



Rijkswaterstaat
*Ministry of Infrastructure and the
Environment*

The Final Countdown

Successful remediation policies
leads to the end of the Dutch
Soil Protection Act

Co Molenaar,
Margot de Cleen
Michiel Gadella



1980's





2010's





Outline

- Development of soil policies in the Netherlands
- Remediation policy: focus on sites with unacceptable risks
 - Period 2009-2015 → unacceptable human risks
 - Period 2015-2020 → unacceptable risks for the groundwater and ecology
- New legislation
- Lessons learned



Soil policy development: 1980's

- Emerging site Lekkerkerk
- Policy response:
prevention, inventory of contaminated sites and multifunctional remediation of all sites
- Distinction between new and historical contamination (1987)



Soil policy development: 1990 -2000

- Inventory depicts magnitude of soil contamination
- Policy evolution: prevention, inventory of contaminated sites and functional remediation of sites
- Combine remediation with spatial development
- Decentralization: 42 competent organizations
- Prioritization with Sanscrit (CSOIL)
- Remediation at a natural moment (except urgent sites)
- Special programs for gasworks, filling stations, railways, dry cleaners.
- Gentlemen's agreements with government, competent authorities and industry (2001)
- Governmental funding: 100 million Euro/year



The Dutch Inventory of potential contaminated sites

- Research in archives: all sites where potentially polluting activities did take place in the past (> the year 1850)
- Provide all local and regional governments with a 'soil-data-system'
- A model for ranking the sites: UBI-model
- A model to monetize the effort



Results inventory 2010

- 1,7 million permits for polluting activities
- 760,629 sites with soil-information
- 420,000 potential contaminated sites
 - 20,000 dump sites
 - 100,000 private oil storage tanks
 - 100,000 filled up canals
 - 200,000 industrial sites
- 380 gasworks
- 2,000 dry cleaners
- 50,000 petrol stations
- Geography and stakeholders are known
- Total costs: 10 to 20 billion Euro



Development of estimated workload





Soil policy development 2010-2020

- Focus on sites with unacceptable risks: the final countdown of historically contaminated urgent sites
- One integrated law for the environmental and spatial planning, aim:
 - Soil-sediment-water system can contribute to societal challenges
 - Prevention as ever first!
 - Soil remediation at a natural moment of redevelopment
 - Set of general rules for dealing with soil contamination





Execution program covenant 2009-2015

Agreement signed by:

Ministry of Infrastructure and Environment,
provinces, municipalities, water boards

Aim:

- Inventory of all sites with unacceptable risks
- Control or remediate all sites with unacceptable risks for humans
- Development of policies for regulation and stimulus of ecosystem services to fulfil societal challenges



Governmental budget:

- 690 Million Euro shared by 42 competent authority



Focus on sites with unacceptable risks

Inventory approach:

- Historical use of sites and potential for soil contamination based upon: archives, permits, areal photography
- Further selection of potential sites based upon specific parameters
- Actual investigation of sites
- End result of inventory:
 - 400 human health
 - 1400 migration to groundwater
 - 200 ecology

Sites with unacceptable risks for human health (2011)





Sites with unacceptable risks for humans

- 50 % of sites is public responsibility
- 50 % of sites is private responsibility
- Soil protection act: Obligation to start control risks within 4 years

Time	Finished	Countdown	Countup
Jul. 2011	0	404	0
Jul. 2012	98	306	98
Jan. 2013	39	267	137
Jul. 2013	38	229	175
Oct. 2014	48	181	223

- Additional 90 sites remediation is started since 2011
- 24 sites remediation before 2016 is uncertain (Finance/legal issues)



Execution program 2016-2020

- Extension of the program, same partners
- Separate agreement with industry
- Aim:
 - Remediation of sites with unacceptable risks for ecology or migration of contaminants into groundwater
 - Increase the contribution of soil-sediment-water system to societal goals (energy, drinking water, groundwater reserves, food production, cultural history, nature, climate adaption and mitigation)
- Governmental budget:
 - 550 Million euro is shared by 42 competent authorities





Urgent sites for ecology and groundwater

- Ecology: small number of sites
- Migration into groundwater, criteria:
 - $> 6000 \text{ m}^3$ & $> 1000 \text{ m}^3/\text{year}$
 - Sink or floating layer of contaminants
 - Nearby a vulnerable object
- Competent authorities:
 - Start of remediation before 2020
 - Integrated area-oriented approach of the plumes
 - Stimulate private owners to remediate their sites
- Program Management Team:
help, support and monitoring progress





Environment and Planning Act (2018)

- Soil Protection Act will be withdrawn
- Remediation of historical contamination at a natural moment of development.
- Direct remediation of new contamination
- Area based approach for groundwater plumes
- Outline:
 - Prevention first!
 - Development based approach for historical contamination
 - Fit for use
 - Generic rules
 - Tailor made integrated instruments for authorities



Lessons learned

- Distinction between historical and new contamination
- Long term political and financial commitment
- Strict preventative policy and legislation is essential
- Time: more than a generation to build up knowledge and conduct a thorough inventory
- Decentralised operation: capacity, spatial planning, owners
- Collaboration, monitoring and benchmarking
- Focus on sites with unacceptable risks
- Integrated legislation on the environment is a stimulus
- Results are accomplished without legal binding EU rules



Questions



Co.molenaar@rws.nl

Margot.de.cleen@rws.nl

Michiel.gadella@rws.nl