

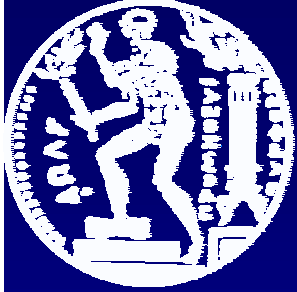
ERRICCA-2

Current Radon Research
as compiled from the Abstracts submitted
to NRE-VII

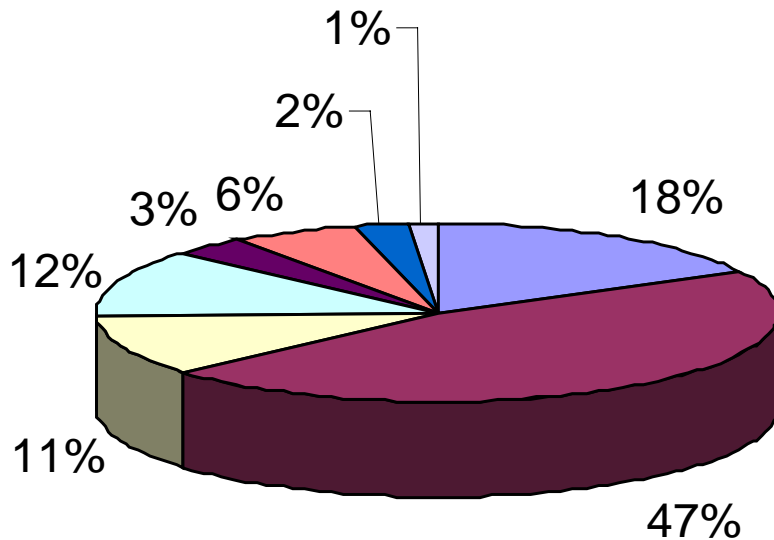
ERRICCA-2 Kick-off Meeting

25-26 February, 2002, BRE-UK, London

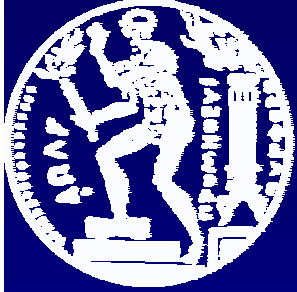
N.P.Petropoulos & S.E.Simopoulos,
NTUA, Greece



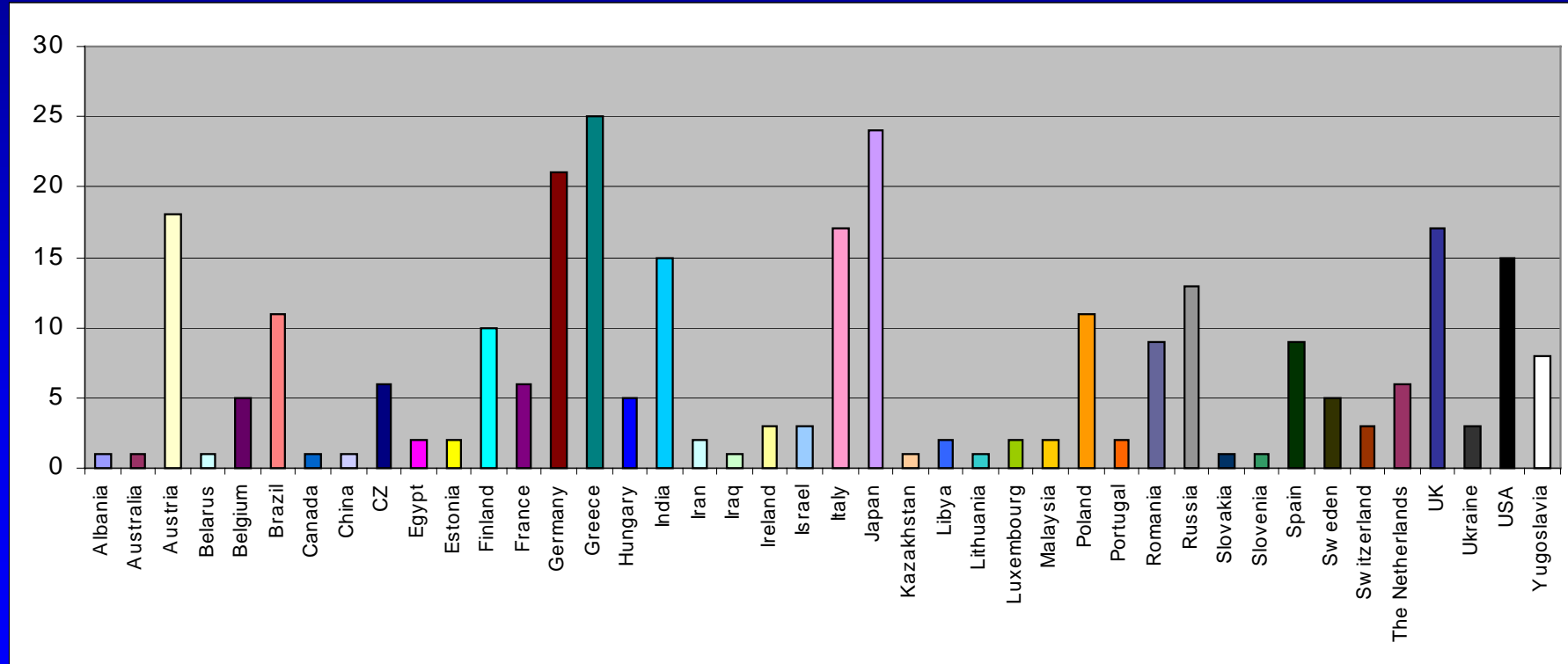
Topics statistics on the 292 **ERRICCA-2** abstracts submitted to NRE-VII (135 on Radon and Thoron)

