

# Outreach activities in radiation protection for high school pupils and their teachers

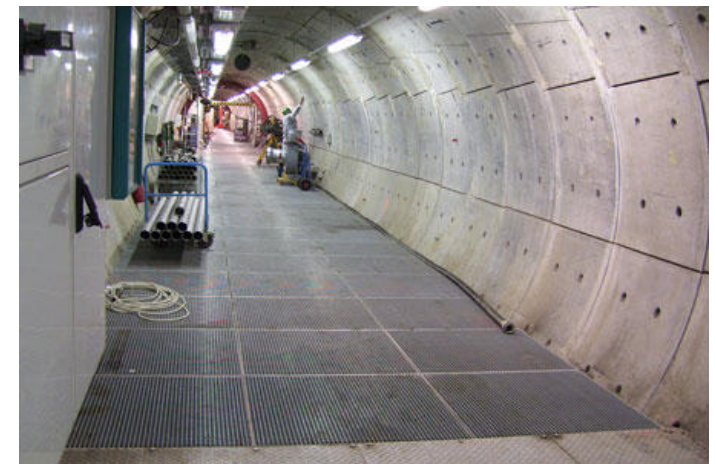
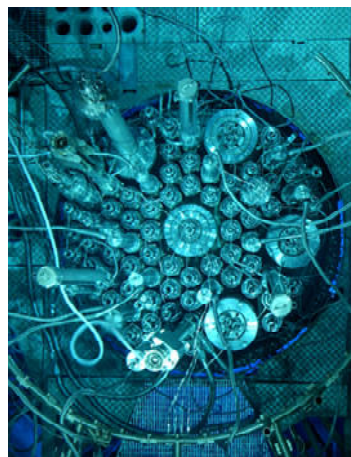
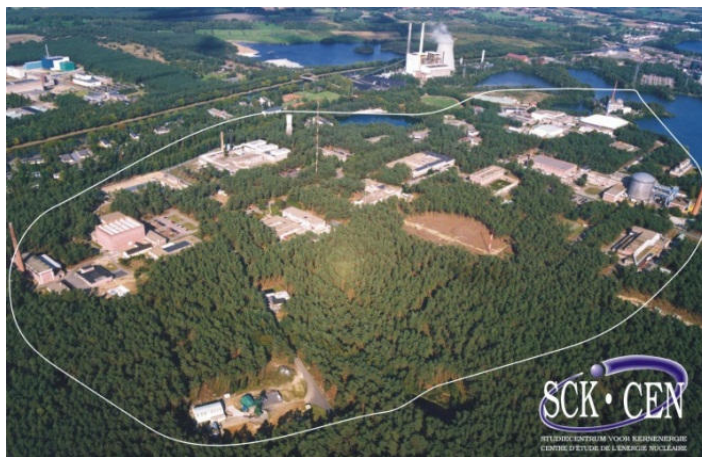


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SCK•CEN = Belgian Nuclear Research Centre

- >60 years of **experience and expertise** in nuclear research and technology
- Most **recent** knowledge and development
- **Innovative** projects
- Availability of **large and unique nuclear installations** in Belgium





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SCK•CEN = Education and Training centre

- °2012: **SCK•CEN Academy** for Nuclear Science and Technology
- Coordinates all E&T activities at SCK•CEN



## SCK•CEN Academy Activities in four domains

1. Guidance for young researchers
  - Thesis (PhD, Master, Bachelor level), post-docs, internships, scientific and technical visits
  - Outreach activities for high schools
2. Organization of courses
  - Academic courses for students
  - Customized training for professionals
3. Policy support on E&T matters and international collaboration
  - EC framework programs, expert groups IAEA, OECD, ...
4. Caring for critical-intellectual capacities for society
  - Scientific/ technical and societal insight



# Outreach to high schools

## Our target audience and aims

### ■ Pupils

- Third grade high school, 17-18 years old
- Curious, develop a **critical mind**
- Faced with important **study choice**

### ■ Aims

- Explain **basics** of radioactivity
- Present research activities of **SCK•CEN**
- **Justify** why nuclear research and applications are important for the well-being of society
- Discuss several examples of nuclear **applications**
- Provide insight into the pluralistic **societal context**
- Inspire pupils to choose for **academic STEM study**





## Outreach to high schools Our target audience and aims

### ■ Teachers

- First source (one of) of information to pupils
- Profound understanding necessary
- Must have state of the art information
- Be able to deal with societal debate



### ■ Aims

- Refresh nuclear knowledge
- Familiarize with state of the art research and applications
- Optimize knowledge transfer to the young generation
- Discuss how multi-aspect issues can be integrated in the standard education programs



## Outreach to high schools Activities in four domains

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1. Dedicated website
2. Thematic guided tours at SCK•CEN
3. Support for teachers
4. Collaboration in/ organization of STEM initiatives



