Reversing the trend of young students from schools turning away from science and Radiation Protection

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* Presented by

Sommary

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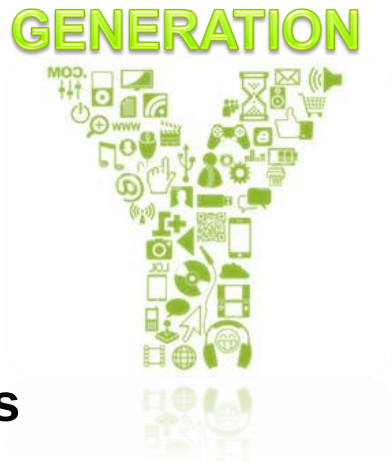
5. Conclusion

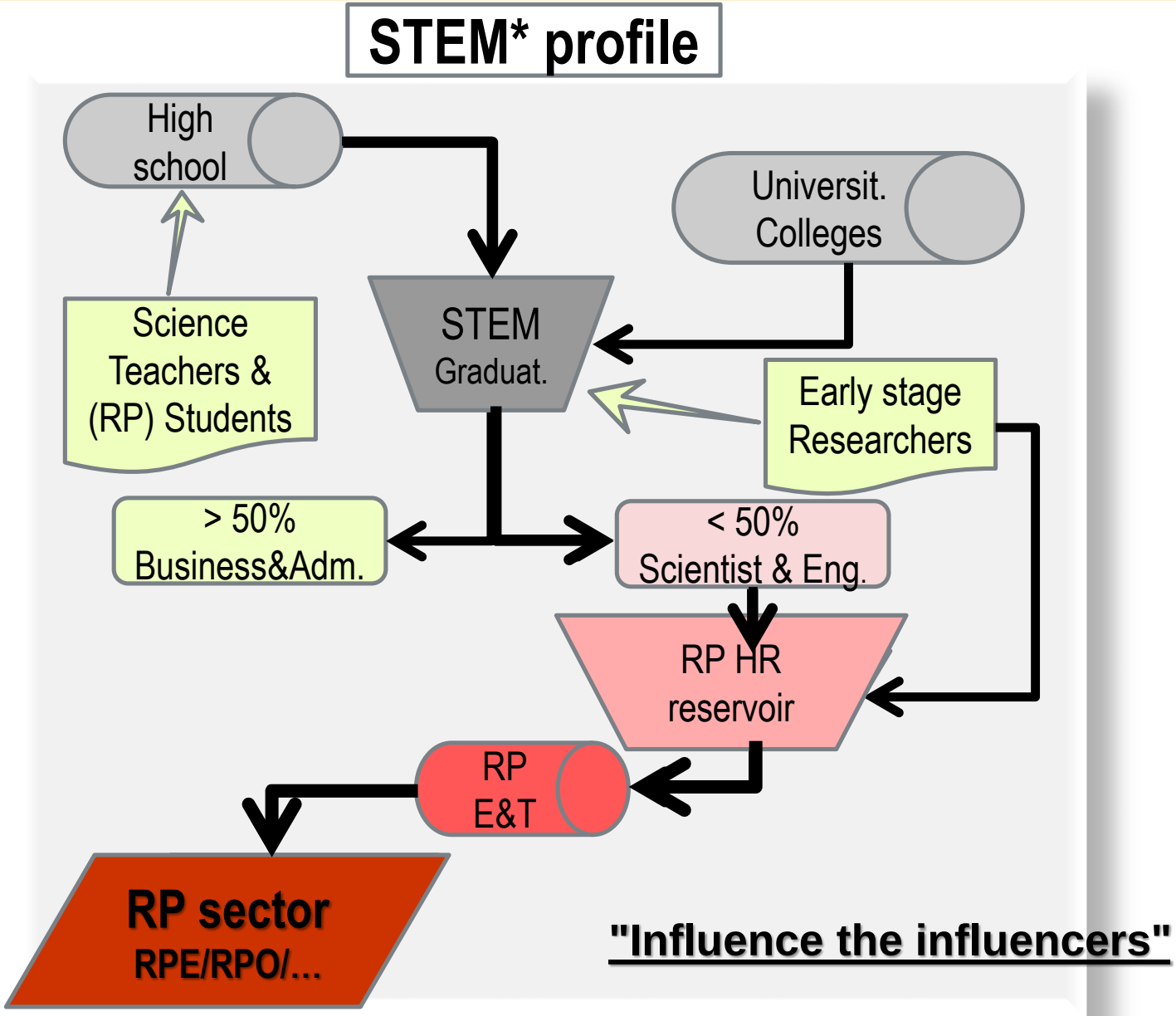
1. Introduction

- **Challenge: Radiation Protection job more attractive for young people Gen Y (1980'-2000 ')?**
  - **Provide attractive career opportunities**
  - **Satisfy need to gain and maintain high level competences (K.S.A.) in RP**
  - **Use innovative tools because Gen Y is using ++ IT and ask for sound, video, games and… high quality content: e/b/m-Learning**



- **Analyse human resources (HR) shortage in RP**
- **Survey national and international initiatives for attracting young people**
- **Design Radiation Protection Action Plan for providing CPD for science teachers and early-stage RP researchers;**

2. Analyze human resources (shortage) in RP



Reversing the trend of young students turning away from science

*STEM = Science, Technology, Engineering and Mathematics

3. Survey of international initiatives

1. Specialized practices	specialized practices with a specific message for a targeted group are used in the surveyed countries
2. Targeted groups	targeted groups varies from country to country, but in most countries the targeted groups are: - primary& secondary schools students (age of 6 to 14); - high schools students studying STEM* (15 to 18); - undergraduates (19 to 22); - early stage researchers (23-25) - STEM teachers from secondary and high schools
3. Event's organizers	event's organizers on attracting YG in RP: universities, regulatory bodies, professional associations, and companies;
