

**Monitoring of drinking  
water : search for  
“reasonable” level in  
Belgium after a few years  
of surveillance programs.**

# 1. Background

- **2013/51/Euratom (22/10/2013) (DWD)**

Council directive laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption

- Monitoring of drinking water in Belgium :

**Regulatory decision making-process :**

- Reference level for public in Belgium → 1mSv/y as well for planned exposure situations as for existing exposure situation
- Typical personal dose for everyone from natural background : 2,5 mSv/y
- Total Indicative dose : 0,1 mSv/y → **prudent level**

# 2. Prevent doses

- What is adequate?
- What is reasonable ?

- Actions commensurate to the level of risk
- Risk perception

# 2. Prevent doses

## What is adequate ?

Societal aspects:

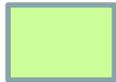
# BELGIUM- Communities



Flemish Community (Dutch)



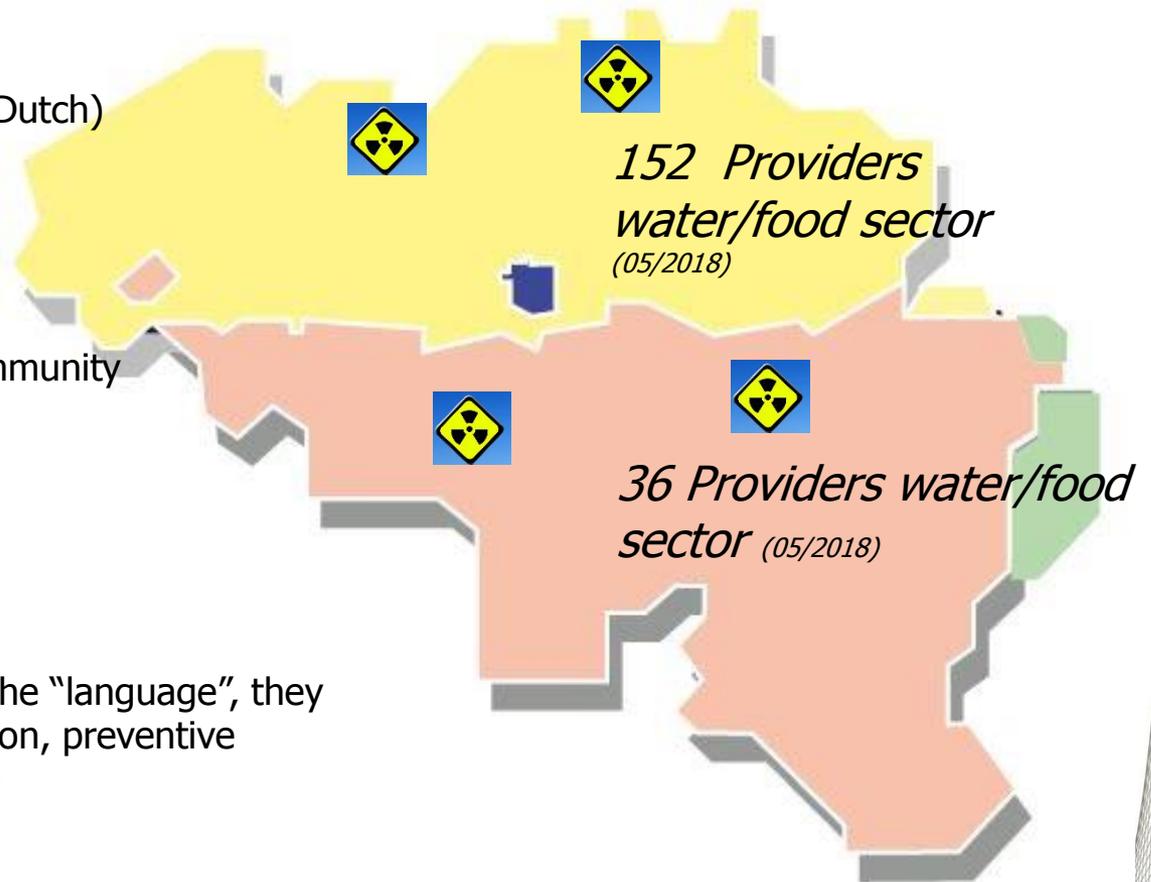
French Community



German speaking Community



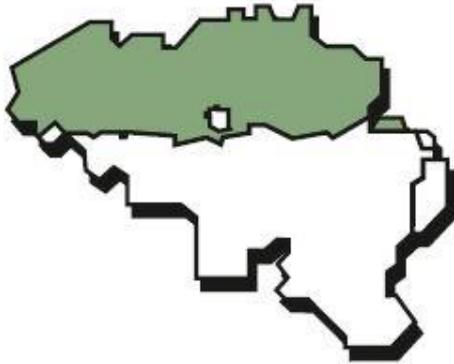
Dutch & French



The communities are based on the "language", they have powers for culture, education, preventive medicine, scientific research, ...