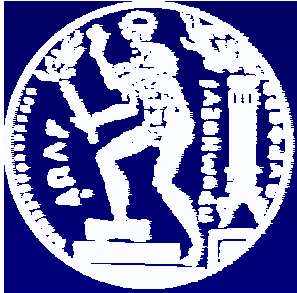


- Radioactivity measurements, Releases and Dosimetry
- Radon & Thoron
- Cosmic Radiation
- Technologically Enhanced Natural Radiation
- High Background Areas
- Internal and External Exposure
- Effects on Biota and Ecosystem
- Legislation



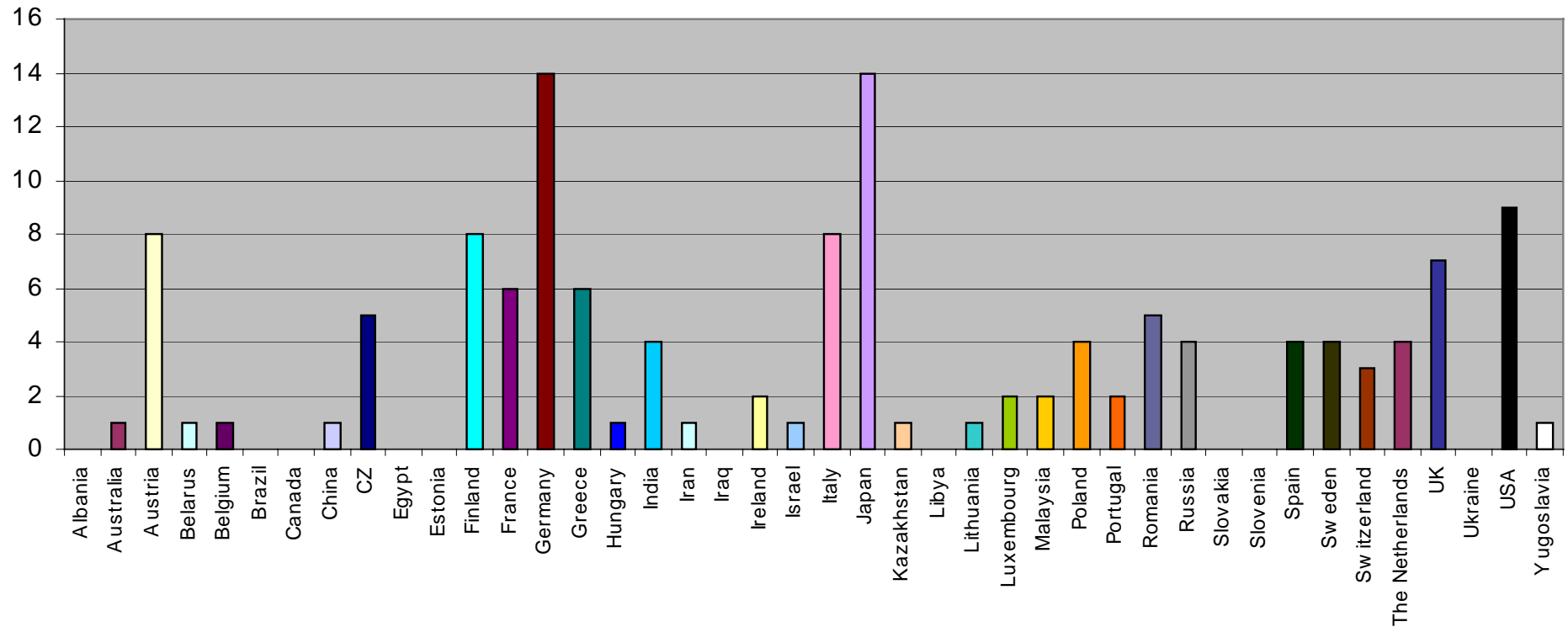
Countries (42) statistics **ERRICCA-2** on the 292 abstracts submitted to NRE-VII