4. Event types to attract YS	**a-** Direct interaction between student/teacher and an "instructor **b-** Indirect interaction between student/teacher and an "instructor" the websites for teachers & students providing different resources (videos, articles, experiences, activities, etc) that they can use in their school activities; **c-** Combined direct & Indirect interaction
5. EU projects on science teaching in Europe	**a-** EU projects on exchanging good practice in the field of science teaching in Europe: The Grid-Network, STELLA project; those networks do not cover the Nuclear Sciences and RP fields **b-** Inter/national projects: **France - Les ateliers de la radioprotection "RP Workshops"**; Spain- Rincón educativo (Educative Corner); Romania- RONET-ROmanian Nuclear network for Education and Training

4. (Inter)national action- “RP Workshops”: Context

- **Radiation Protection workshops are organised each school-year in French and foreign high schools** in coordination with French Institute of Radiation Protection and Nuclear Safety (IRSN), Nuclear Evaluation Protection Centre (CEPN), and the Centre for scientific culture of Franche Comté (Pavillon des Sciences)

- **Since 2007 more than 500 high school students and 18 high schools were involved**

- **Objectives:**
  - **Involving students in multidisciplinary activities related to the Radiation Protection culture** according to local concerns : management of radon risks, radiation protection in hospitals, environmental surveillance around nuclear sites, post-accident management, etc.
  - **Providing** them clues to respond to different questions like:
    - Where is situated radioactivity in environment and how to measure it?
    - What are the modes and levels of exposure?
    - What are the health effects of ionizing radiation and how can we evaluate the risk at low dose?
    - What are the means of protection against radiation exposure?