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# BELGIUM - Regions



Flemish Region



Walloon Region



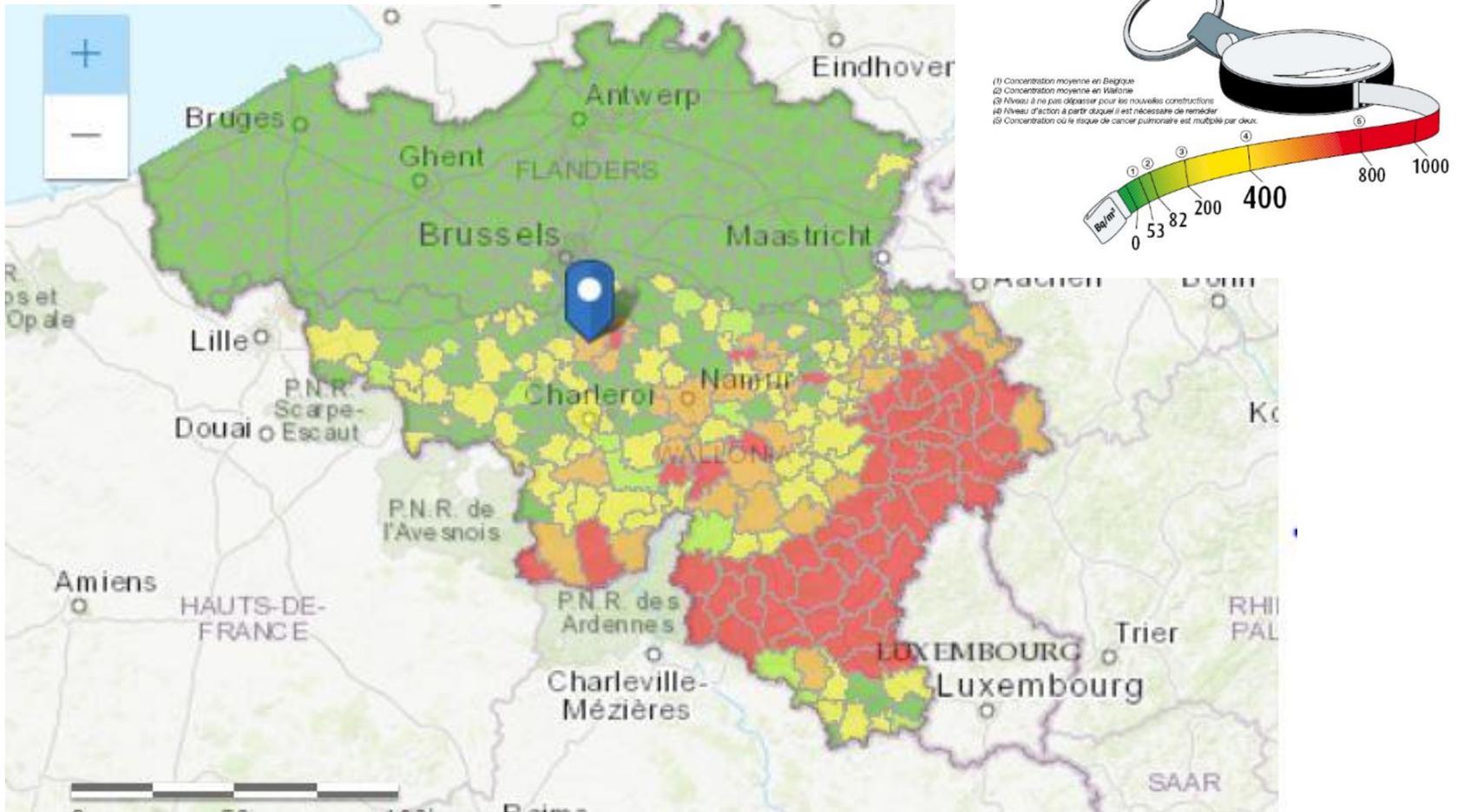
Brussels-Capital Region



