



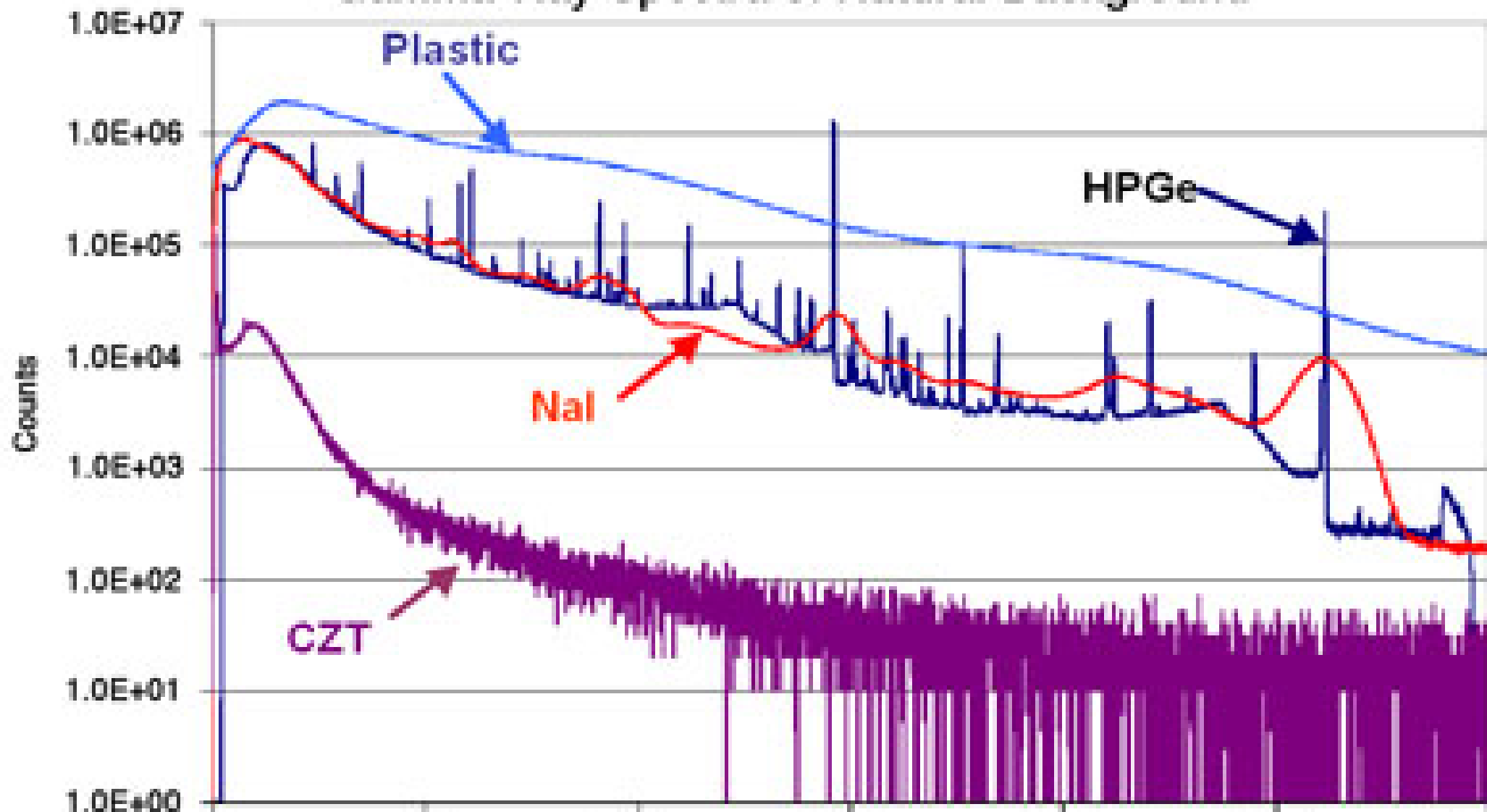
# FOI

# Radiation Detection

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## Gamma-Ray Spectra of Natural Background





