

Initiatives of the SCK•CEN Academy to motivate high school pupils for STEM

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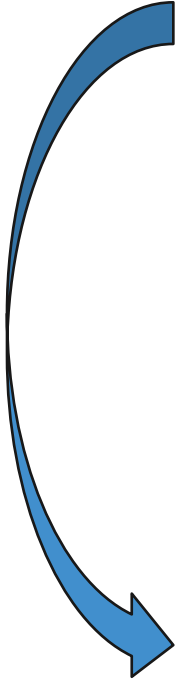


SCK•CEN: Belgian Nuclear Research Center

- Belgian Nuclear Research Center is a foundation of public utility
- ° 1952, cradle of nuclear research, applications and energy development in Belgium
- Today:
 - Major international player in the field of nuclear R&D
 - Today: ~700 staff, >50% with academic degree + ~ 65 PhD students
- Main research themes
 - Nuclear materials science
 - Advanced nuclear systems
 - Environment, health and safety
- Next to research: services, communication, education and training
- Annual turnover: 140 M€
 - 45% government support - 55% contract work





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- SCK•CEN = **research center**
 - > 60 years of **experience** in nuclear research and technology
 - Most **recent** knowledge and development
 - **Innovative** projects
 - Availability of **large and unique nuclear facilities**
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- SCK•CEN = **education and training** center
 - °2012: SCK•CEN Academy for Nuclear Science and Technology, coordinates all E&T activities, in broadest sense
 - Major nuclear training provider in Belgium, complementary to universities



1. Guidance young researchers

- Thesis (PhD, Master, Bachelor level), post-docs, internships, initiatives for pupils and students, (CPD – scientific visitors)

2. Organization of courses

- Academic courses for students
- Customized training for professionals
- Events for information exchange

3. Policy support with regard to E&T matters

- European Framework Programs, expert groups IAEA, OECD, EHRO-N, ENEN Association, ...

4. Caring for critical-intellectual capacities

- Scientific/technical + context! (philosophical, ethical, economical, political, ...)



Specific target public: High school pupils and their teachers

■ Pupils

- Wide attention span, eager to learn, curious
- Start to realize complexity of certain issues
- Develop an open and critical mind in order to gain more insight in multi-faceted issues such as risks and benefits of radioactivity and nuclear technology
- Make choice for future studies

■ Teachers

- (one of) First source of information to pupils
- Need to understand very well, before being able to transfer knowledge
 - Understand technical/scientific part; have most recent information
 - Be able to deal with the societal debate



Our aims

- Familiarize pupils and their teachers with STEM in general and nuclear applications in particular
- Explain/refresh basics of radioactivity
- Discuss several examples of nuclear applications
 - In nuclear industry, healthcare, non-nuclear industry, daily life, ...
- Present research activities of SCK•CEN, justify why nuclear research is important, how does it contribute to well-being of society in general
- Discuss with teachers how the standard education programs can integrate a pluralistic approach to complex technical issues such as applications of radioactivity



Our actions

1. Dedicated website
 - <http://highschools.sckcen.be>, in Dutch and French
2. Thematic guided tours at SCK•CEN
3. Workshops for teachers ("teacher's days") (at SCK•CEN and via events organized by professional bodies)
4. Participation in large special events for youngsters - collaborations
5. General policy support and international projects:
 - Signed Belgian STEM charter
 - Contribution in IAEA CRP L53003 (Sustainable Education in Nuclear Science and Technology): outreach activities to engage young potentials in nuclear science and technology



1. Website

- Information about SCK•CEN and our research
- Educational material that can be used in class
- Information about visits and workshops + possibility for registration
- Teasers : "Did you know" ...

SCK•CEN General Website | SCK•CEN Academy Website | Home | Bezoek aanvragen | Woordenlijst | Contact | NL | FR

SCK•CEN ACADEMY
FOR NUCLEAR SCIENCE AND TECHNOLOGY

Geef een zoekterm in Zoek

SCK•CEN Voor leerlingen Voor leerkrachten Educatief Materiaal

Over SCK•CEN
- Bedrijfsfilm
- Opleiding & training
- Organigram
- Geschiedenis

Onderzoeksdomeinen
Onderzoeksinstallaties
Bezoek het SCK•CEN

Wist je dat...
SCK•CEN over een ondergronds laboratorium beschikt dat wel 225 meter diep is!
Meer...

Home » SCK•CEN » Over SCK•CEN

Het Studiecentrum voor Kernenergie in een notendop

Het Studiecentrum voor Kernenergie, SCK•CEN, werd opgericht in 1952 en is vandaag één van de grootste onderzoekscentra in België met laboratoria in Mol en maatschappelijke zetel in Brussel.

Iedere dag zetten meer dan 700 medewerkers zich in voor de ontwikkeling van vreedzame industriële en medische toepassingen van radioactiviteit. Zo vormt het SCK•CEN een onmisbare schakel in onze samenleving. We doen toekomstgerichte onderzoeken en ontwikkelen duurzame technologieën. Verder organiseren we opleidingen en bieden we gespecialiseerde diensten en consultancy aan.