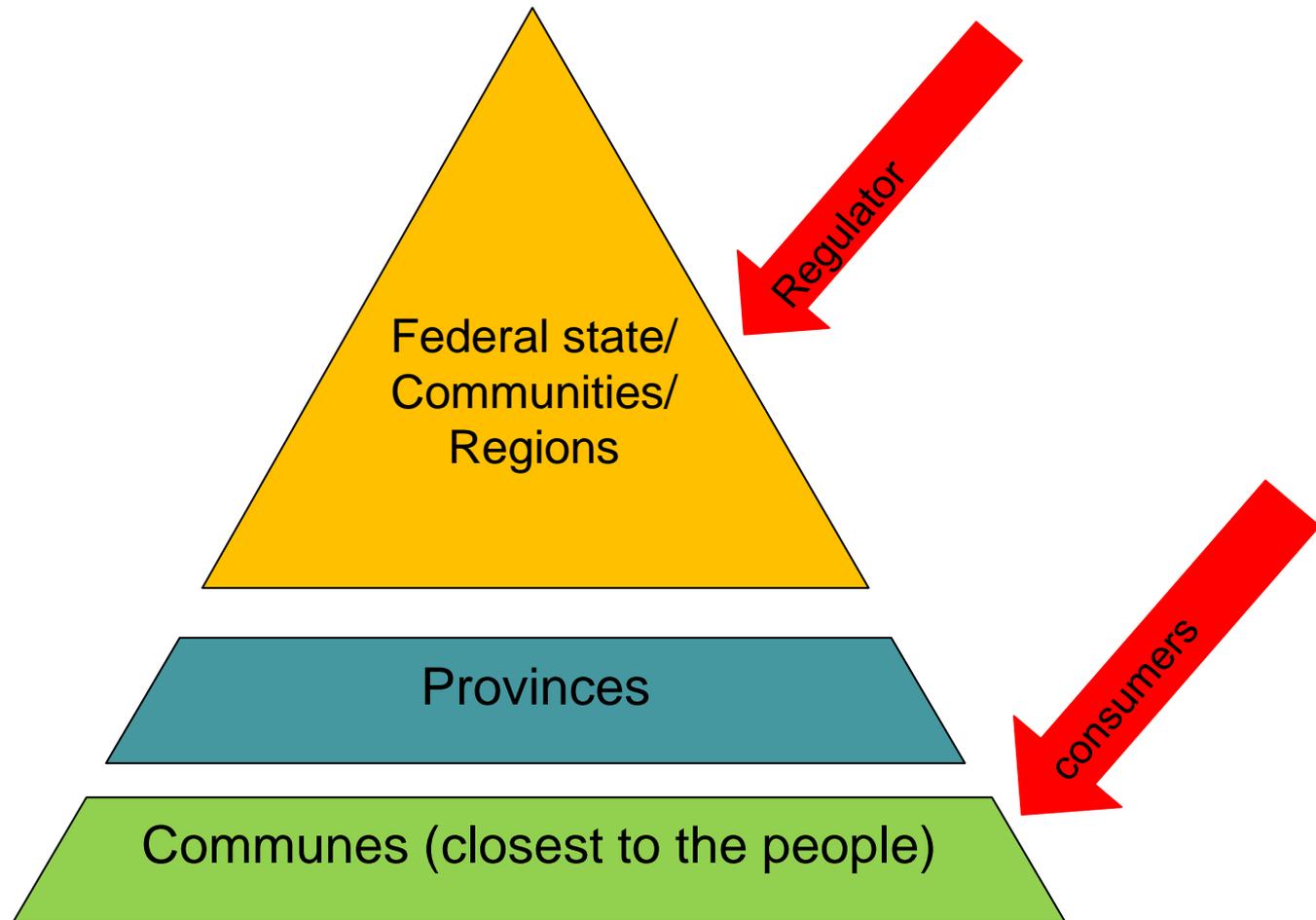
Regions have power in fields that are connected with their region or territory ( agriculture, water policy, environment, nature conservation ... )

