



Flanders
State of the Art

Hydrogen projects in Flanders:

- Situation
- Risk assessment at the moment

Bruno Reiners

Team Environmental Effects – External Safety

DEPARTMENT OF
**ENVIRONMENT
& SPATIAL
DEVELOPMENT**



Background

Flemish Administration, Department of Environment & Spatial Development

Merge of the Department Spatial Development & Department Nature, Environment & Energy

Our Mission:

“To play a central role in the preparation, the optimisation and evaluation of the Flemish external safety policy and to cooperate in the implementation of this policy. (linked to Seveso Directive)”

Responsibilities:

- Expertise center on external safety
- Prepare and maintain guidelines for safety reporting
- Quality control of safety reports
- Advice on the environmental permits of vulnerable objects and possible sources of risks near Seveso-establishments

Situation in Flanders

Industrial domain



Industrial domain



Public domain

Licensing of (Seveso) establishments in Flanders

- ▶ **Quantitative Risk Analysis (QRA):**
 - × Calculation and visualisation of iso-risk contour plots, calculation of the societal risk and visualisation of a F-N-curve.
 - × assessment of the severity of the risk against criteria described in a code of good practice
 - Localized risk criteria
 - A societal risk criterion
- ▶ **Reasoning for other projects is based on the same philosophy**
 - × QRA mindset written in Flemish BAT (BBT)
 - × Or Safety study: Criteria QRA

Licensing of (Seveso) establishments in Flanders

- ▶ **Seveso site:**
 - × Safety report (high tier)
 - × Safety study (low tier)
- ▶ **Hydrogen fuel station (analogue for LNG, CNG)**
 - × No Safety study when fully compliant in Flemish BAT (BBT)
 - × Or Safety study: deviation of BAT
- ▶ **Other H2-projects:**
 - × Safety study

Licensing of hydrogen stations Flanders: BAT or safety study

BAT-study for Hydrogen filling stations (2020)
Full report only available in Dutch



RISK CALCULATIONS MANUAL

Guidelines for quantitative risk analysis,
indirect risks and environmental risk analysis

Created for Safety report: High Tier Seveso

Localized risk criteria

SEVESO SITE

- o 10-5 /j: Plot boundary
- o 10-6 /j: Residential area
- o 10-7 /j: Vulnerable locations



Filling station (Hydrogen, LPG)

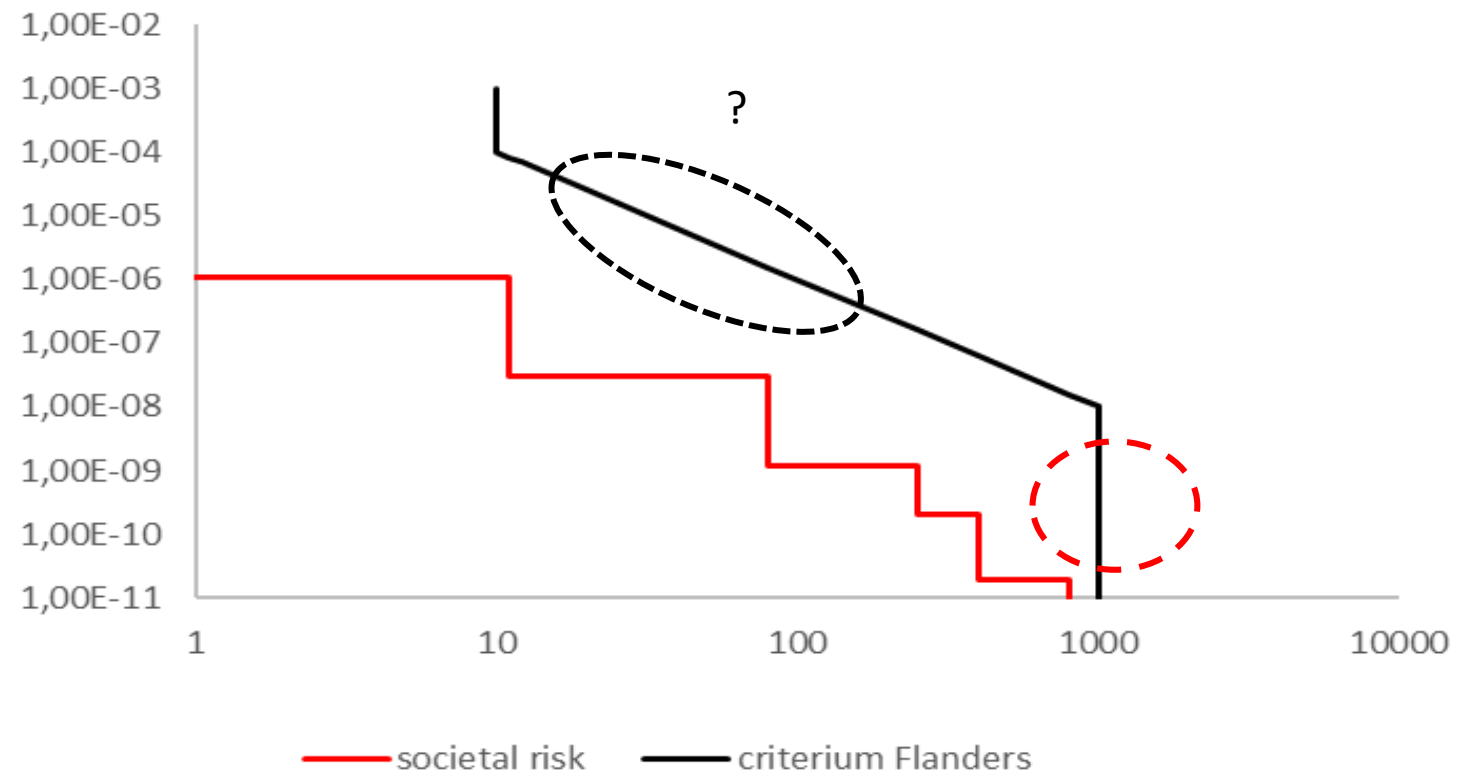
- o ~~10-5 /j: Plot boundary~~
- o 10-6 /j: existing/potential home, buildings other, not belong to the establishment, with regular occupancy by people
- o 10-7 /j: Vulnerable locations + child day care

Filling station (CNG/LNG)

- o 10-5 /j: Plot boundary
- o 10-6 /j: existing/potential home, buildings other, not belong to the establishment, with regular occupancy by people
- o 10-7 /j: Vulnerable locations

Societal risk criterion

SEVESO SITE = FILLING STATION



Example 1: Hydrogen fuelstation – H2 pipeline

- ▶ Discussion Flemish criteria (fail rates) are too conservative for hydrogen vs US:

- ▶ CAN BE SHARED ON REQUEST: bruno.reiners@vlaanderen.be

Example 2: High tier SEVESO Hydrogen production

▶ CAN BE SHARED ON REQUEST: bruno.reiners@vlaanderen.be

Example 3: Liquid Hydrogen (fuel station)

- ▶ CAN BE SHARED ON REQUEST: bruno.reiners@vlaanderen.be

Summary

- ▶ Hydrogen: not new, but other settings
- ▶ Generalistic approach versus specific
- ▶ Mixing of procedure: BAT, SEVESO, Other legislation
- ▶ What with public domain, transport ?
- ▶ Where are you going to locate? More Urban planning?
- ▶ Learning from other nations, different approaches, sharing of knowledge

Thank you for your kind attention

bruno.reiners@vlaanderen.be