

**ERRICCA-2**

# NTUA's views regarding ERRICCA-2

*ERRICCA-2 Kick-off Meeting*

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

**M.J.Anagnostakis, NTUA, Greece**



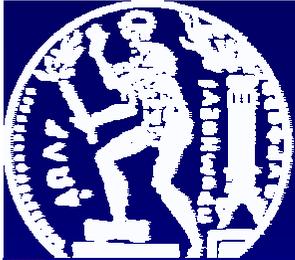
## Contents

- Progress during ERRICCA-1.
- Plans for Topic Building Materials.
- Some ideas for ERRICCA-2.
- 2<sup>nd</sup> European Radon Forum (Athens, Greece).



## Progress on Topic: Building Materials, during ERRICCA-1

- Building Materials Data Base (BMDB) Design and Construction.
- Intercomparison of radon exhalation rate measurements from building structures (20 participants from 13 countries).
- Final meeting in Athens “*Radon in the Living Environment, Athens 19-23 April 1999*”.



# Building Materials Data Base (BMDB)

# ERRICCA-2

Microsoft Access

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Materials

**Material Code** 1010070030100701000000MS12301

**Description** CEMENT from AGET HERACLES

**Sampling Date** 1/1/2002

**Comments** Cement Collected by ...

**Type Category** Cenment - Clinker and Concrete Products

**Type** black cement

**Origin Country** GREECE

**Origin Within Country** CHALKIDA

**Sub origin** 111

**Contr. Laboratory** GREECE

**Country Lab Code** Nuclear Engineering Section, NTUA

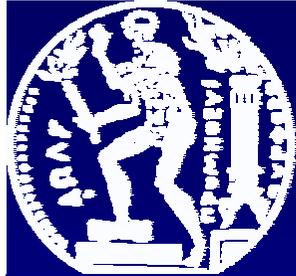
**Internal Code** 0000000MS123

**Provision** 01

Delete Material New Material Search Search by code

Property	Value	Meas. Unit	Total Error	Analysis Date	Reference Conditions
Density	1.1	gcm**-3	2.00%	12/10/2002	
Ra-226 concentration	30	Bqkg**-1	4.00%		
K-40 concentration	100	Bqkg**-1	5.00%		

Record: 4 of 4



# Building Materials Data Base (BMDB)

**ERRICCA-2**

Microsoft Access - [r1\_crosstab : Report]

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## LIST OF MATERIALS MATCHING THE SEARCH CRITERIA

Material Type	Country	Origin Within Country	Laboratory	Internal Code	Ra-226 concentration Bqkg**-1	K-40 concentration Bqkg**-1
black cement	GREECE	CHALKIDA	Nuclear Engineering Section, NTUA	0000000MS123	30	100
cemented clinker	GREECE	--	Nuclear Engineering Section, NTUA	000000000333	30	111
ceramic wall tiles	GREECE	0001	Nuclear Engineering Section, NTUA	000000000111	111	1111



**ERRICCA-2**

## Topic: Building Materials



# Plans for ERRICCA-2 (I)

## Building Materials Data Base BMDB

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- Proceed with feeding the Data Base ?

*If the answer is yes, then:*

- We need the Industry's feedback, ideas and data.
- Sources and kind of data we are interested in ?
- National representatives undertake the task of informing and distributing the BMDB within countries, during National Fora.
- National representatives undertake to collect in electronic form and in reports form all data.



# Plans for ERRICCA-2 (II)

## Building Materials Data Base

### BMDB

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- All data are sent to NTUA, in electronic form and as hardcopies (reports).
- NTUA undertakes to feed BMDB.
- A small group (2-3 persons) checks the BMDB integrity.
- Final version in CD-ROM.
- Distribution of BMDB through National representatives.
- Availability through the www site ? (legal matters ?)



## Plans for ERRICCA-2 (III) Standardisation of procedures

- What has been done so far.
- Which procedures need standardisation:
  - Radon exhalation from raw materials and structures.
  - Radon in water measurements.
  - Gamma spectroscopic determination of natural radioactivity of building materials.
  - Test of radon barrier materials (membranes, resins etc.)
- How shall we proceed with standardisation.
- Report(s) preparation ?



## Plans for ERRICCA-2 (IV)

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### Accreditation of laboratories conducting building materials measurements?

- Existing situation and standards.
- Existing experience from other laboratories.
- Invite specialists to give guidelines about accreditation.
- Necessary steps towards accreditation of a laboratory.
- What kind of measurements and procedures?
- Some steps are already taken by NES-NTUA.