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# Concentration of radon: natural source



# Federal State and the power levels



At the top level, we find the Federal State, the Communities and the Regions, all three of which are equal from the legal viewpoint. They are on an equal footing but have powers and responsibilities for different fields.

# Risk-management in DWD

→ Risk can vary with different people's opinions and perception

→ Stakeholders in the process :

Having conflicting risk assessment methods

→ not helpful when engaging the public in the process

→ Holistic view of risks

**→ Prudence in radioprotection**

# Stakeholders

- Legal contributors
  - mandatory consultation process
- Authorities for public information
- Providers
  - Water
  - *Food Industries*
- Laboratories
  - (exposed workers, radiological impact on workers<<<)
- Public

# Types of water

- Ground water (GW)
- Surface water (SW)
- Mixed origin for water in Belgium (GW+SW)
- D, F, NL
- Food Sector : contact water, incorporation water (**more restrictive DWD**)

# Public perception

- **Federal Agency for Nuclear Control (radioprotection) :**
  - Types of water : SW, GW, IW, SW, GW
  - Same concept : incorporation and contact water in food industry
- Exceeding parametric values
  - 1) remedial actions for providers } Potable water
  - 2) dose assessment }
  - 3) **If** continuing exceeding parametric values → **Undrinkable**
- **Federal Agency for the Safety of Food Chain :**
  - Types of water : SW, GW, bottle water, Food industry,...
  - Same concept : incorporation and contact water in food industry
  - Exceeding parametric values → **Undrinkable**

can be misinterpreted → *loss of public confidence*

# 2. Prevent doses

**What is reasonable ?**

# Estimation of confidence level in FANC

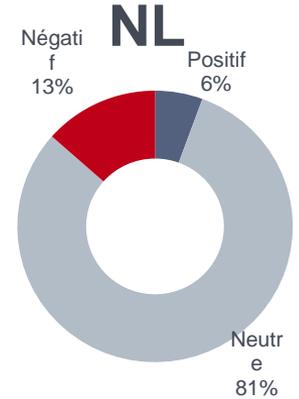
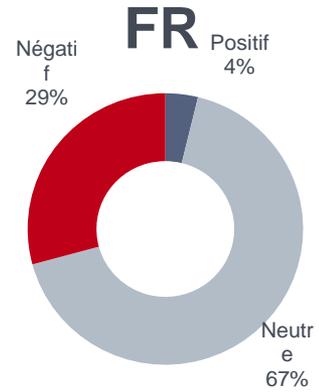
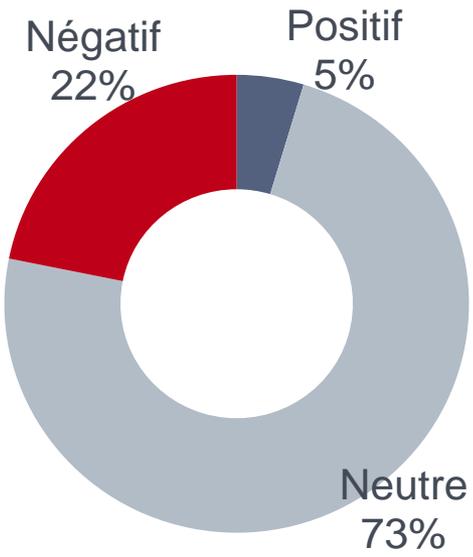
- 2014 – Survey : SCK Mol, Media barometer
- 2016- Survey : Mediascore impact – The Cube Monitoring from 01/2015 to 31/12/2015
- 2017 – Survey : FANC's Dept communication