Onze opdracht

Als stichting van openbaar nut doet het Studiecentrum voor Kernenergie onderzoek rond thema's die nu en in de toekomst belangrijk zijn voor onze samenleving, zoals

- Veiligheid van nucleaire installaties
- Doordacht beheer van radioactief afval
- Bescherming van mens en milieu tegen ioniserende straling

Het SCK•CEN werkt samen met partners van over de hele wereld. We verspreiden onze kennis via opleiding en communicatie en verlenen diensten gevraagd door de nucleaire industrie, de medische sector, de wetenschappelijke



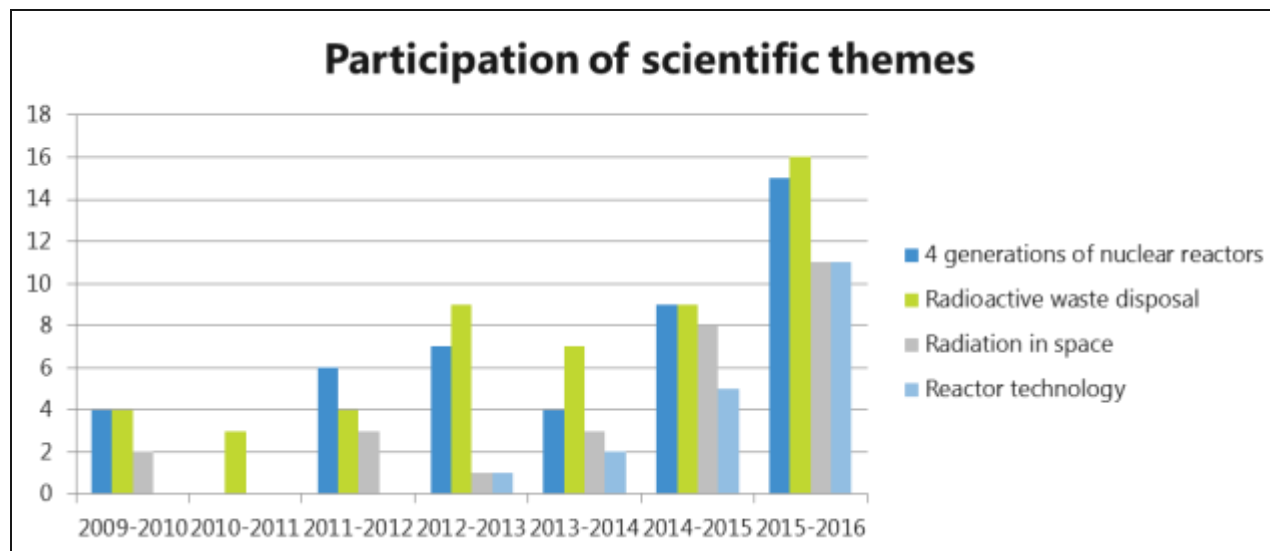
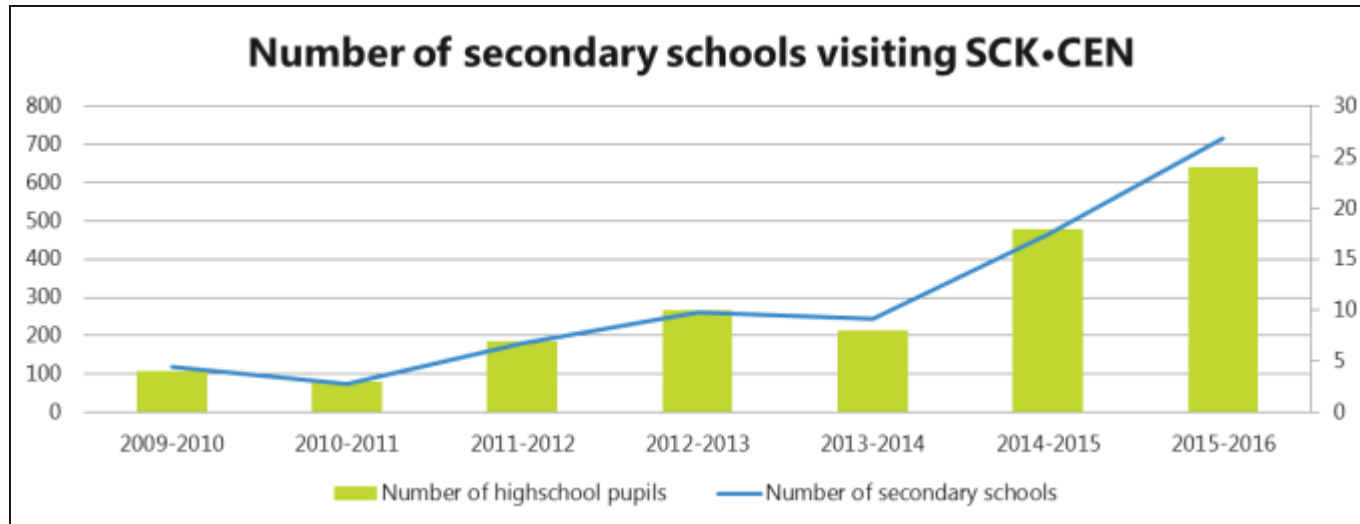
2. Visits

- Guidance by researchers of SCK•CEN
- In French, Dutch or English
- Fixed dates / once a month
- Free
- 4 pre-defined themes/tours available:
 - Four generations of nuclear reactors
 - Radiation in space
 - Radioactive waste and disposal
 - Reactor technology – from idea to practice





High school visits





Feedback

Fun and educative excursion !



