

**Figure: 30 TAC §336.357(z)**

| Category 1 and Category 2 Threshold |                     |                    |                     |                    |
|-------------------------------------|---------------------|--------------------|---------------------|--------------------|
| Radioactive Material                | Category 1<br>(TBq) | Category 1<br>(Ci) | Category 2<br>(TBq) | Category 2<br>(Ci) |
| Americium-241                       | 60                  | 1,620              | 0.6                 | 16.2               |
| Americium-241/Be                    | 60                  | 1,620              | 0.6                 | 16.2               |
| Californium-252                     | 20                  | 540                | 0.2                 | 5.40               |
| Cobalt-60                           | 30                  | 810                | 0.3                 | 8.10               |
| Curium-244                          | 50                  | 1,350              | 0.5                 | 13.5               |
| Cesium-137                          | 100                 | 2,700              | 1                   | 27.0               |
| Gadolinium-153                      | 1,000               | 27,000             | 10                  | 270                |
| Iridium-192                         | 80                  | 2,160              | 0.8                 | 21.6               |
| Plutonium-238                       | 60                  | 1,620              | 0.6                 | 16.2               |
| Plutonium-239/Be                    | 60                  | 1,620              | 0.6                 | 16.2               |
| Promethium-147                      | 40,000              | 1,080,000          | 400                 | 10,800             |
| Radium-226                          | 40                  | 1,080              | 0.4                 | 10.8               |
| Selenium-75                         | 200                 | 5,400              | 2                   | 54.0               |
| Strontium-90                        | 1,000               | 27,000             | 10                  | 270                |
| Thulium-170                         | 20,000              | 540,000            | 200                 | 5,400              |
| Ytterbium-169                       | 300                 | 8,100              | 3                   | 81.0               |

Note: Calculations Concerning Multiple Sources or Multiple Radionuclides

The "sum of fractions" methodology for evaluating combinations of multiple sources or multiple radionuclides is to be used in determining whether a location meets or

exceeds the threshold and is thus subject to the requirements of this section.

I. First determine the total activity for each radionuclide from Table 1. This is done by adding the activity of each individual source, material in any device, and any loose or bulk material that contains the radionuclide. Then use the equation below to calculate the sum of the ratios by inserting the total activity of the applicable radionuclides from Table 1 in the numerator of the equation and the corresponding threshold activity from Table 1 in the denominator of the equation. Calculations must be performed in metric values (i.e., TBq) and the numerator and denominator values must be in the same units.

$R_1$  = total activity for radionuclide 1  
 $R_2$  = total activity for radionuclide 2  
 $R_n$  = total activity for radionuclide n  
 $AR_1$  = activity threshold for radionuclide 1  
 $AR_2$  = activity threshold for radionuclide 2  
 $AR_n$  = activity threshold for radionuclide n

$$\left[ \sum_i^n \left[ \frac{R_1}{AR_1} + \frac{R_2}{AR_2} + \frac{R_n}{AR_n} \right] \geq 1.0 \right]$$

$$\frac{R_1}{AR_1} + \frac{R_2}{AR_2} + \dots + \frac{R_n}{AR_n} \geq 1.0$$

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