

**NTW Seminar on Nuclear  
Emergency Response &  
Preparedness – Paris, 6-7 Feb 2014**

**Review of European  
Challenges for EP&R**

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**In the end, there always remains a degree of risk that you can reduce through retrofitting and investments. But you can never completely eliminate it**

**Günther Oettinger, EU Commissioner for Energy**



Chernobyl 1986



Fukushima 2011

# **Max Planck Institute, May 2012**

## **New risk evaluation after Fukushima**

- Probability of a INES-7 scale accident is 200 X higher than estimated before Fukushima**
- We can expect a catastrophic nuclear accident every 10-20 years**
- Western Europe has the worldwide highest risk of radioactive contamination caused by a major nuclear accident**

# Despite Chernobyl and Fukushima...

**EP&R remain based on the assumption that the worst possible accident in a European NPP is INES-5**

Cfr. Three Mile Island, Harrisburg, 1979

- Limited off-site contamination
- Forced evacuation of pregnant women and children from 8 km zone (5 miles) for 12 days
- >200,000 citizens in 30 km zone spontaneously left their homes

# 21 nuclear power reactors in and around Belgium

GREENPEACE



**Doel: 4**  
**Tihange: 3**  
**Borssele: 1**  
**Gravelines: 6**  
**Chooz: 2**  
**Cattenom: 4**  
**Mol: 1**

GREENPEACE

[www.greenpeace.be](http://www.greenpeace.be)

## Number of residents in 30 km zone

- Chernobyl : 116,000
- Fukushima : 170,000
- Tihange : 840,000
- Doel : 1,500,000

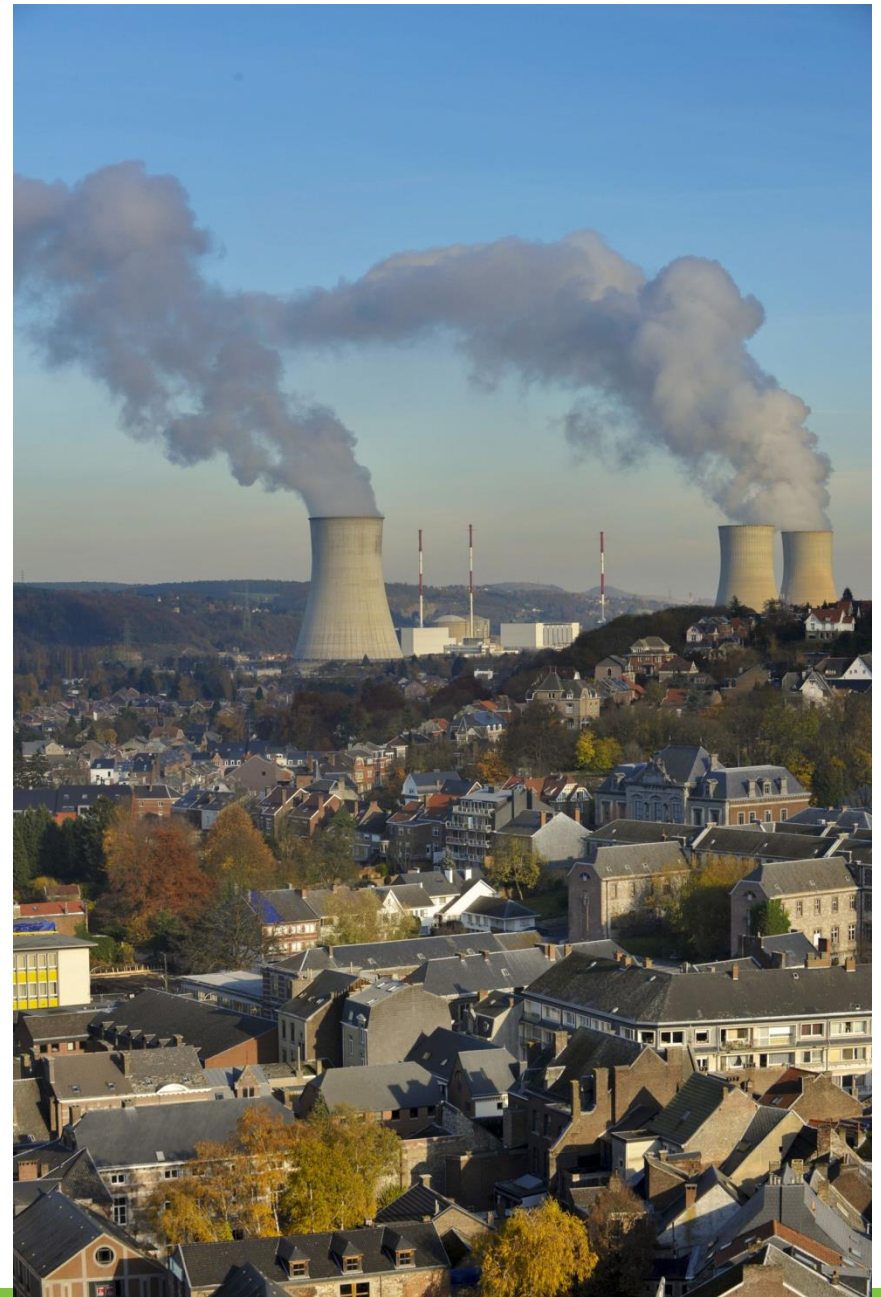
**Europe = very high population density +  
high NPP concentration**