# Outreach to high schools

## 1. Website

- <http://highschools.sckcen.be>
- In Dutch and French

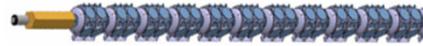
The screenshot shows the SCK-CEN Academy website. The header includes the SCK-CEN logo and the text 'SCK-CEN ACADEMY FOR NUCLEAR SCIENCE AND TECHNOLOGY'. There is a search bar with the placeholder 'Geef een zoekterm in' and a 'Zoek' button. The navigation menu has four items: 'SCK-CEN', 'Voor leerlingen', 'Voor leerkrachten', and 'Educatief Materiaal'. The main content area features a 'Wist je dat...' section with a list of trivia questions in Dutch, such as '... de Belgian Reactor 2, samen met 4 andere reactoren in de wereld, verantwoordelijk is voor de productie van 90 % van de belangrijkste radio-isotopen voor nucleaire geneeskunde?'. A small photo shows a group of people at 'Bezoek Campus De Reynaert, Tielt'. The footer of the website is not visible in the screenshot.





## Outreach to high schools 2. Guided tours

- Four pre-defined themes/tours available





## Outreach to high schools 2. Guided tours

- Four pre-defined themes/tours available
  - Four generations of nuclear reactors
  - Impact of radiation on man and environment
  - Radioactive waste and disposal





## Outreach to high schools 2. Guided tours

- Guidance by researchers of SCK•CEN
- In French, Dutch and English
- Fixed dates / once a month
- Free

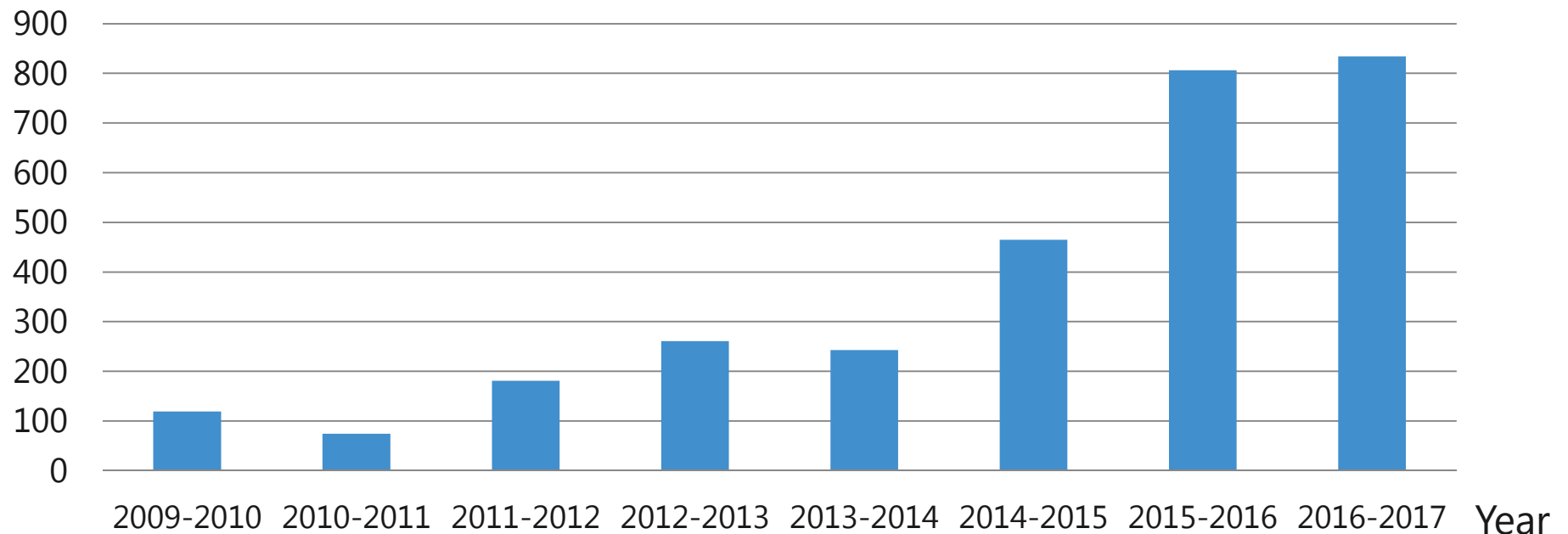




## Outreach to high schools 2. Guided tours

- Number of visitors has strongly **increased**
- More than 800 visitors from 24 schools in 2016-2017

