



STUDIECENTRUM VOOR KERNENERGIE  
CENTRE D'ÉTUDE DE L'ÉNERGIE NUCLÉAIRE

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# EURADOS Working Group 12

## EMAN: European Medical ALARA Network

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SCK-CEN

Prague, February 9th, 2011

# EMAN: structure

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- EMAN: European Medical ALARA Network
- Start: October 23rd 2009
- Length: 3 years
- EUROPEAN COMMISSION
  - DG Energy (G. Simeonov)
- Partners: SSM, BfS, CEPN, ESR, EFRS, EFOMP, **EURADOS**

# EMAN: objectives

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- main objective: to establish a sustainable European Medical ALARA Network (EMAN)
  - where different **stakeholders** within the medical sector will **discuss and exchange information** on different topics relating to the implementation of the ALARA principle in the medical field.
  - This network will also **support the European Commission (EC)** in its activities relating to the optimisation of radiation protection of individuals submitted to medical exposures

# How to reach the objectives

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- Three Working Groups:
  - three specific topics will be widely discussed by professionals
    - CT exposure (+EURADOS)
    - IR/IC (+EURADOS)
    - X-Ray outside the radiology department
- A website:
  - to widely diffuse the information gathered and the work done
- A final workshop:

- **EURADOS**
  - Partner in EMAN
  - Need to provide input for EMAN
    - Partially from ORAMED
    - Partially needs to be generated and collected
- **New Working group 12 started in January 2010**
  - ♣ Large interest
  - ♣ Topics
    - ♣ Focussed on delivering info to EMAN
    - ♣ Also sustainable WG within EURADOS
    - ♥ 3 'hot' items were chosen

# WG12: subgroups

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- ♣ SG1: CT fluoroscopy staff dosimetry
  - ♥ Frank Becker
- ♣ SG2: trigger levels + accident handling in IR/IC
  - ♥ Annelisa Trianni
- ♣ SG3: technical aspects on DAP calibration and CT calibration
  - ♥ Hannu Jarvinen

# EURADOS WG 12 - SG1: CT-Fluoroscopy staff dosimetry Prague Feb 2011

INSTITUT FÜR STRAHLENFORSCHUNG (ISF)



CT device  
@ Klinikum  
Karlsruhe

# CT-Fluoroscopy staff dosimetry

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- Literature review : Write a review paper for publication (e.g. RPD) till end of the year 2011
- Simulations:
  - Parameter evaluation, collimation, filters, ...
  - Three groups for simulations (MCNPX, MCNP4, Penelope, Gmctdospp):
    - ITN
    - KIT
    - RPI

# CT-Fluoroscopy staff dosimetry

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## Simulations:

1. Validation
2. Staff/Patient configuration
  1. First step PMMA-CT-Phantom (intermediate deadline June 2011)
  2. Individual Phantom: Hand + Body (KIT-Phantoms)

## Measurement – Physician Exposure – How to measure ?

- Protocol draft
- TLDs: Calibration with N120 X-ray standard
- Harmonization of the procedures
- Measurements performed at ITN/IPO, SMU

## Subgroup 2: Trigger levels in interventional radiology/cardiology

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- Trigger level: level at which skin lesions can occur (patient dosimetry)
- Questionnaire to know the status of implementation of trigger levels in Europe
  - ♣ 12 answers received
  - ♣ Some extra countries will be contacted
  - ♣ Some clarification of the answers will be asked

## Task 2: Guidance/overview document

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➤ Structure:

1. Introduction: why do we need trigger levels
  1. References ICRP 85, medical directive, ...
2. Which dose indicators (DAP, FT, CDI,...)
3. How to measure skin doses (TLD, film,...)
  1. uncertainties
4. Comparison of literature values
5. Trigger level determination
  1. How to determine trigger level (statistical issues)
  2. Construct one big database for 3 selected procedures
    1. Is a European trigger level possible?
6. Conclusions on trigger levels
7. Accident handling, how to organise patient follow up

## Subgroup 3: Technical aspects on DAP calibration and CT calibration

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- KAP meter intercomparison by circulating a KAP meter (lab)
  - RQR radiation qualities
  - Combine with an IAEA and EUROMET intercomparison
- Comparison of field calibrations of KAP meter
  - Two realistic clinical conditions
  - Following the IAEA CoP
- CT dosimetry
  - Presently based on CTDI<sub>vol</sub> and DLP in standard PMMA phantoms
  - Problems with this approach
  - Recent new approaches by IEC, ICRU, AAPM
  - SG3: reviewing of these different approaches