

Proper Choice and Use of Radiation Instruments

- **Select the right instrument for the job**
 - **Ask your medical physicists for advice**
- **Learn how to use it properly**
- **Understand the meaning of the readings**
- **Make sure that the batteries are fresh**
- **Make sure that it is properly calibrated**

Ion chambers measure radiation exposure and are most useful for radiation safety surveys



- *Specific models used for illustration purposes and not for endorsement*

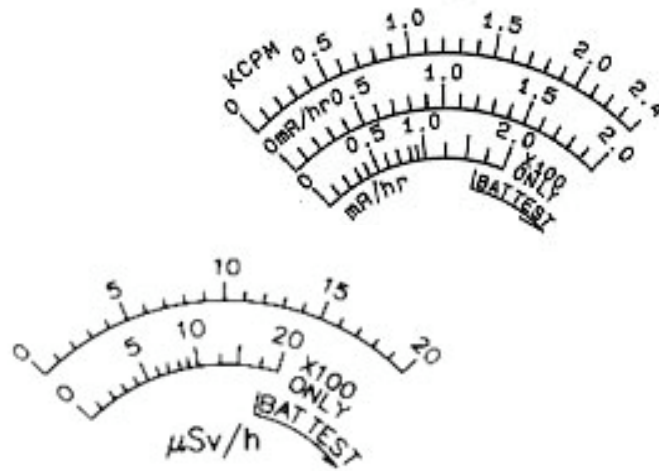
(Geiger) counters combine a count-rate-meter with a (Geiger) tube detector and are used to detect radioactive contamination



- They are very sensitive detectors and will give large count rates close to small quantities of radioactive material

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Analogue meters are inexpensive and rugged



- The range must be switched and alternative dials may be confusing

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Digital meters are more expensive.



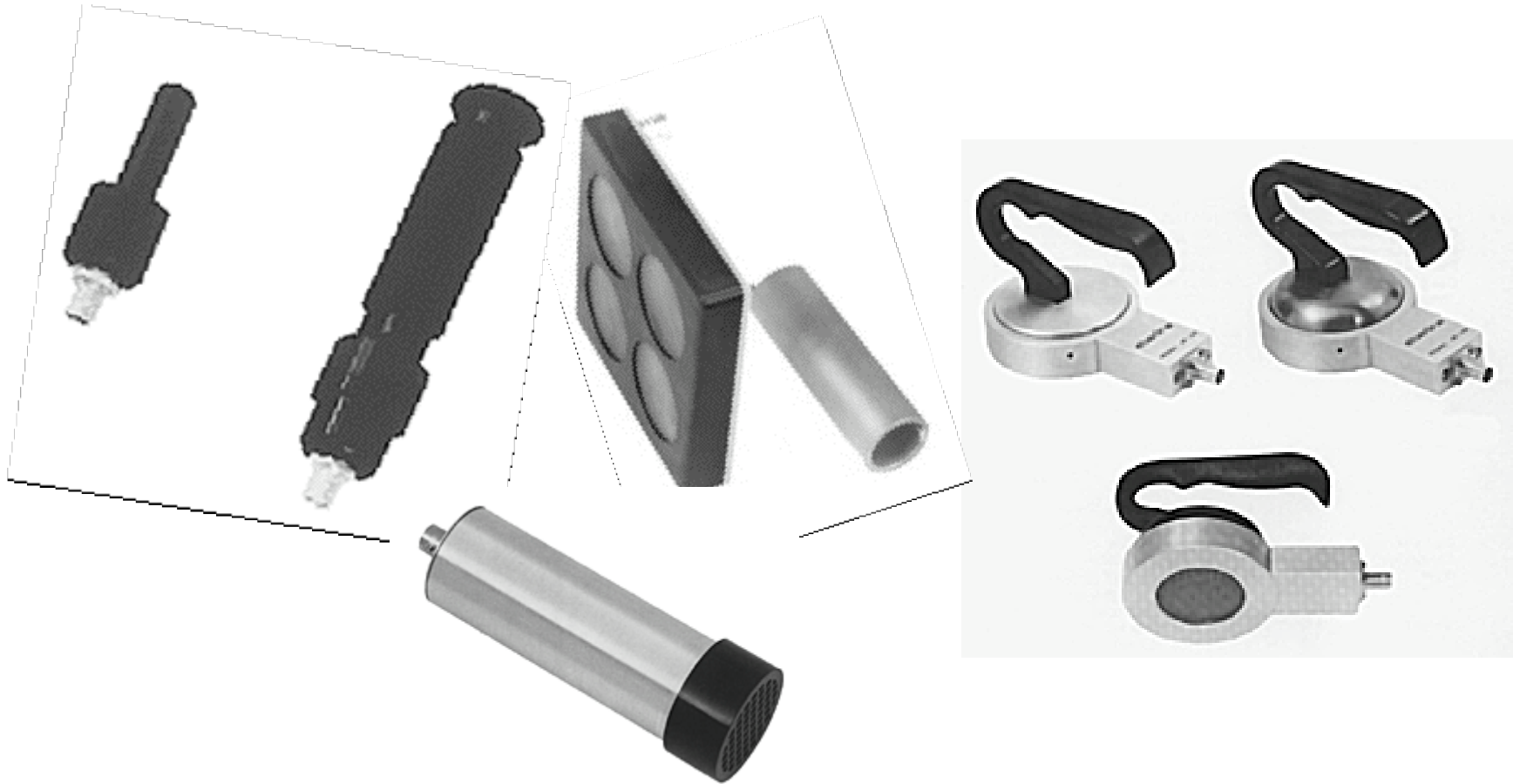
- **But may also have multiple modes of operation**