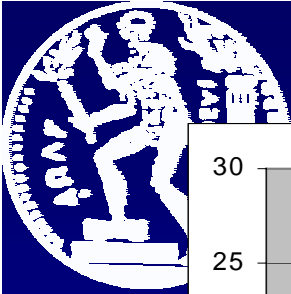




Countries statistics on the 135 abstracts on Radon (NRE-VII)

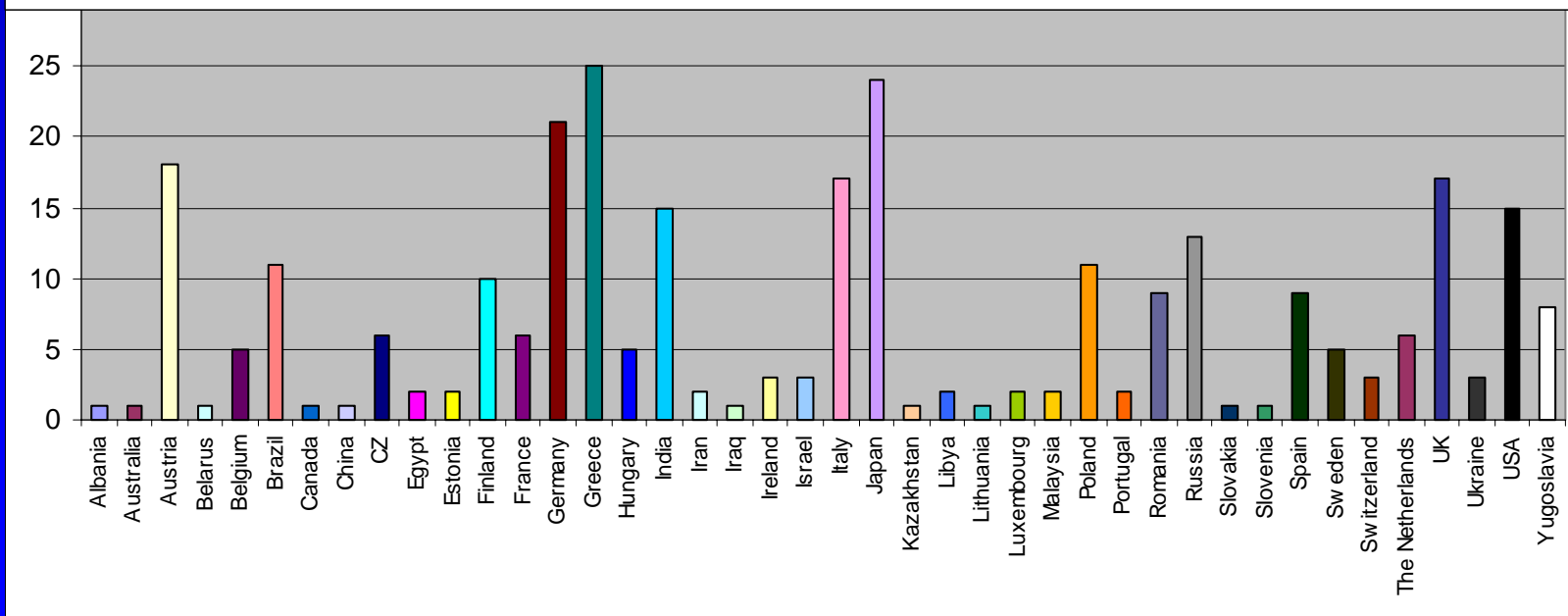
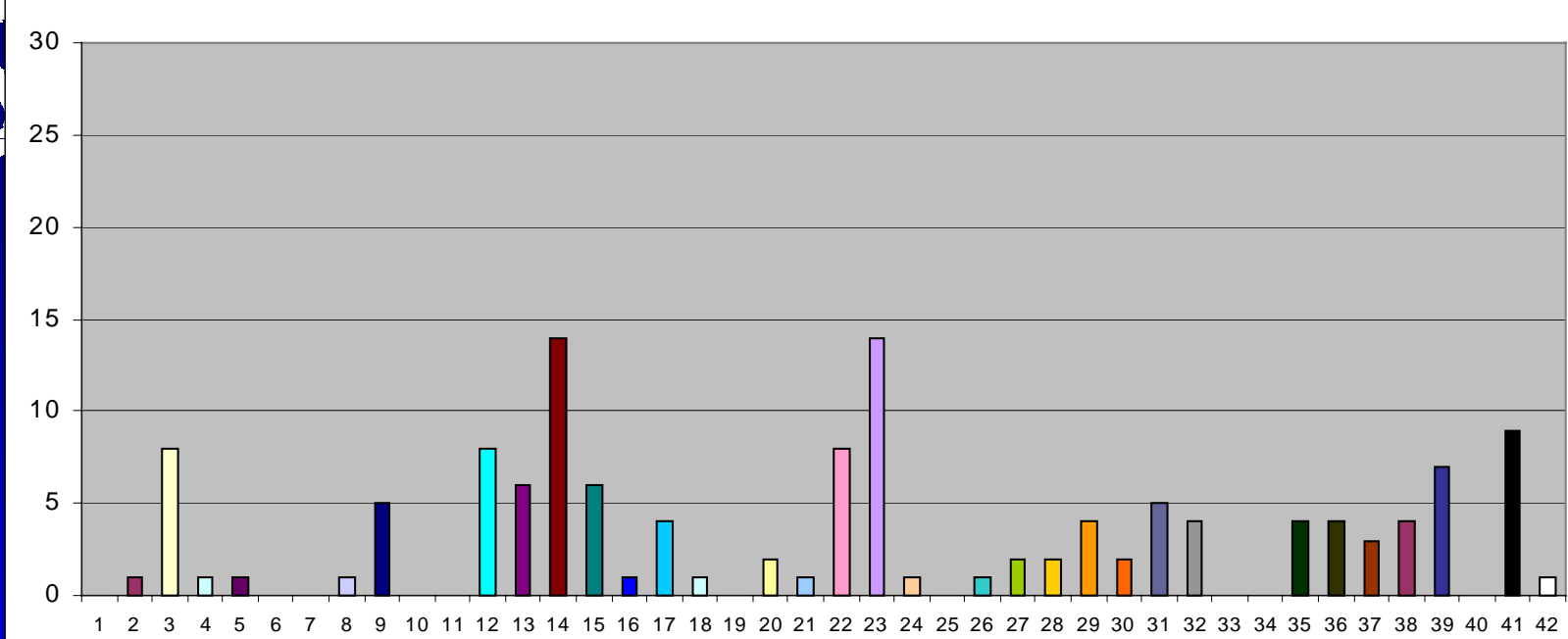
ERRICCA-2