4. International action- “RP Workshops”: Methodology

- **“Workshops" are led by teachers in collaboration with radiation protection experts** in the relevant scientific disciplines

- To conclude this activity, **"international high school student meetings"** are organised each Spring to allow students who participated in workshops **to present their work and exchange information and their point of view** with other students and radiation protection professionals

4. Radiation protection workshops 2010/2011

➢ 10 french and foreign high schools:

- **France**: Lycée Notre Dame (Boulogne Billancourt) ; Lycée Marie Curie (Grenoble); Lycée Viette (Montbéliard), Lycée Bois d'Amour/Aliénor d'Aquitaine (Poitiers),
- **Belarus**: Gymnasium n°46- Gomel, Soudkovo school – Khoiniki; **Germany**: Martin Luther- Marbürg; **Romania**: College Mikhail Viteazul- Bucharest and **Ukraine**: Gymnasium 118 – Kiev

➢ International high school meeting

- 21-23 March 2011 organised by CEPN, IRSN, Pavillon des Sciences & CEA/INSTN
- At University Joseph Fourier, Grenoble,
- **150 participants**: high school students, professors, students of the European MSc in Radiation Protection, experts (CEPN, IRSN, ASN, CEA, AREVA, EDF, ANDRA, WIN France)

4. RP workshop 2010/2011 experience of M. Vitazeul College (Bucharest)

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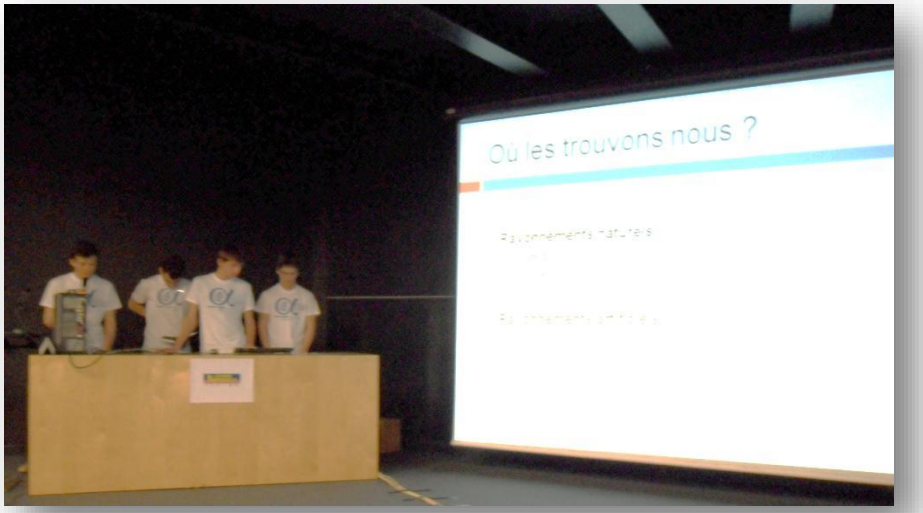
- **Romanian Radiation Protection workshop in partnership with:**
  - Romanian association “Nuclear Energy”
  - Society “Nuclearelectrica”
  - Polytechnic University of Bucarest
  - Romatom fora
  - ENETRAP II - WP10



4. RP workshop 2010/2011 experience of M. Vitazeul College

- **Visit of Cernavoda NPP and presentation of environmental surveillance plan**
- **Visit of the Environmental Monitoring Laboratory**

  - Participation of the students of sampling campaign
  - Comparaison between soil and current water from Bucarest and from Cernavoda
  - Estimation of radiation doses received by Cernavoda inhabitants with focus on NPP impact

5. Conclusion

- **To attract young generations, we have to promote:**
  - **Actions for STEM teachers**: courses, visits of nuclear installations, networking…
  - **Involvement of postgraduates and MSc RP students** throught participation to events, congress, students networking, national and supranational RP associations (IRPA, SFRP…) or projects
  - **Actions/events for high school students** like French, British initiatives and others…
  - **Countries participation**: France (5 ⟶ 8), Ukraine (2), Belarus(2), Germany, Romania, Italia, Moldavia, Italia, (Japan)
- **Find sustainable funding to maintain this kind of action with high school students otherwise…**

THANK YOU FOR YOUR ATTENTION !