## Plans for ERRICCA-2 (V) Intercomparisons

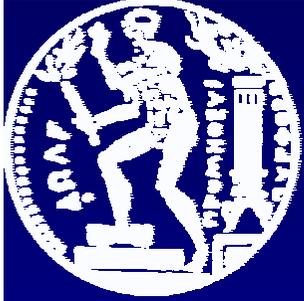
- There is experience on intercomparisons.
- Proposal of an intercomparison of raw building materials (radioactivity and radon exhalation rate).
- Who will undertake the leader(s) role(s) ?
- Proposal for other intercomparisons (*to follow*).
- Expenses ?



## Plans for ERRICCA-2 (VI)

### Easy techniques for the industry to estimate the Radiation Performance Index

- Is there an increasing interest from the building material industry for natural radioactivity measurements of building materials?
- These measurements are often undertaken by research laboratories and cost.
- Need for simple (pass no-pass) techniques ?
- Is it of interest to the industry ?
- Can we provide the industry with such tools ?



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Some ideas for **ERRICCA-2**



## Plans for ERRICCA-2 (VII)

### National Fora

- Not just small conferences where papers are presented, but meetings for exchange of experience.
- Focused on special issues (responsibility of the national representatives).
- The national representative should transfer experience gained from ERRICCA-2.
- Data for BMDB and radon related papers should be collected.



## Plans for ERRICCA-2 (VIII)

### Radon papers Data Base

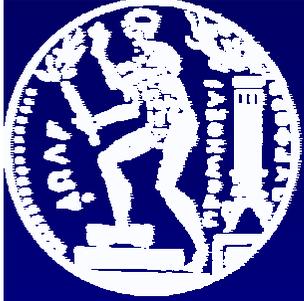
- A Data Base to include all recent (?) publications on radon related matters.
- The data base could be available from the www site, containing:
  - Full reports
  - Links to publications, when copyright problems exist.
- NTUA may undertake the construction and feed of this data base.
- We need data from partners in electronic form.



# Plans for ERRICCA-2 (IX) **ERRICCA-2**

## some more ideas...

- Thoron measurement techniques.
- Thorium uses (e.g. turbine engines, thorium weld).
- Deposition-Recycling of materials from demolition of buildings and industries.
- TENORM materials (recycled iron, mineral wools etc)
- Correlation between Ra content and Rn exhalation from building materials.
- Building materials contaminated with artificial radionuclides
- Occupational exposure of building materials industry workers.



**ERRICCA-2**

## 2<sup>nd</sup> European Radon Forum

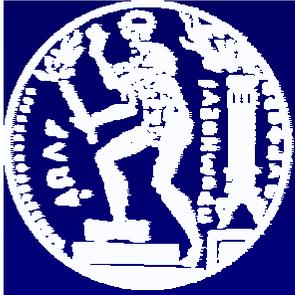
Fall 2002, Athens, Greece



## 2<sup>nd</sup> European Radon Forum (I)

- **Venue:** Technological Park of Lavrio, ~60km from Athens, near Cape Sounio. Accommodation near Sounio).
- **Time:** autumn 2002 (September-October). It should be finalised until 30 June 2002.
- **Events:** two days meeting.
- **Provisionally:**
  - Intercomparison of radon in water at NES-NTUA.
  - Intercomparison of radon in soil gas and radon exhalation measurements from surface.
  - Extra days and extra cost.

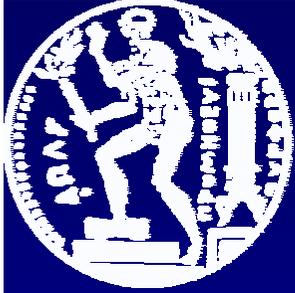
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# 2<sup>nd</sup> European Radon Forum (II)

## Lavrio Technological and Cultural Park





# 2<sup>nd</sup> European Radon Forum (II)

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## Lavrio Technological and Cultural Park





## 2<sup>nd</sup> European Radon Forum (III)

### Megalopolis lignite field basin

- Megalopolis lignite field basin ~300km from Athens.
- Field over an unexploited lignite mine with:
  - elevated natural background ( $\sim 400\text{Bq/kg}$   $^{226}\text{Ra}$  in soil),
  - radon in soil gas ( $500\text{-}1000\text{kBq/m}^3$ ),
  - radon exhalation rate ( $\sim 200\text{ mBq/m}^2\text{sec}$ ),
  - and external gamma-ray dose rate (up to  $500\text{nGy/h}$ ).
- Discarded fly-ash deposition fields also exist in the area.
- Measurements: radon in soil gas, radon exhalation from soil surface, radon outdoors.
- One day excursion is needed.

**ERRICCA-2**



# 2<sup>nd</sup> European Radon Forum (IV)

## Megalopolis unexploited lignite field

