SESSION 6 - FUTURE LAND CONTAMINATION

CHAIR: MR. ANDREAS BIEBER, GERMANY
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LESSONS LEARNED FROM CONTAMINATED SITES

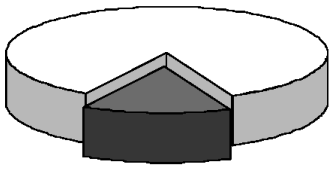
Speaker: ***Mr. Andreas Bieber***
Federal Ministry for the Environment
Germany

Concept for Sustainable Management of Land

- Effects of the past and current treatment of soil and land (have led to “contaminated sites” and “land consumption”).
- Reasons for a change in behaviour towards soil and land
- Idea, how a change could be realized

Identification and Registration

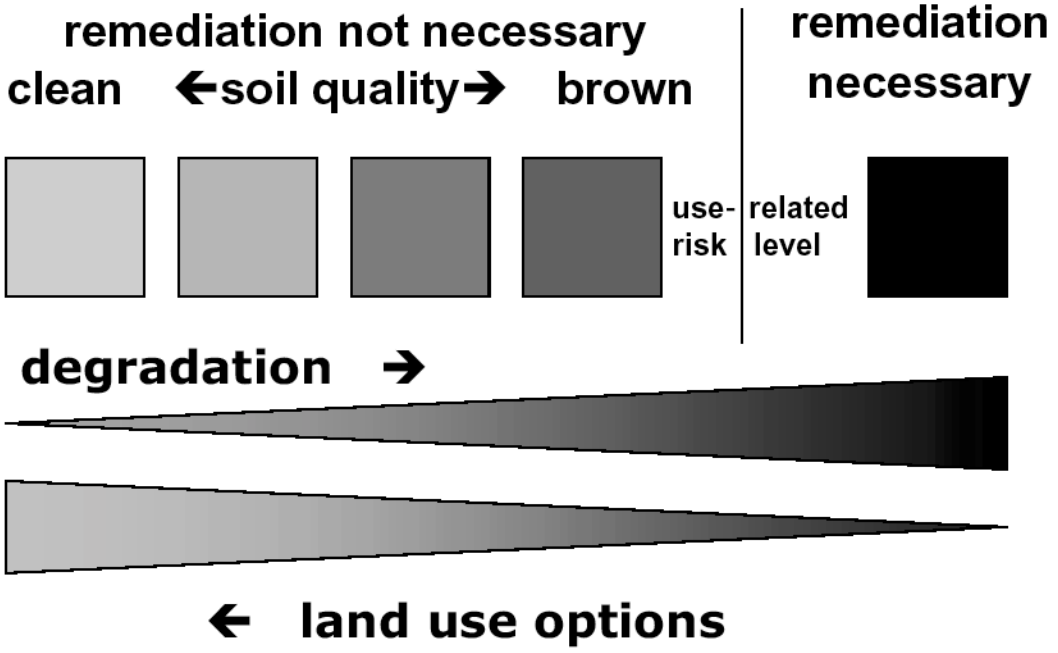
- More than 360,000 sites are registered in Germany as suspected to be contaminated.
- Estimation: 10-15% will need remediation after detailed investigation and assessment.



And the rest (85-90%)?

Are those sites clean?

Not necessarily!



Reasons for Site Contamination

How was it possible that contamination could happen?

- Did people act inexcusably?
- Did they act against the law or against knowledge?
- Did they accept the damages consciously?

Probably only in rare cases

- Dominant was the opinion that nature would cope with the contaminants, would “naturally attenuate”.

Limits of Knowledge

But ... the opinion was wrong.
The knowledge was wrong or insufficient.

Knowing today that the past knowledge was insufficient, can we be sure that the present knowledge is sufficient?

- Are we today producing the contaminated sites of tomorrow?
- Are there definable limits for ineffectual contamination?

Land Consumption

- Settlement development and
- 150 years of industrial activity

➡ Influence on the landscape and the soil

➡ 12% of the ground in Germany is used

- The need for land use is still growing.
- Pressure on agricultural land and on previously unused land.