- **They may switch ranges automatically**



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Geiger and other probes are optimized for specific detection tasks



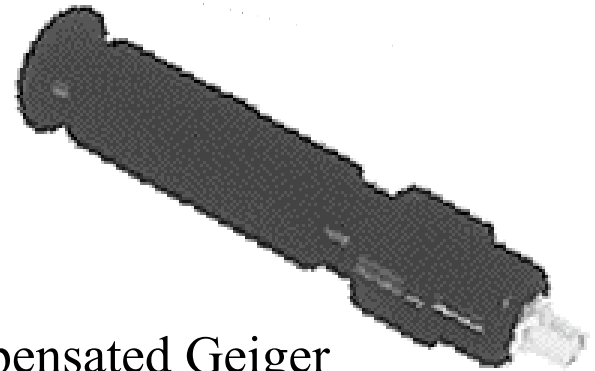
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These are the most useful general purpose Geiger probes

- Thin end window Geiger
- Detects most alpha, beta, gamma

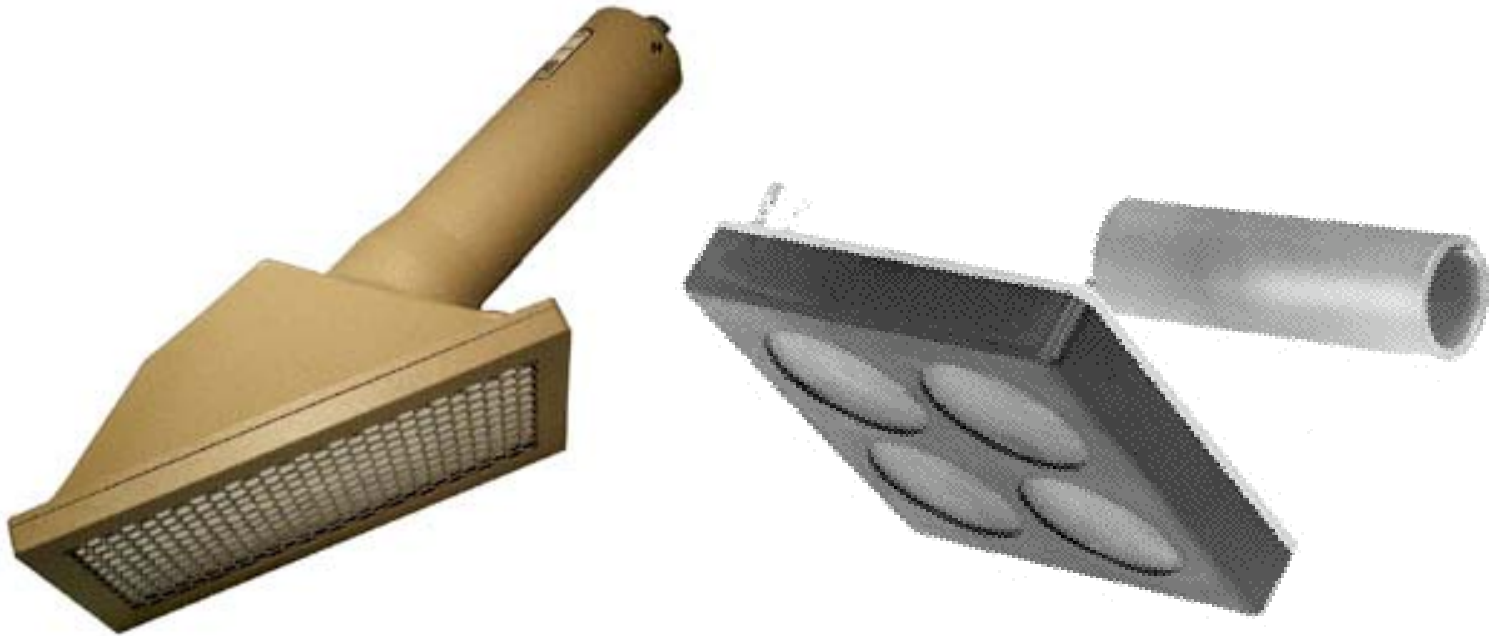


- Energy compensated Geiger
- Detects gamma and most beta
- Can also estimate exposure rate if calibrated



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Large area probes with thin walls are used to detect alpha and/or beta radiation



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Portal monitors use multiple probes to check people for contamination as they walk through



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Waste monitors use multiple probes to check waste carts for contaminated contents



- Waste monitors could also be used as portal monitors (but are very sensitive to radiation from nuclear medicine patients)

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