# Antwerpen at 12 km from Doel



# Tihange at

- 3 km from Huy
- 22 km from Liège
- 26 km from Namur





# Belgian Nuclear Emergency Plans

## **Federal framework 2003 :**

- Plan d'Urgence Nucléaire et Radiologique pour le Territoire Belge

## **Provinces :**

- ➔ Plan Particilier d'Urgence et d'Intervention(PPUI)

# Nuclear Emergency Plans are Inadequate and outdated

- Intervention area remains limited to :
  - sheltering and evacuation : **10 km**
  - predistribution iodine tablets: **20 km**

**This does not reflect the reality of a major nuclear accident in a densely populated region**

**Lessons from Chernobyl/Fukushima are completely neglected**

# Nuclear Emergency Plans are Inadequate and Outdated

Government neglects its own nuclear safety authority

***“ ... des comprimés d'iode pourraient se révéler nécessaires (...) à des distances allant jusqu'à plusieurs dizaines de km. La notion de zone sans risque devient donc pratiquement virtuelle et il y aura lieu de prévoir la possibilité d'approvisionnement en iode en pratique sur l'ensemble du territoire.”***

Source: Smeesters, e.a.: “Accidents nucléaires et protection de la thyroïde par le iode stable”, AFCN/FANC, Mars 2011.

# Nuclear Emergency Plans are Inadequate and Outdated

## PPUI Prov. Antwerp

### 4 evacuation centers:

- Sport arena
- Old WW-I fortress
- Old abattoir
- Civ.Prot. Brasschaat

→ 2 are ruins

→ All are within 14-20 km  
from Doel



# Nuclear Emergency Plans are Inadequate and Outdated

***“All persons and vehicles leaving the emergency area need to be controlled and decontaminated”***

Cfr: - 500.000 people in Antwerpen  
- 200.000 people in Liège



# **EP&R exercises still take TMI as reference**

**Efficient EP&R must be more than a list of intentions:**

- Equipment for checking and decontamination of > 1 million people**
- Evacuation infrastructure 1 million people**

**This implies consequent training of intervention teams, but also teachers, nurses, social workers, journalists,... and the public !**

# Emergency exercises are not realistic

- They do not involve the public (psychological factor)
- No real time effective evacuation exercises
- Fukushima : evacuation of Futaba hospital very problematic after staff run away
- => Antwerp, at 12km from Doel NPP: 16 hospitals, 4.500 beds (how and where to evacuate them?).

# **Example: Exercice de crise nucléaire à Gravelines, 18 Jan 2011**

## **Conclusions of CLI-Gravelines:**

- Citizens are insufficiently informed;**
- Exercise scenario is not realistic;**
- PPI is too restricted;**
- Evacuation centres are too close to NPP**

**Contrary to Gravelines : civil society is not allowed to participate, even not as observers**



# Main findings

- 1. Major nuclear accidents (INES-7) can happen everywhere at any time**
- 2. Europe high concentration of nuclear power stations and high population density**
- 3. Nuclear EP&R planning is outdated and inadequate to deal with the real impact of a major nuclear catastrophe**
- 4. Lessons from Chernobyl and Fukushima are ignored by the authorities**

# CONCLUSION

**European  
governments neglect  
their duty to protect  
its citizens in the  
event of a severe  
nuclear accident**