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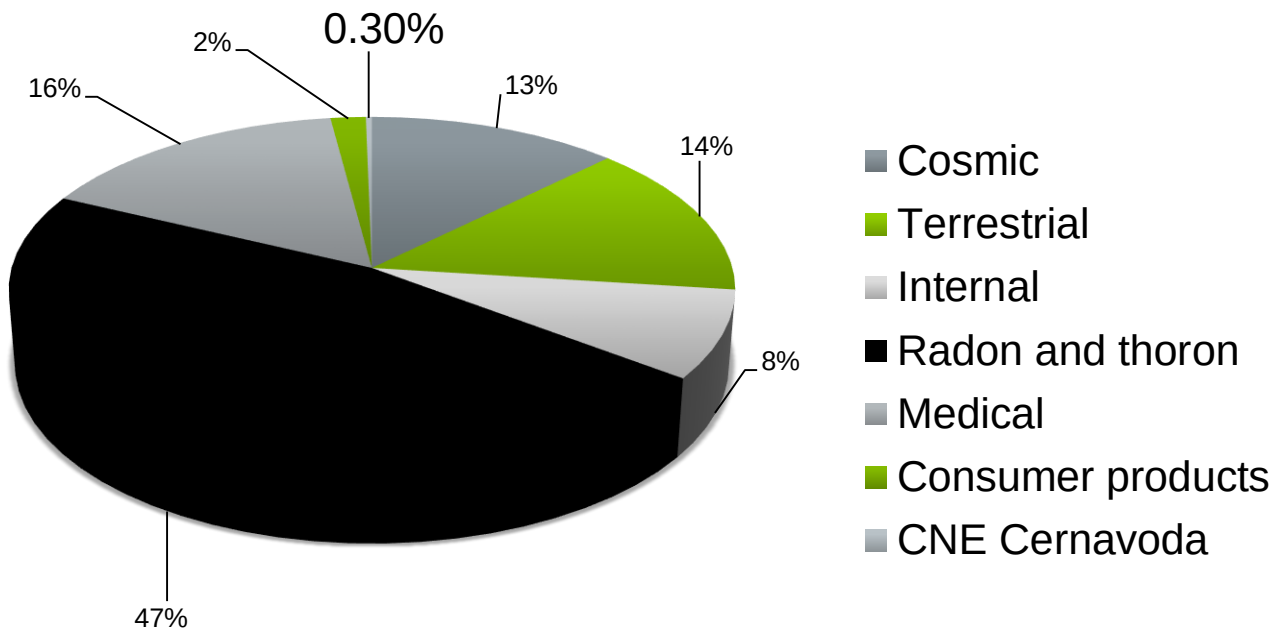
4. Radiation protection workshop 2010/2011: workshop of Mikhail Vitazeul College

- **Results concerning soil and current water sampling**

Current water Bucarest			Current water Cernavoda		
Rn	**Mean activity (Bq/kg)**	**Id confidence**	**Rn**	**Mean activity (Bq/kg)**	**Id confidence**
K- 40	1,98E+00	1,37 E+00	**K-40**	1,25E-01	1,35E+00
Pb-212	8,74E-01	1,18E+00			
Soil from Bucarest			**Soil from Cernavoda**		
Rn	**Mean activity (Bq/kg)**	**Id confidence**	**Rn**	**Mean activity (Bq/kg)**	**Id confidence**
K-40	4,57E+02	1,83E+01	**K-40**	4,05E+02	1,82E-01
CS-137	5,64E+00	4,98E-01	**CS-137**	2,32E+00	3,04E-01

4. Radiation protection workshop 2010/2011: workshop of Mikhail Vitazeul College

- **Estimation of radiation dose received by an inhabitant of Cernavoda in 2009**



2. Analyzing human resources in RP

Finding	Description
1. The trend of young people turning away from science	• drop in STEM * students, as well as in high school & university graduates; • fewer than half of STEM graduates take up jobs as scientists & engineers; • concerns identified over the long-term pipeline of young talent going from schools onto university STEM courses and subsequently into RP field
2. Measures to address HR shortage in RP	• varies from country to country • ENETRAP's II specific approach on addressing the HR shortage in RP and for reversing the trend of young people to turn away from science

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