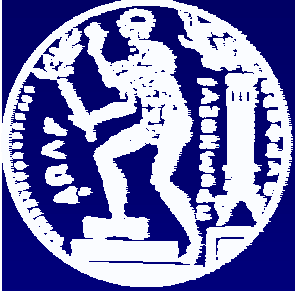




292 total /135 radon abstracts

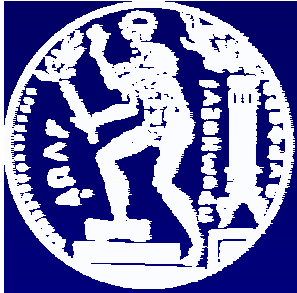
ERRICCA-2



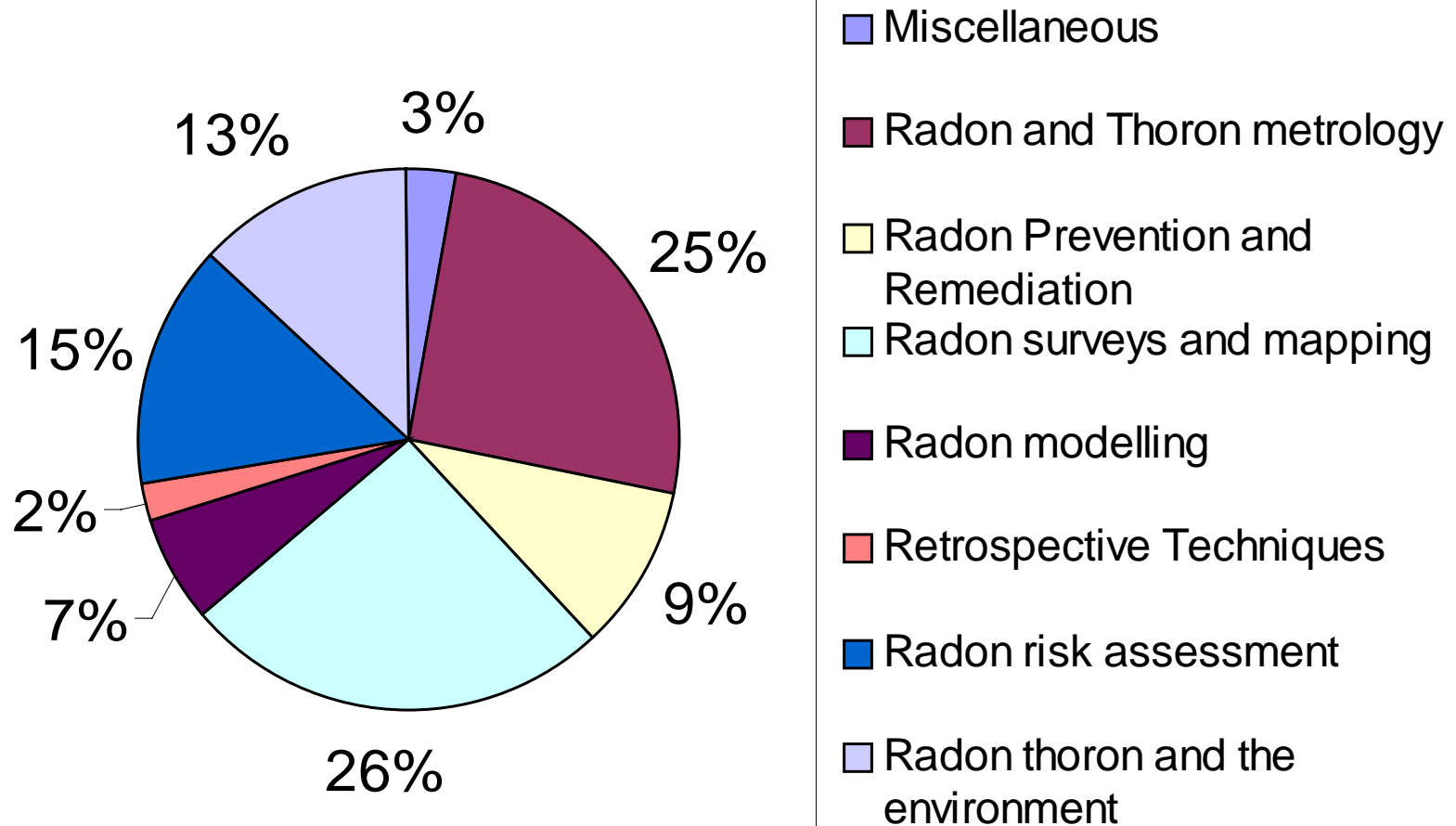


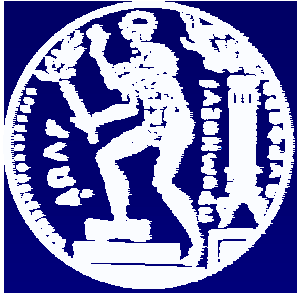
Countries statistics : All Topics vs Radon

- Radon research is still going on (~47% in NRE-VII abstracts)
- Most of the 42 countries are analogically involved in radon research as in other NRE fields
- This analogy is not followed - in favour of radon - in the cases of Germany and Japan and partly in the cases of Austria, Finland, Greece, Italy, UK and USA