Number of high school pupils visiting SCK•CEN





## Outreach to high schools 2. Guided tours

*Fun and educative excursion !*



*A nice and explicative  
experience in an  
unexpected  
environment !*

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



*Interesting to indicate future carrier opportunities !*



# Outreach to high schools

## 3. Support for teachers

### ■ Provide educational material

**SCK-CEN ACADEMY**  
FOR HIGH SCHOOL AND UNIVERSITY  
Wetenschap in de hoogste versnelling  
La science en accélération

1897 Thomson ontdekt het **electron**. | Thomson découvre l'**électron**.

Naam	Principe
Marie Curie	
Ernest Rutherford	
Johannes Stark	
Charles Thomson	

1919 Rutherford ontdekt het **proton**. | Rutherford découvre le **proton**.

Naam	Principe
Marie Curie	
Ernest Rutherford	
Johannes Stark	
Charles Thomson	

1932 Chadwick ontdekt het **neutron**. | Chadwick découvre le **neutron**.

Naam	Principe
Marie Curie	
Ernest Rutherford	
Johannes Stark	
Charles Thomson	

**SCK-CEN ACADEMY**  
FOR HIGH SCHOOL AND UNIVERSITY  
Vier generaties reactoren | Quatre générations de réacteurs

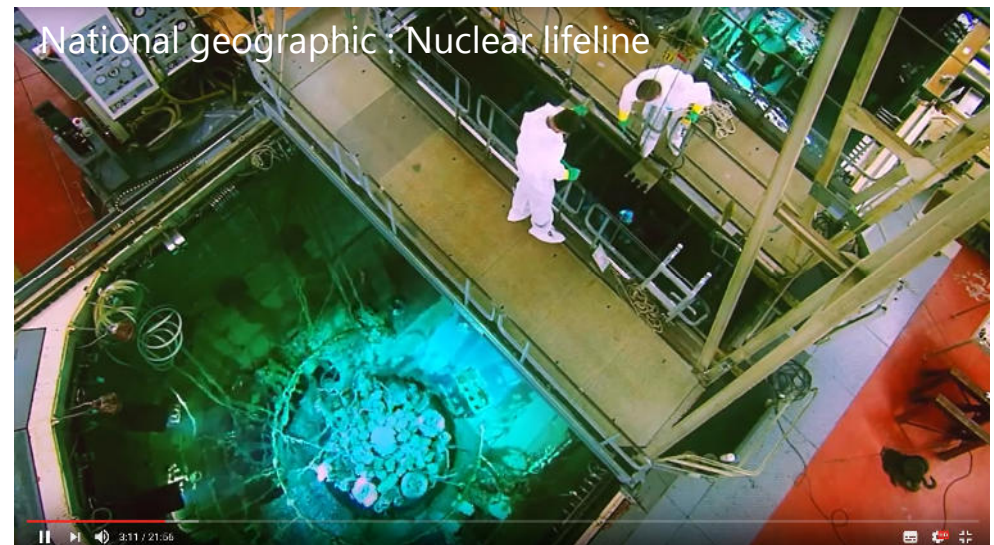
1942 Chicago, USA | 1946 BNL  
Eerste kernreactor ter wereld | Première centrale nucléaire au monde

1956 BNL  
Eerste kernreactor in België | Première centrale nucléaire en Belgique

1960 Generatie 2: Middige reactoren voor productie van elektriciteit  
Generations 2: Réacteurs actuels pour la production d'électricité

1990 Generatie 3: Modernste reactoren die nu worden gebouwd  
Generations 3: Réacteurs les plus modernes actuellement en construction

2040 Generatie 4: Reactoren van de toekomst  
Generations 4: Réacteurs du futur





## Outreach to high schools 3. Support for teachers

- Continuous Professional Development
  - Thematic days for teachers (SCK•CEN)
  - At initiatives/ events of other professional organizations
    - Association of science teachers
    - Pedagogic didactical centre
    - Flemisch Science Centre





## Outreach to high schools 4. Other STEM initiatives

- In **collaboration** with professional organizations
  - Essencia Creativity Marathon (Vlajo, Essencia)
  - Kékulé youth afternoon (UAntwerp)
  - Printemps des Sciences (UNamur)
  - Open day European School Mol
  - Flemish Space Days (Flemish Space Industry)
  - Support in Flemish Physics Olympiad (VONW)







## Outreach to high schools 4. Other STEM initiatives

- Support in **international** initiatives
  - Greenlight for Girls



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## Outreach to high schools 4. Other STEM initiatives

- Upcoming national contest **Nuclear Game Challenge** in collaboration with Joint Research Centre (JRC)
  - School year 2017-2018
  - Central topic: nuclear sciences and applications
  - Aim: broaden the view on nuclear sciences and applications enhance discussion
  - Focus on interactivity and team work
  - Kick-off event in Brussels 8/11/2017
  - First prize is two day visit in Ispra, Italy (JRC)



SCK·CEN & European Commission

Vous mettent au défi !

**Nuclear Game Challenge**

Événement kick-off

Mercredi 08/11/17, 13h45-18h30

Muséum des Sciences naturelles

Bruxelles

Informations et inscription  
highschools.sckcen.be



## Contact

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**SCK•CEN**

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Centre d'Etude de l'Energie Nucléaire  
Belgian Nuclear Research Centre

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