# Visibilité globale

2016

2.065 articles/sequences pour 365.182 points Mediascore

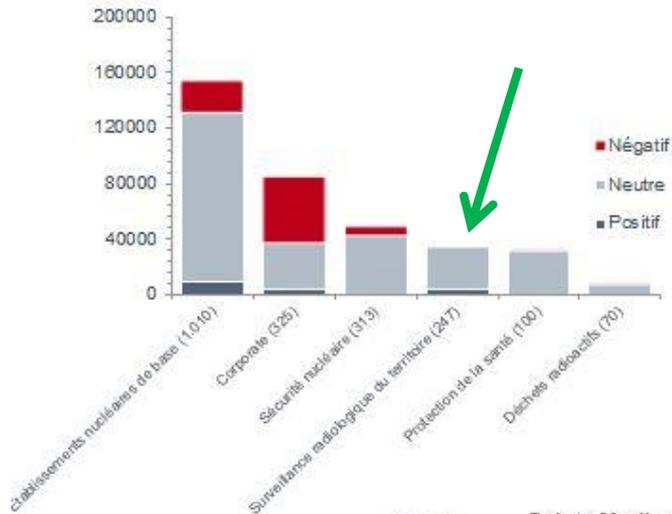
- ⊕ 17.006 points Mediascore
- 268.435 points Mediascore
- ⊖ 79.740 points Mediascore
- ▷ 365.182 points Mediascore



- ⇒ L'impact médiatique de l'AFCN dans les medias belges est d'ordre factuel essentiellement. Les rédactions s'en tiennent la plupart du temps à l'information pure, sans émettre d'opinion pour ou contre l'Agence.
- ⇒ La visibilité globale de l'AFCN en 2016 recule par rapport à 2015, de 414.696 à 365.182 points Mediascore (-11,94%).
- ⇒ La proportion de l'engagement qualitatif augmente quant à lui, puisque le négatif et le positif représentent 27% de l'impact global en 2016, contre 19% en 2015.
- ⇒ C'est le négatif qui augmente dans les plus fortes proportions, de 68.141 à 79.740 points Mediascore (+ 17,02%).
- ⇒ La visibilité positive de l'AFCN progresse néanmoins, de 10.819 à 17.006 points Mediascore (+ 57,19%).