From Quantity to Quality

Necessity is seen to limit the growth:

- to 10% of the previous growth, or
- up to 0% in the long run.

➡ Aim : Reducing the quantity

But: 20 years of discussion and no solutions

Quantity approach:

- no distinction between different kinds of land use (parks, gardens, housing, traffic, industry)
- focus on minimization

Quality approach:

- taking into account that soil is stressed differently according to its use;
- focus on degradation prohibition.

Sustainable Development

Requirements of sustainable development:

- future kinds of land use adaptable to future needs
- land use changeable without big efforts
- to prevent the persistent degradation of land quality
- to preserve the quality of borrowed resources

➡ Risk-based, land use related remediation obligations are not sufficient.

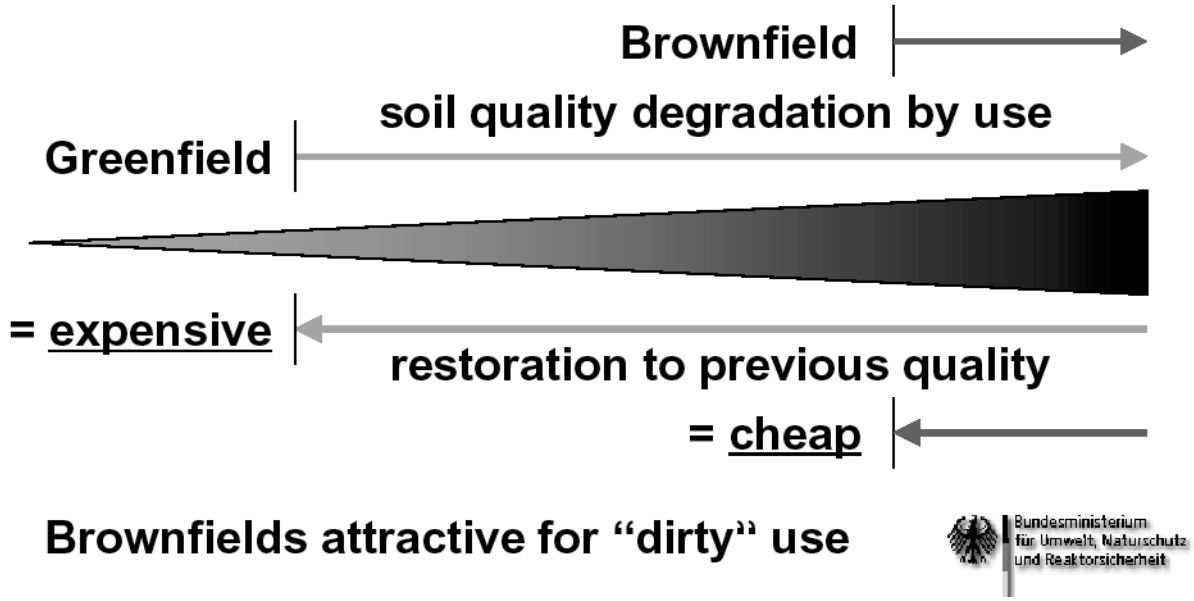
Principle: Obligation to Restore the Previous Quality

- to avoid that land quality slowly degrades;
- to avoid that land use options get lost;
- to achieve that used land keeps its value.

➡ An additional duty is necessary:

- **A used site has to show the same quality after the use of the site as it had before the use.**
- Restoration obligation not connected with risks,
- not connected with generic levels,
- only connected with a comparison quality before ←→ quality after,
- does not aim at remediation after the use,
- but aims at careful dealing during the use.
- Restoration obligation preferably for those kinds of land use, which in the past produced heavy degradation problems:
  - industrial and commercial land use,
  - traffic related land use.

Effect of the Restoration Obligation on Land Consumption



Additionally: Financial Security

In many cases with historic contamination:

➔ responsible (financially) not able to fulfill his obligations

Necessary therefore:

The land user has to provide and to prove that he is able to fulfill the obligation to restore the previous land quality.