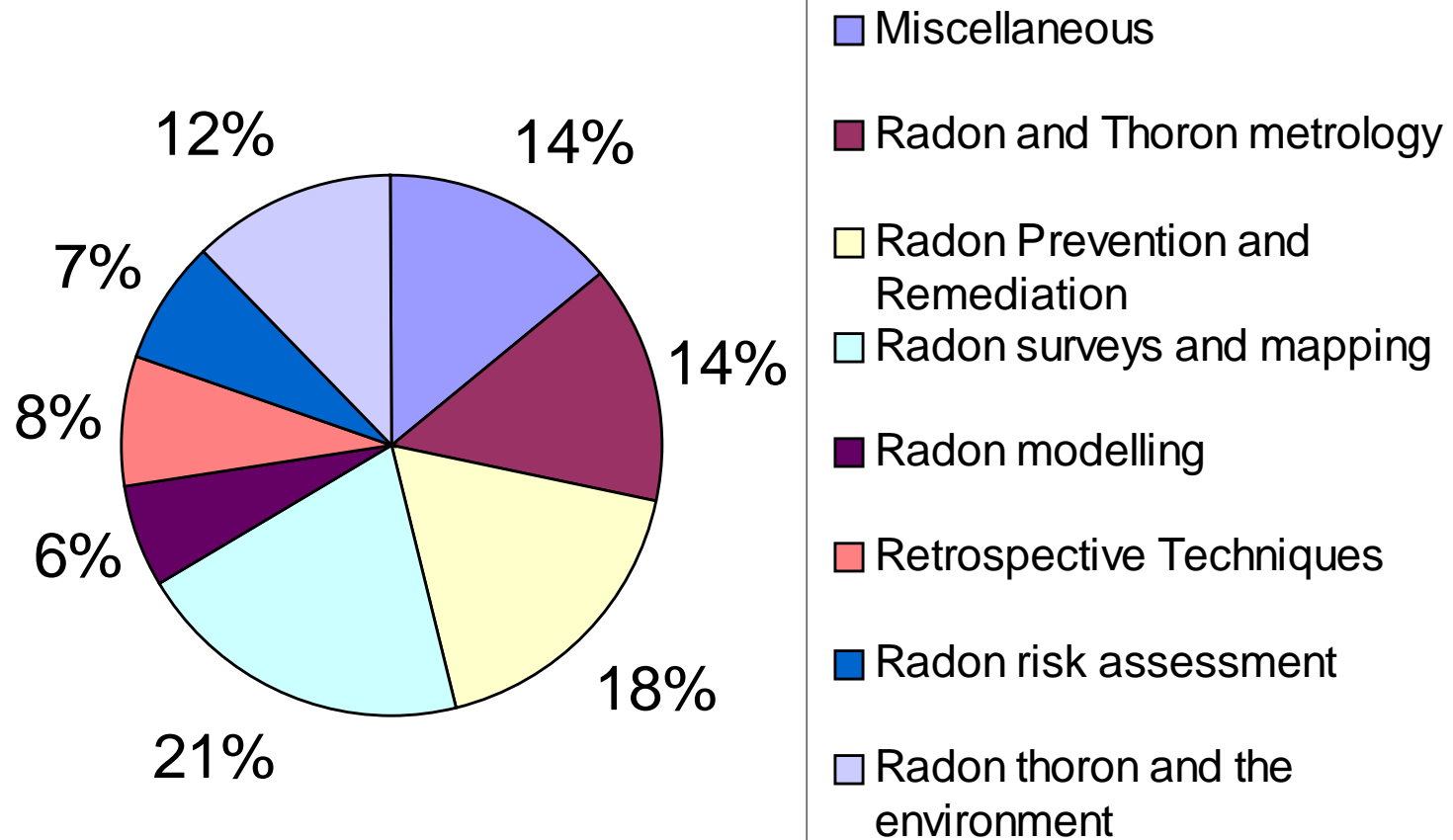


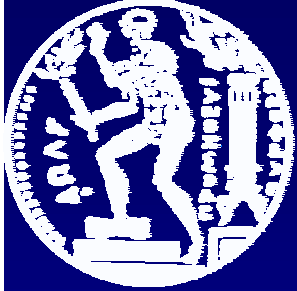
Radon & Thoron NRE-VII Topics (135 abstracts)