# Visibilité par groupes de sujets

2016



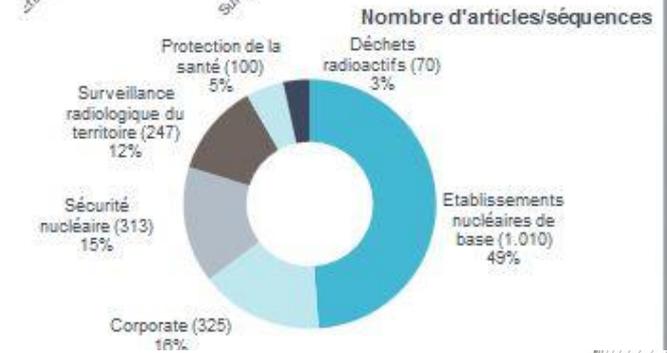
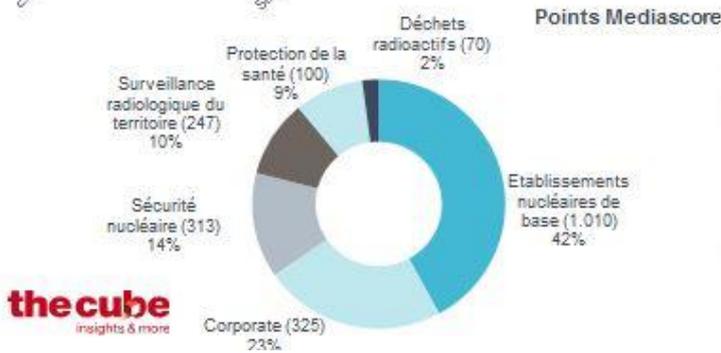
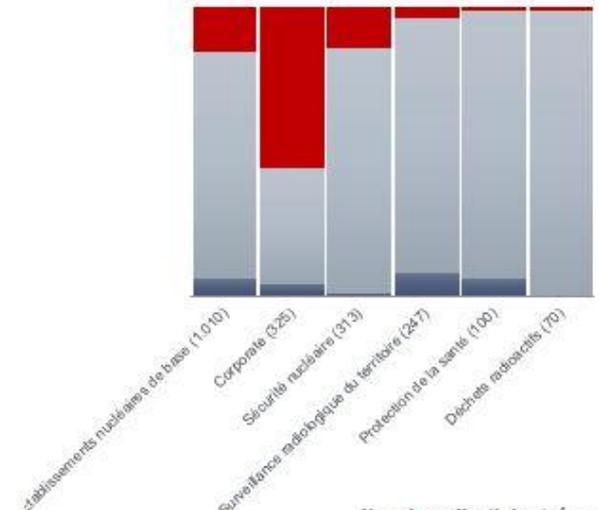
Le groupe de sujets Etablissements nucléaires de base récolte 42% de l'impact total en termes de points Mediascore, 49% en termes de nombre d'articles/séquences;

Si le groupe de sujet Corporate est moins visible (23% en termes de points Mediascore, 16% en termes de nombre d'articles), en revanche il est nettement plus négatif que n'importe quel autre groupe de sujet au cours de la période étudiée (audit interne);

Le troisième groupe de sujets, Sécurité nucléaire représente 14% de l'impact en points Mediascore, 15% en nombre d'articles/séquences. L'engagement qualitative est essentiellement négatif.

Le quatrième groupe de sujets, Surveillance radiologique du territoire (10% en points Mediascore, 12% en nombre d'articles) est le plus positif pour l'AFCN, avec Protection de la santé;

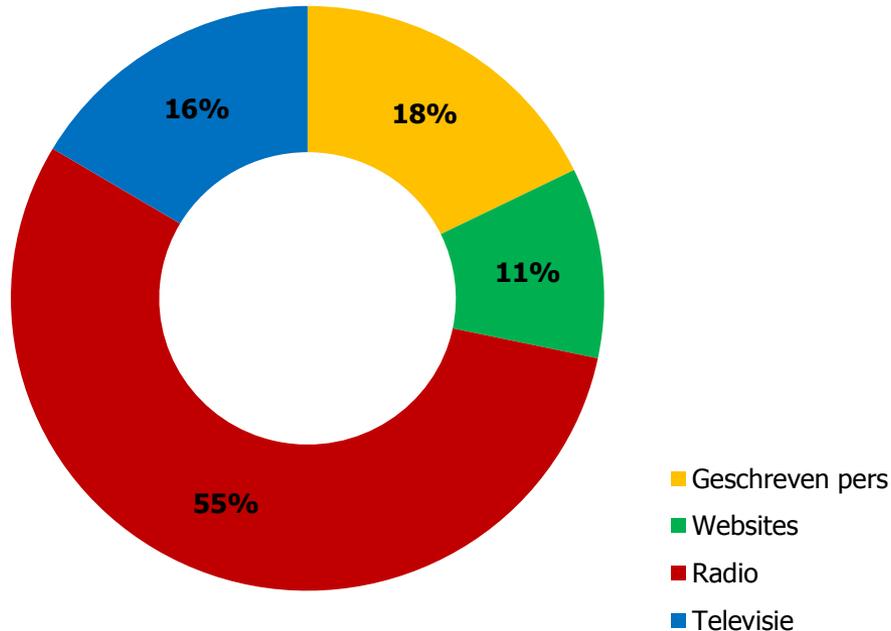
De manière générale, les "petits" groupes de sujets sont plus visible en 2016 qu'auparavant.



