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| Sommario/riassunto | A wide variability exists among commercial radiation detection instruments used to measure exposure rate or ambient dose equivalent rate. These instruments are used to measure both the radiation background and the radiation field produced by radioactive sources that are used to test other types of radiation detection systems against different consensus document standards. Most radiation fields specified in the ANSI standard are quite low, ranging from 0.05 Sv/h to 0.5 Sv/h above background. Due to the radiation fields being so low in intensity, the uncertainty of the measurements made with these instruments can be potentially quite large. As a result of these large uncertainties, it is possible that the response of the various parameters being tested by the standards (e.g., alarm indication, radionuclide |

identification) will be dependent on the specific radiation detector employed by the testing laboratory. In this work, we used two different methods to set the radiation fields to analyze the differences that can be expected. One method is based on measurements performed with a high pressure ion chamber while the second method is based on calculating the radiation fields from a known source activity using a point source estimate. The sources of uncertainties in both methods are identified and are reflected in the differences that can be expected in setting the radiation fields. In order to achieve consistency across different testing laboratories in setting radiation fields, we provide insight to what are the most relevant factors that affect the determination of the field using either one of the two methods.