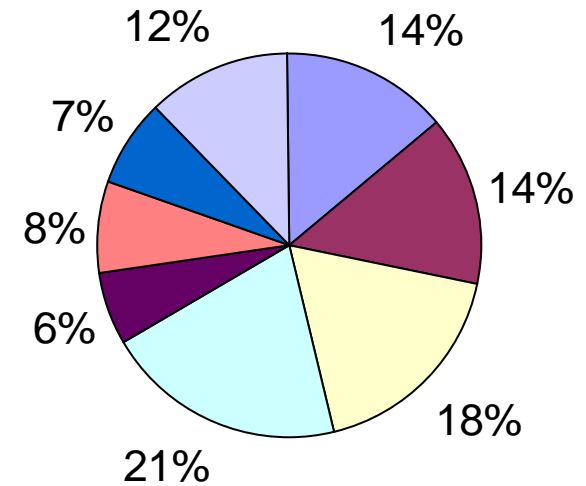
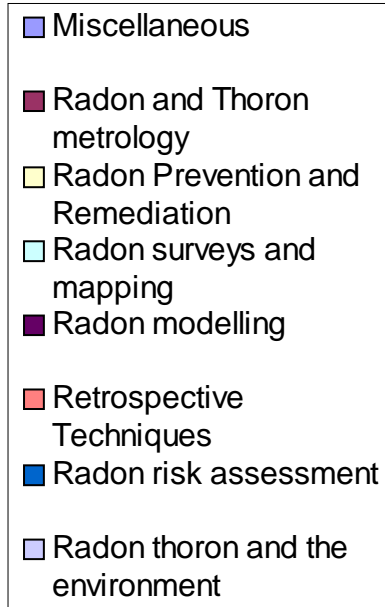
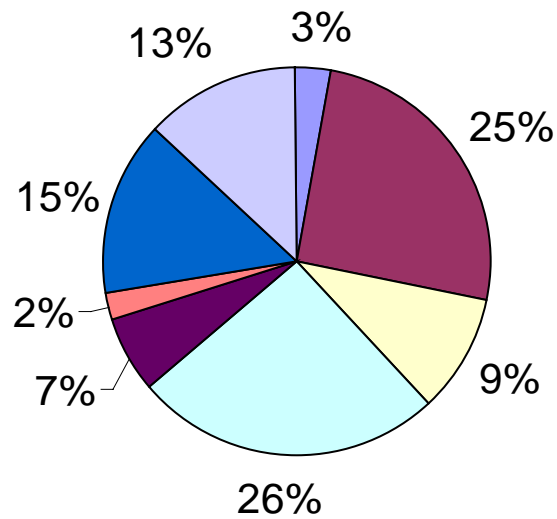


Radon & Thoron RLE **ERRICCA-2** (ERRICCA-1) Topics (163 papers)



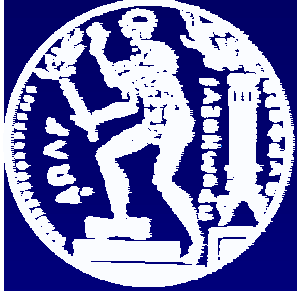


Rn&Tn NRE-VII (135) vs RLE (162) topics



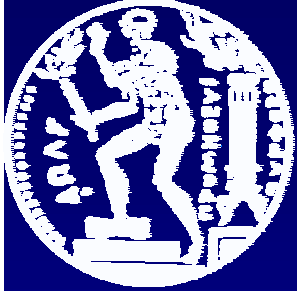
NRE-VII

RLE



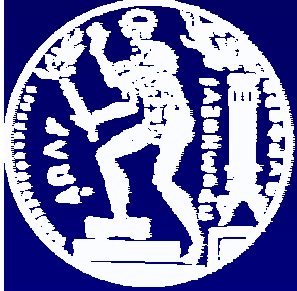
Radon topics statistics : **ERRICCA-2** NRE-VII (2002) vs RLE (1999)

- Reported work is increased on : **Metrology** and **Risk assessment**
- Reported work is decreased on : **Prevention and Remediation**
- Significantly less work is now reported on **Retrospective Techniques**
- Surprisingly, research on **Surveys and Mapping** seems to be going on at a constant rate



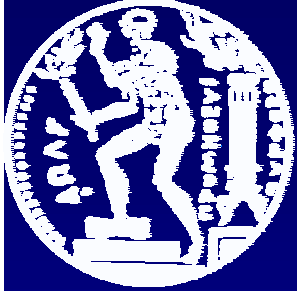
Important Areas of ERRICCA interest

1. Feasibility of developing a new non-destructive *in situ* monitoring technique for concrete ageing using exhalation measurements
2. Improved method for measuring the radon diffusion coefficient of porous building materials (hollow cylinder geometry)



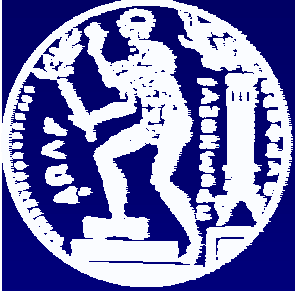
Important Areas of ERRICCA interest ...