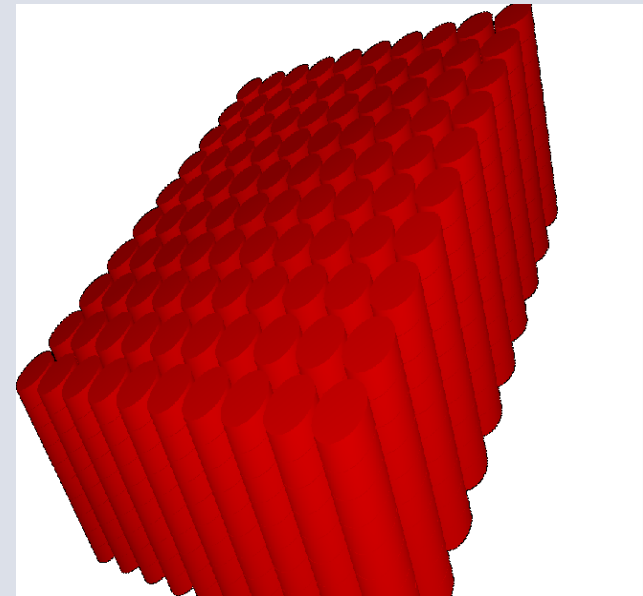
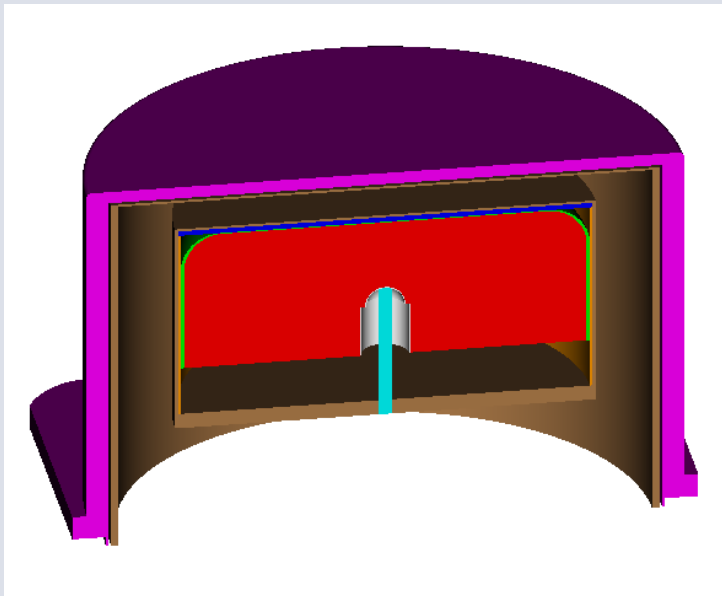
# Live measurements

- Anything regarded as a safety threat to logistics staff is detectable (gamma radiation)
- High probability of correct identification of a vast number of radionuclides.



# Simulations of nuclear material

- Simulation of a Commercial system
- Distance to source – 80 cm
- Uranium dioxide 2,4 kg
- Plutonium (Pu-239 - 950 g)





# Euroskey Radiation Detection

## Conclusions

- Most radiological substances are likely to be detected and identified – with the proposed system for Euroskey.
- Identification of the source of the radiation will help lowering the number of “false” positives.
- If gamma radiation is obscured by heavy shielding (high density material, e.g lead) this will show in the x-ray.
- Nuclear materials in kg amounts are most likely detectable.
- If gamma radiation from the nuclear material is shielded, neutron detection could be used as an optional method. Calculations of neutron detection limits for nuclear material suggest:
  - Plutonium is probably detectable
  - Uranium not detectable



Select instrument [Instrument Name]

V. 1.

Trend Analysis

Limit level factor:

High:

Low:

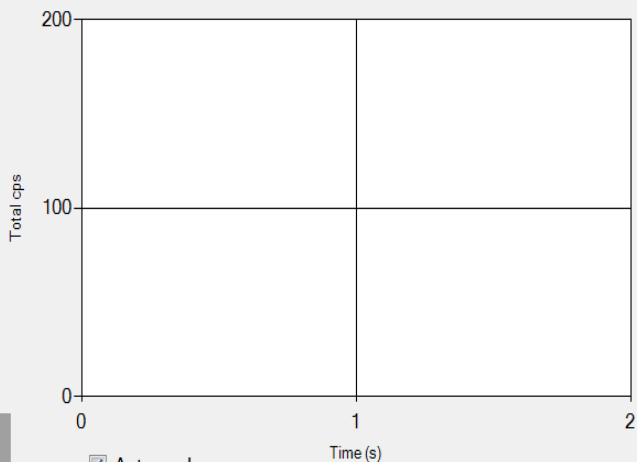
Offset time interval for background (s):

Integration time (s):

Background avg. cps: -

Counts/s: -

Change factor: -



Auto scale

ROI Surveillance - User Defined

Peak center (channel):

Peak center (keV):

ROI (channels):

ROI (keV):

Integration time (s):

Limit factor:

Gross Area: -

Net Area: -

Change factor: -

ROI Surveillance - Pre Defined

Name	Peak (k...	ROI (k...	Limit	Net A...
Am-241	59.54	10	3	
CO-60...	1173	19	3	
CO-60...	1332	19	3	
CS-137	661	16	1	

Integration time (s):

Delimiter for man made/natural spectrum

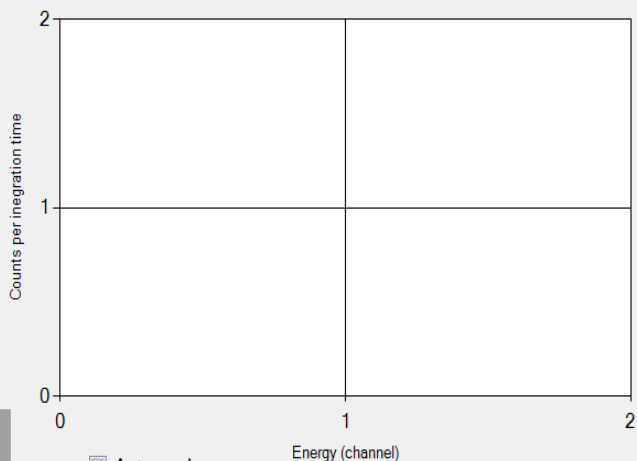
Channel:

Energy (keV):

Integration time (s):

Ratio limit:

Ratio: -



Auto scale

Event Log




Alarm combination: Trend  Delimiter

Delimiter  ROI User

ROI User  ROI Pre





Thank You !!