



**Radiation Safety  
Institute of Canada**  
Institut de radioprotection du Canada

Radiation Safety &  
Wellness Webinars



February 17, 2023



# **Radiation Surveys & Instrumentation**

RSIC Presenter: Lynn MacDonald

Invited Guest: Franz Dambo, Nuvia Canada

**Good Science in Plain Language®**



- Audio and video
  - During the presentation, from the presenters only
  - Use computer or telephone (call in)
  - Computer seems to give the best sound quality
- Use the “Chat” feature to enter comments and questions
- Posted on webinar page
  - Video, answers to questions, copy of the slides
- Follow up email will be sent
  - Topics covered, time of attendance
- It may be possible to change your Zoom view if the controls are hiding the closed captioning.



- Introduction
  - Radiation Detection
  - Radiation Survey
- Guest Demonstrations
  - Franz Dambo, Director, Nuvia
  - Types of Survey Instruments
    - Direct & Indirect Methods
    - Dose & Dose Rate
  - Checks
    - Physical
    - Calibration
    - Battery
    - Source
  - Instrument Show & Tell
  - Differences in Radiation Surveys
    - By Nuclide
    - Contamination
    - Dose Rate Survey
- Q&A with Franz





- No senses to detect ionizing radiation
- Must rely on instruments
  - Dosimeters
    - Integrating
    - Usually worn
  - Survey Instruments
    - Rates
    - Often hand-held





- Systematic set of measurements using a survey meter
  - Instrument capable of measuring dose rates, dose, or contamination
- Can look different based on hazard





# Radiation Surveys & Instrumentation

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# Survey instruments

- Contamination meters
- Dose/ dose rate meters
- Spectrometry meters
- Other survey meters/methods

# Contamination meters







# Smear/wipe test counters

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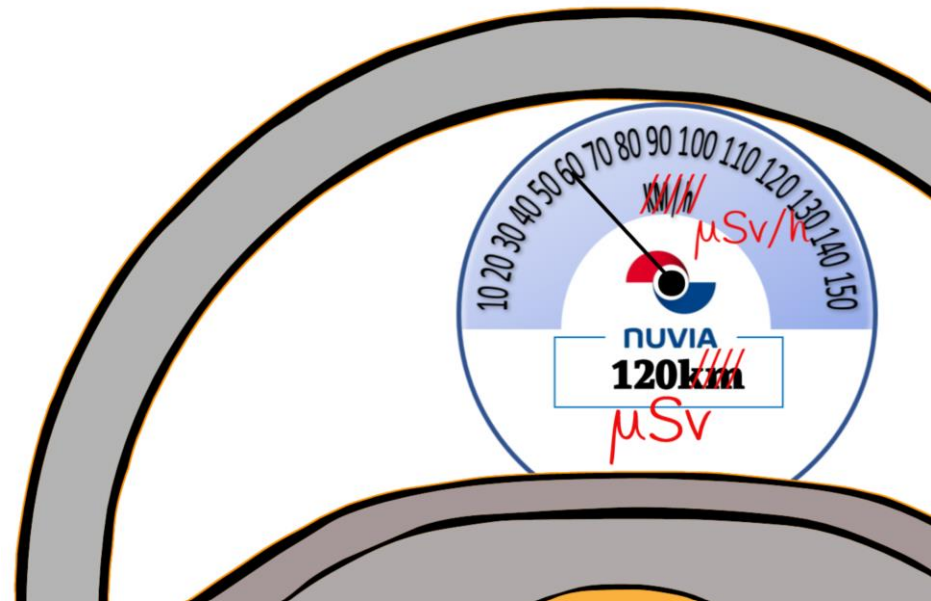
# Article monitor

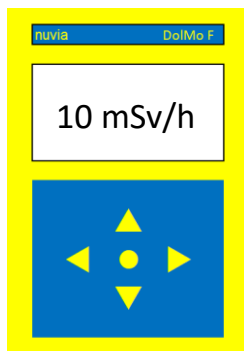
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# Dose and dose rate meters

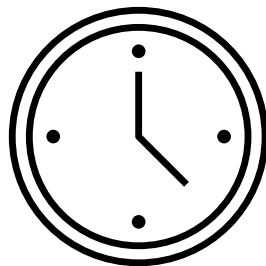


# Dose and dose rate





\*



= Dose



# Beta dose rate

Understanding the beta radiation calculation



$$\begin{array}{ccc} \text{CAP off 10 REM} & - & \text{CAP On 1 REM} & = & 9 \text{ REM} \\ \text{(Gamma and beta radiation)} & & \text{(Gamma radiation)} & & \text{(Beta radiation)} \end{array}$$

## Spectrometric



# Other survey meters/methods

- Neutron
- Tritium
- Radon

# PCBS

P-Physical (do not forget cable flex if applicable)

C-Calibration

B -Battery

S-Source

## **Sample Calibration sticker**

**ID: NuCoMo-170D-6780**

**BY: Freddy T. Trix**

**CAL: 16-Aug-2022**

**DUE: 16-AUG-2023**

# Instrument show and tell





- Questions posted in the Q&A/Chat room
- To ask a question verbally
  - use “raise hand” button
  - When asked, press spacebar or unmute to speak
- Questions we do not get to
  - Answers will be posted to our website and link to resources emailed out





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Nuvia

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<https://www.nuviatech-instruments.com/>



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***“Good science in plain language”<sup>®</sup>***

***Thank you for listening!***

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# Wellness Break

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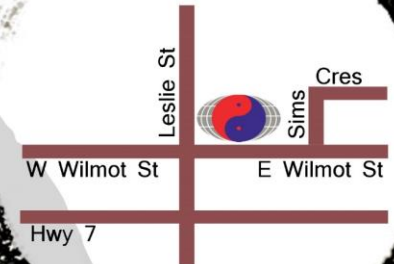
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