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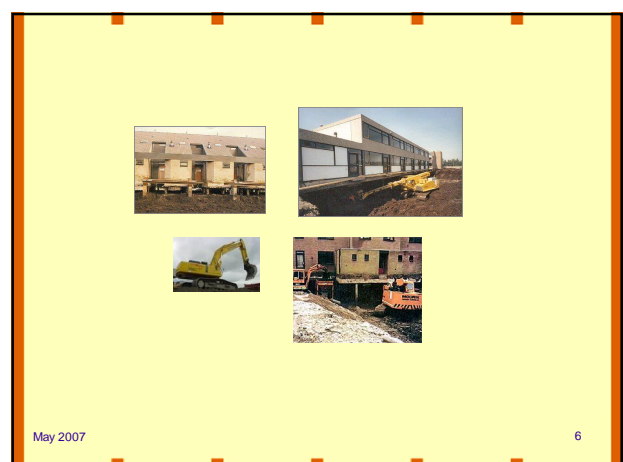
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- ## 1 START OF AWARENESS
- o In 1980 the Netherlands were badly surprised by a new phenomenon. It was called soil pollution.
 - o Before 1980 soil pollution was rather unknown.
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- ## THE VILLAGE OF LEKKERKERK
- o What happened in 1980? In a small village called Lekkerkerk a housing development project had been finished. The new houses were partly built on remnants of chemical waste!
 - o There was no legislation and no money to clean the soil under the houses.
 - o Yet a soil remediation took place.
 - o The costs were " 80 million, paid by the State of the Netherlands.
 - o The motive was: fear for risks (human and politic).
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After Lekkerkerk

- o National inventarisation of problem.
- o Two persons for each of twelve provinces.

Minister of Environment:

"The Netherlands are clean within 10 years"

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2 PERCEPTION OF PROBLEM

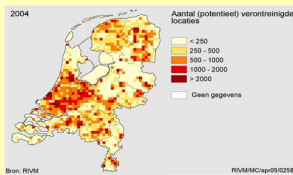
- 1980 The Netherlands are clean, with the exception of some polluted spots
- 1990 The Netherlands are polluted (diffusely) or heavily polluted (locally)
- 2000 We want an answer on the number of polluted sites
- 2005 We know the number

*So it took 25 years to know the truth!
And how long to clean the soil?*

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- o 600.000 sites suspected of soil pollution
- o Probably 60.000 need remediation



- o That is one suspected spot for every 27 inhabitants.
- o Or one suspected spot per 6 hectare.

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How long will it take to clean our soil?

National goals:

- o Urgent sites: safe in 2015.
- o Less urgent sites: safe in 2030.

Safe means:

soil has been remediated, or
risks have been taken away.

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3 REMEDIATION POLICY

- o **First:** clean the soil to a level suitable for many purposes (multifunctionality)
- o The big municipalities disagreed.

"It is not necessary to grow salad in the centre of our city"

Jan Cley,
Milieudienst
Amsterdam (1990)



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"Is it allowed that the city is more polluted than a pasture?"



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Yes, for the inhabitants of Amsterdam don't eat grass+



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Companies also disagree!



This results in a National Research Program Biological In-Situ Remediation Techniques, or NOBIS, payed by the Ministry of Economy.

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The Ministry of Environment starts discussions about a new soil policy

BEVER



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Basis for new policy:



approach: not sectoral, but integral
resulting soil: not suitable for many purposes, but suitable for a certain use (risk based)
decisions: not central, but decentral
actions: not only by authorities, but especially by the market
accompanied by: research programmes NOBIS and SKB

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Results of discussion

Make difference between:

- immobile pollution (common in topsoil)
- and
- mobile pollution (common in subsoil)



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IMMOBILE SITUATIONS

- o If the pollution in the soil is *immobile*, it is allowed to construct a suitable life layer+ of 1 m thickness.
- o The pollutant content in this layer should not exceed the level of the so called soil use values (risk based).

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- o Four different forms of landuse:
 - I houses and intensively used (public)green,
 - II extensively used (public) green,
 - III buildings and pavement,
 - IV agriculture and nature
- o Future: more forms.

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Life layer

OPTION 1

Remove the most polluted part of the soil, to achieve that the remaining soil meets the requirements of the soil use value.



OPTION 2

Place on top of the polluted soil a new layer of soil, meeting the requirements of the soil use value.