the cube  
insights & more

# 1<sup>st</sup> semester 2017

## Media's Repartition



1. L'Avenir
2. De Standaard
3. La Dernière Heure
4. La Meuse
5. De Tijd

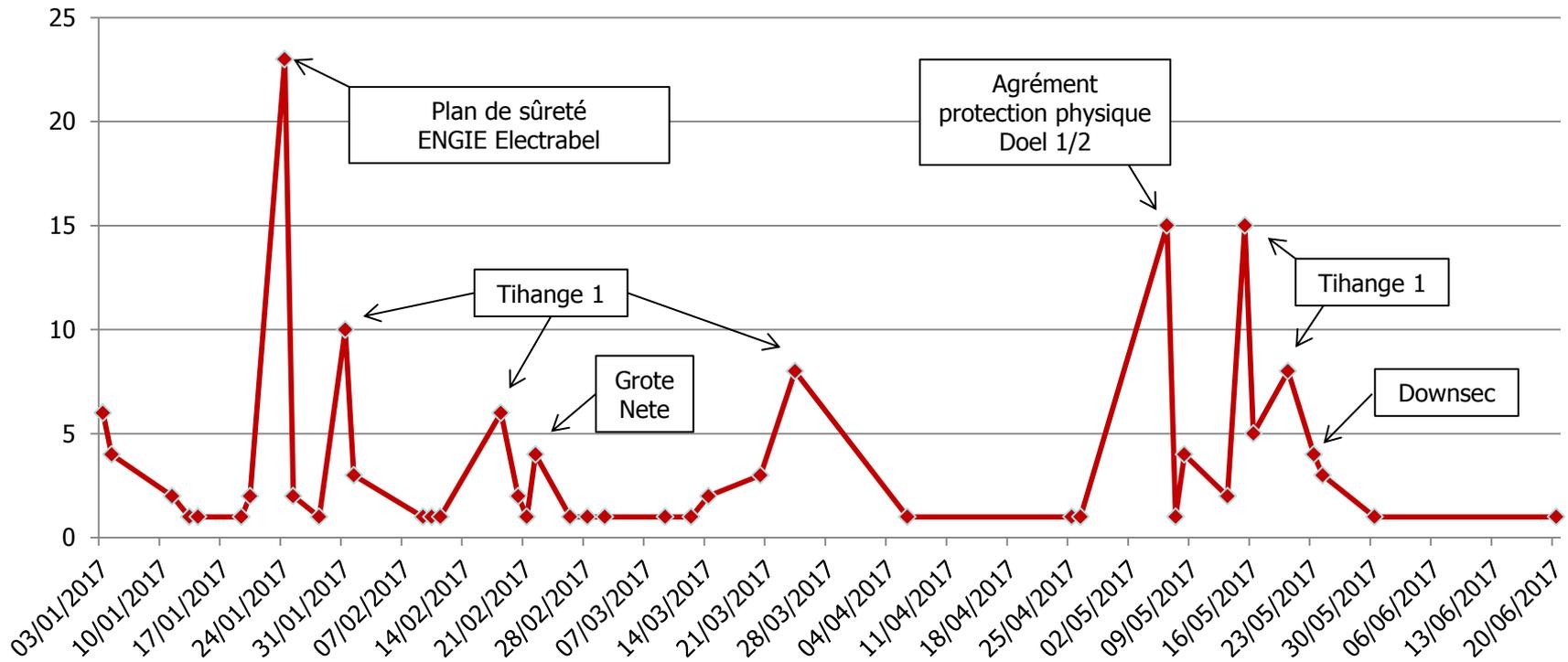
1. VTM
2. VRT Eén
3. TV Oost
4. La Une
5. RTL TVI