Interesting to indicate future career opportunities !



Pity we cannot go to BR2



Life as it is... at a research centre



A nice and explicative experience in an unexpected environment !

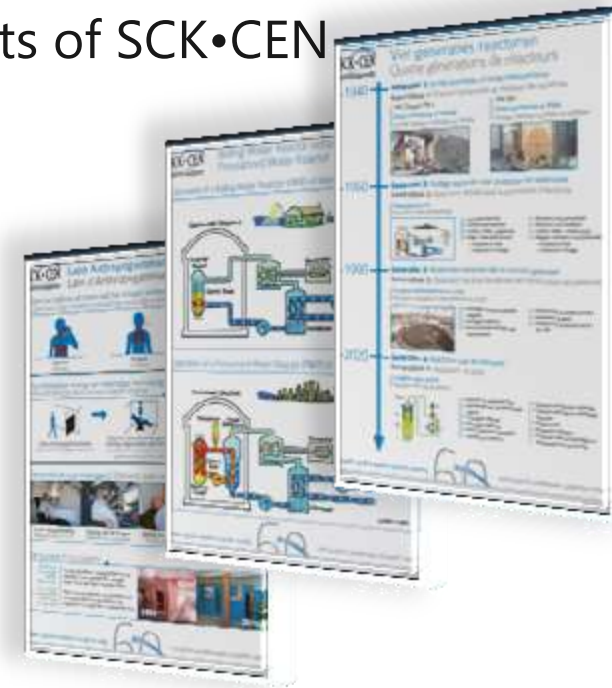


What you see here, together with the professional guidance, cannot be experienced at school...



3. Workshops for teachers

- Continuous professional development - refresh nuclear knowledge
- Dialogue sessions between teachers and scientists of SCK•CEN
 - State of the art research
 - Complementary visit
 - Societal aspects affecting the perception of nuclear technologies
 - How to optimize the knowledge transfer to the young generation
- At SCK•CEN, free, but not an overwhelming participation
- At other events, in collaboration with the association for science teachers:
 - VeLeWe (association of science teachers)
 - PEDIC (pedagogic didactical centre)
 - WeWi-dag (math & science day)





4. Special events

Annual Open Days at European School

 **Open Day European School
Mol 2015
SCK•CEN Booth** 



Join the 2016 edition on 16/4 from 2 to 6pm!



4. Special events

April 2015 | "Spirulina event" | Live video call with ISS astronaut

- The event was the finale of a large-scale campaign run by [ESA Education](#) aimed at generating interest in space travel amongst young people. Pupils throughout Europe experimented with spirulina, a bacterium with a high nutritional value, which also produces oxygen; making it ideal for long space missions
- http://www.sckcen.be/en/News/20150427_spirulina_event





4. Special events

March 2016 | "Creativity Marathon"

- Organised by [Vlajo](#) (Vlaamse Jonge Ondernemingen) and [Essenscia](#), the Belgian Federation of Chemical Industries and Life Sciences
- About 100 5 and 6 secondary school pupils were mixed together to form 18 teams
- The aim of the game: for each team to fire up its imagination and come up with an ingenious plan to meet a major scientific challenge
- SCK•CEN theme: "Imagine a sustainable habitat for astronauts on a mission on Mars"





5. Policy support – international collaborations

- After a few years of experience and actions: put ourselves on the map of STEM supporting institutes
- Sign STEM charter (initiative of Flemish government to support STEM) → concrete goal to increase number of pupils interested in STEM
- International collaboration, share experiences and best practices to optimize initiatives, in IAEA CRP L53003



Conclusions (1)

- Today's pupils = our future workforce
= society with a certain perception of nuclear applications
- Everybody's responsibility/duty to reach out to this target public!
Not difficult, you only need:
 - Enthusiastic collaborators: at SCK•CEN Academy: about 150 scientists, engineers, technicians, medical doctors, PhD students, ... about 15 for STEM
→ multidisciplinary team, mixed ages
 - Coordination: SCK•CEN Academy
 - Support by management
- Show the whole picture:
 - ALL application fields, ALL issues
- Early-stage STEM researchers: show "real-life" situations = added value



Conclusions (2)

- Motivate to choose for scientific or technical studies is one main aim

but as -or more?- important:

- Discuss risks and benefits of nuclear applications in general
 - Stimulate an open and critical mind in order to
 - gain more insight in complex issues of radioactivity and nuclear technology, and
 - contribute in serene way to the societal debate
- ➔ Contribute to development of critical-intellectual capacities for society



Thank you for your attention