3. Study of Rn-222 exhalation of phosphogypsum blocks used as building materials
4. Results of the EU-CA for a survey on Radon Exhalation Measurements
5. A new recommendation guide for radon prevention in the design and construction of new buildings, in areas with highly elevated radon levels



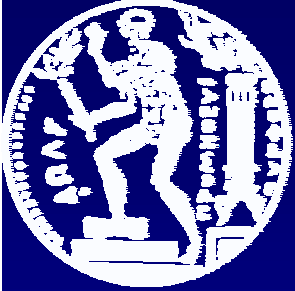
Important Areas of ERRICCA interest ...

6. Suppression of radon gas in security shelters
7. Developments in radon-safe building (with the installation of a bitumen felt)
8. A new method for supplying low radon air by using a hollow fiber module (development in cooperation with industry)
9. A new approach to increasing the uptake of radon remediation in the UK



Important Areas of ERRICCA interest ...

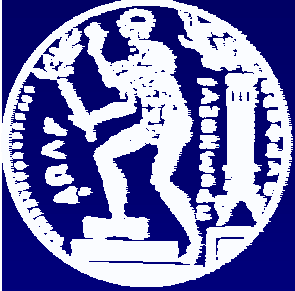
10. Measurements and modelling of combined diffusive and advective radon transport in porous building materials
11. Cancer risks from radon in indoor air and drinking water
12. Radon-in-water secondary standard preparation



New Areas

Radon & Thoron Metrology

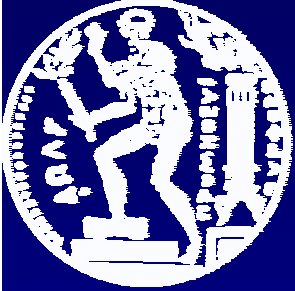
- Ra-226 measuring method by detecting alphas of Ra-226/Rn-222 in micro-precipitates by SSNTDs
- A method using an imaging plate (BAS-III developed by FUJI Ltd) for estimating the airborne concentration of radon progeny
- In-vivo (21 volunteers) measurements of deposition (respiratory tract and head ?) and absorption (blood analysis) of unattached radon progeny



New Areas

Radon Risk Assessment

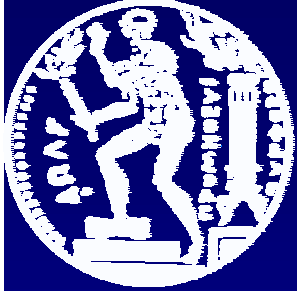
- Prenatal exposure due to ingestion of radionuclides of natural origin
- Fetal dose from ingested maternal radon in water
- Biophysical mechanisms and radiation doses in radon therapy



New Areas

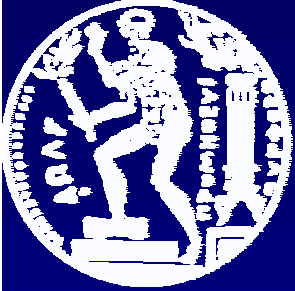
Radon Surveys and Mapping

- Some aspects of radon problem in Kazakhstan (dwellings up to 6 kBq/m³, soil gas up to 300 kBq/m³, 1000 dwellings tested with significant increase by 2.5 times of respiratory illnesses)
- Machine learning algorithms and geostatistics for mapping and classification



New Areas Thoron

- Simultaneous measurement of radon and thoron exhalation rate from soil and BM
- Characterization of thoron and radon flow-through sources
- A new calibration facility for thoron gas activity concentrations
- Dose evaluation of indoor thoron progeny in some areas in China



Conclusions

- Radon research is going on
- Concerted Actions like ERRICCA-1 and RETRO... helped research on the topics :
“Prevention and Remediation” &
“Retrospective Techniques”
- The focusing on Metrology will help standardization and guidance
- Systematic investigation on radon should be extended to NIS countries