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Parameter	Target value	Soil use I	Soil use II	Intervention value
As	29	40	40	55
Cd	0,8	1	12	12
Pb	85	85	290	530
Zn	140	350	720	720
PAH	1	2	40	40

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Policy of Ministry of Agriculture:

- o No demands on level of contaminants in soil, but in food (*also risk based*).
- o Farmer is responsible for the quality of his soil and his products.

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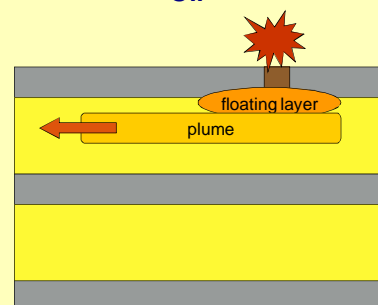
MOBILE SITUATIONS

- o If the pollution in the soil is *mobile*, removal is the first option.
- o Remnants of pollution in the soil are allowed, provided that there is no dispersion and there are *no risks*.
- o Exceptions are possible.

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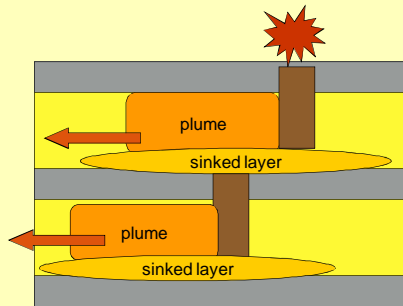
Oil



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Chlorinated solvent



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4 SOIL LEGISLATION

- 1983 Soil Remediation Law
- 1987 Soil Protection Law
- 1995 Soil remediation in Soil Protection Law
- 2005 New policy in Soil Protection Law
- 2007 More new policy in Soil Protection Law

So it took about 25 years to finish the law!

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5 DECENTRALISATION

- o In early times the provinces were the central authorities for soil matters.
- o Later our big cities got the same rights.
- o More tasks will go to the smaller municipalities, in order to combine the necessary developments with soil remediation.

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6 FINANCIAL ASPECTS

- o " 18 miljard
- o Central government pays
- o " 4,5 miljard

	Regular	Banknotes
yi (one)	一	壹
er (two)	二	貳
san (three)	三	叁
si (four)	四	肆
wu (five)	五	伍
liu (six)	六	陆
qi (seven)	七	柒
ba (eight)	八	捌
jiu (nine)	九	玖
shi (ten)	十	拾



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7 EXPORT OF SOIL POLICY

- o In 2004 a Dutch soil delegation visited China, to discuss possible solutions for the huge soil pollution.
- o Since then contacts have been intensified, mainly by meetings of Chinese and Dutch experts.
- o The idea is to start a Soil Technology Centre in Nanjing, in cooperation between China and The Netherlands.
- o The Dutch expect to export their policy, knowledge and practice to China and other countries.

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China:

- o Soil pollution is on the national agenda, because of the contamination of food due to soil pollution.
- o It is focussed mainly on agricultural area.
- o A national soil survey is going on, to produce national soil quality maps.
- o Attention for soil pollution due to industrial activities is growing. That is not easy:
 - 1 the land is owned by the authorities
 - 2 the company was owned by the authorities
 - 3 the licence was given by the authorities
 - 4 authorities prefer developments above a clean environment

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8 FINAL REMARKS

Developments:

- o European Soil Strategy: usefull document.
- o European Soil Guideline: all memberstates like a Guideline, with exception of the Netherlands.
- o Not only chemistry, but also biology and fysics.
- o Not only total contents, but also availability.
- o Our National Auditor thinks that the national goal to have finished remediation of urgent sites in 2015 is not realistic.

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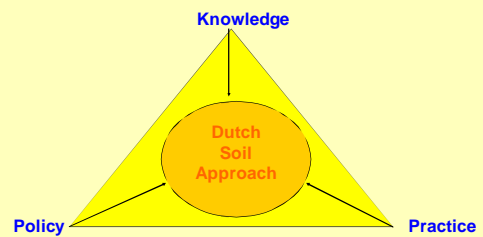
Psychology:

- o How does it feel to live on a polluted site?
- o And if experts tell you that there are no risks?
- o And if your child is getting ill?
- o Is it wise to build houses on former waste disposal sites, even if there are no risks?

Facts are facts, but perception is reality+

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Thank you for your attention.

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