(preferably: insurance)

Financial Security: Insurance

Advantages from an insurance:

- Restoration is paid by the policy holders (and not by the public).
- Variable premium will provide careful treatment of the land.

THE PROBLEM OF FUTURE LAND CONTAMINATION IN QUEBEC, CANADA

Speaker: ***Mr. Michel Beaulieu***
Québec Ministry of Environment
Canada

Contaminated Land Rehabilitation Policy (1988)

- Thousands of sites are contaminated;
- impact on land management.
- Hundreds of sites assessed and reused.
- Some of them were very costly to clean;
- not always possible.
- Many contaminated sites were transferred to municipalities or the government.

Regulation Respecting Hazardous Materials (1997)

9. Any person who accidentally releases a hazardous material into the environment shall immediately:

(1) stop the spill;

(2) inform the Minister; and

(3) **recover the hazardous material and remove all contaminated material that is not cleaned or treated on site.**

Preparing the New Policy

- The past demonstrates that it is often very difficult, if not impossible, to return to a contaminated site all the soil functions and uses that it has lost;
- so it would be unproductive, from both the environmental and economic points of view, to continue to rehabilitate contaminated sites without, at the same time, taking the measures needed to prevent repetition of the scenarios that led to the situation that society is now facing;
- adoption of more high-performance technologies and the introduction of monitoring programmes may be more expensive at the beginning but;
- this investment quickly becomes cost-effective if we take into consideration the costs resulting from the obligation to decontaminate the environment or the handicap represented by the long-term liability incurred by the presence of contamination.

<u>The objectives of the “protection” aspect of this policy are thus</u>:

- to favor the adoption by the targeted industries of “clean” technologies; and
- the introduction of stricter monitoring prevention systems in order to maintain the quality of non-damaged soils and permit quicker, more effective and less expensive responses.

Soil Protection and Contaminated Land Rehabilitation Policy (1998)

Section 5: Protection

Who is targeted?

- New industrial installations included in areas of activity likely to contaminate the soils and groundwater.

List of Industrial and Commercial Activities Likely to Contaminate Soils and Groundwater

- Mines
- Petroleum and natural gas extraction
- Rubber products industries (tires and tubes)
- Leather and related products industries
- Wood industries (wood treatment, chipboard panelling)
- Paper and paper products industries
- Petroleum and coal products industries
- Chemical industries
- Wholesale petroleum products businesses
- Transfer centres for waste materials and contaminated soils
- Final disposal sites for waste materials and contaminated soils
- Treatment (mechanical, chemical, mechanico-chemical, biological, thermal, etc.) of waste materials and contaminated soils

What Should They Do (Before Getting a Certificate of Operation)?

- Characterize the soils and groundwater on the site before work begins (and send a copy of the characterization report to the ministry).
- Adopt technology that respects the environment, and use it in compliance with the regulations and the codes of practice.
- Put in place a groundwater and surface water monitoring program.
- Mobilize financial resources making it possible to carry out the required rehabilitation work during operations or in case of bankruptcy.

Environmental Impact Assessment

Article 31.1

No person may undertake any construction, work or operation, or carry out work according to a plan or programme, in the cases prohibited by regulation of the government without **following the environmental impact assessment procedure and obtaining an authorization certificate from the government.**

Article 31.5

Where the environmental impact assessment is considered satisfactory by the Minister, it is submitted together with the application for authorization to the government. The latter may issue or refuse a certificate of authorization for the realization of the project with or without amendments, and **on such conditions as it may determine.**

Act 156 (Draft)

Article 31.50

Any request for a certificate of authorization for the implementation of a targeted industry must be accompanied by:

1) An assessment of the initial quality of the land.
2) A description of the measures which will be taken to prevent, detect and correct all contamination of the land resulting from the plant's exploitation, namely relating to watch and control the quality of the surface and groundwater.
3) Under the conditions stated in the regulation, financial guarantees or responsibility insurance allowing the payment of the cost incurred in 2), namely the elimination of the contaminants eventually present on the land and resulting from plant's activity.

