leakage. Radiation detection systems containing neutron radiation detectors must also include absorbent material sufficient to absorb the entire gas contents of the neutron radiation detectors. Absorbent material must be surrounded by a liner or liners, as appropriate. They must be packed in strong outer packagings unless neutron radiation detectors are afforded equivalent protection by the radiation detection system.

b. Except for transportation by aircraft, neutron radiation detectors and radiation detection systems containing such detectors transported in accordance with paragraph (a) of this special provision are not subject to the labeling and placarding requirements of part 172 of this subchapter.

c. When transported by highway, rail, vessel, or as cargo on an aircraft, neutron radiation detectors containing not more than 1 gram of boron trifluoride, including those with solder glass joints, and radiation detection systems containing such detectors, where the
neutron radiation detectors meet and are packed in accordance with the requirements of paragraph (a) of this special provision, are not subject to any other requirements of this subchapter.

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