1. La Première
2. Vivacité
3. VRT Radio 2
4. VRT Radio 1
5. Bel RTL

Midi du Personnel - Personeelsmiddag | 26/06/2017

# 1<sup>st</sup> semester 2017

## Evolutie van het aantal artikels/reportages



Midi du Personnel - Personeelsmiddag | 26/06/2017

# Risk-Management

- Risk-management is focused on non-radiological hazards
- Radiological risk is rarely dominant
  - Public's information
    - Federal Agency for the Safety of Food Chain : 35 communications in July 2018 (≠ DWD)
    - Federal Agency for Nuclear Control : 3 INES in June 2018 – 4 communications in July 2018 (≠ DWD)

→ *What is the influence of (wrong ?) public perception in the "reasonable" criteria?*

→ **Prudence in radioprotection = Reasonable**

# 2. Prevent doses

**What is reasonable ?**  
Economical aspects

# Prudence in RP : all and for everybody

- Superior Health Council :  
asked to consider the Total Indicative Dose for children and adult → well known variability with age (ICRP60-1991)
- Economical and political considerations of the Parliament → **NO**
- FANC  
→ Radiological assessment if non-conformities (case by case)

# Prudence in RP : all and for everybody

- Estimation of the financial cost after 2 years of measurement:

0,01 cent/m<sup>3</sup> → level of ~~consumer~~

→ Financial cost for the providers: Polluter pays ???

from 10.000 € to 100.000 €

→ Difference between providers ***not acceptable***  
(belgian constitution)

→ Appeal from some providers

Legal uncertainty

# 3. Outcomes (2015)

- *Total Indicative Dose* : 0,1mSv was set as a prudent level. **Legal compliance**
- Typical personal dose  $\sim 2,5$  mSv/y for everyone from natural background
- No unnecessary risk – Prudence
- Equity in the distribution of public's exposures

# 3. Outcomes

- No capacity to intervene on the source
- If the parametric values *are and stay* exceeding, a dose impact study is required
- Fanc is providing advice on radiological aspects

# 3. Outcomes (06/2018)

- 152 providers from Flemish Region
  - 36 providers from Walloon Region
    - Providers with  $\text{vol} < 100 \text{ m}^3$
    - Providers with more than 300 points of controle
- 2 cases of exceeding parametrics values  
Ra 226 – (GW)

# Experience gained

- No exposed workers
- Acceptable level of risk
- Increasing of collective dose for public <<<<<
- Health detriment ? No evaluation tool
- Communication to the public:
  - Evaluation of level of confidence at FANC
  - No systematic demonstration of compliance in DW (annual reports, web)
- Prudence in RP too expensive and dependent for the providers (legal uncertainties)

# Issues to be addressed

- Solve the legal uncertainties → Member State
- Consider the economical aspect for providers  
→ the plaintiff contribute to the risk assessment
- Revision of the decision tree to decrease the number of control

# Revision of system of radioprotection

- Exchanges FANC and laboratories:

Frequency of control

Nature of risk	Criteria for frequency
Min	1
Radon risk	+ 0,25
Nuclear Power plan	+ 0,25
Risk (local circumstances, Pb, ...)	+ 0,25
H <sup>3</sup>	After geological analysis and no NPP – no control

# Revision of control frequency

- Approach on the existing framework at regional level
  - systematic collaboration between authorities
- Approach on the existing framework at food industry control
  - (radiological risk integrated in the other risks)

# Conclusions

- Prudence

In practice, prudence merges into conservatism

As RP professionals we have accepted 'conservatism' too bindly

- It is important to think consciously about 'how much' conservatism is appropriate

# Conclusions

- The system of protection cannot be based solely on science but it must take account of ethical judgments and experience – (Roger Coates, IRPA President)