Financial Guarantees in Other Québec Regulations

- Mines (1995)
- Hazardous Waste (1997)
  (1) A site for the elimination of hazardous materials;
  (2) operates for commercial purposes a treatment process;
  (3) stores any hazardous material after having taken possession thereof for that purpose;
  (4) uses for energy-generation purposes any hazardous material after having taken possession thereof for that purpose.

  It is more difficult to determine the amount of the guarantee in the case of industries' implementation.

Responsibility Insurance in Other Québec Regulations

- Hazardous Waste (up to 3 million CDN$)
- Responsibility insurance would be a perfect "flexible" tool

Survey on Financial Guarantee and Insurance

All Ad Hoc Members contacted:

- Czech Republic
  - Not up to now, but there is a new Act on Ecological Damages being prepared which will consider this mechanism. The proposed mechanism is not only for new industries but also for owners of enterprises with old ecological damages.
- Flanders
  - Such mechanism for:
    - some industries;
    - for accidents etc. (mines, etc.), for landfills (the operator must deposit a financial caution to the government, calculated according to the area occupied to guarantee that the final cover is placed);
    - polluted site transfer.
- Switzerland
  - Regulations concerning the management of landfill sites

THE MANAGEMENT OF ENVIRONMENTAL RISK ON INDUSTRIAL SITES

Speaker: ***Mr. Jonathan Derham***
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Structure of this Talk

- Introduction to Integrated Pollution Control Licensing
- EPA's interest in Environmental Liability
- Provision for Environmental Liabilities (EU, Irish statute, etc.)
- Identification of Environmental Liabilities
- Permit Conditions
- Forms of Financial Guarantee
- Concluding Remarks

Integrated Pollution Control Licensing

- The Environmental Protection Agency (EPA) is responsible under Part IV of the Environmental Protection Agency Act 1992, for the licensing and regulation of large/complex industrial and other processes with significant polluting potential on the basis of Integrated Pollution Control (IPC/IPPC).
- The Integrated Pollution Control approach to licensing dictates that only one licence will be issued to a facility to control all aspects of air, water, waste and noise pollution.
- The permit addresses the whole site.
- See http://www.epa.ie

What are Environmental Liabilities?

- In discussing environmental liabilities, one is generally talking about such matters as land contamination, surface and groundwater pollution, and air pollution.
- Regulatory charges and compliance costs are often considered by industry to fall within the definition of an environmental liability.
- Some examples might be, the costs of re-stocking a stretch of river, remediation of contaminated groundwater, soil cleanup, replanting a wooded area damaged by air emissions, removal of potentially polluting residuals, monitoring charges, etc.

Why are the EPA Interested in Environmental Liabilities?

Because –

- There is evidence of pollution at ~ 20% of the 600 industrial operations that are regulated by the Agency.
- There are currently at least 30 licensed industrial operations with on-site landfills.
- All operations will eventually cease. There are residuals following closure of all industrial sites.
- Somebody has to pay!

Environmental Liabilities from the Perspective of a Regulator

Basically there are two types:

- known or anticipated - ACTUAL Liability
  - Existing contamination, historical activities, closure/decommissioning, landfill aftercare and regulatory charges
- unknown or unanticipated - POTENTIAL
  - Risk of contamination, future incidents, fire water, UST failure, storage of substances R50 to R59, fines,...

Environmental Liability and IPPC

The EU Integrated Pollution Prevention and Control Directive (96/61/EC) states in Articles 3(e) and (f)

- *Member States shall take the necessary measures to provide that the competent authorities ensure that installations are operated in such a way that:*
  - *the necessary measures are taken to prevent accidents and limit their consequences.*
  - *the necessary measures are taken upon definitive cessation of activities to avoid any pollution risk and return the site of operation to a satisfactory state.*

NB: Also EU White Paper on Environmental Liabilities

EU White Paper on Environmental Liability

Full Title: Directive on Prevention and Restoration of Environmental Damage

- Responsible Person
  - Operator controlling the Dangerous or Relevant Activity
- Dangerous or Relevant Activities
  - IPPC, Sevesco II, Waste handling operations, others,…
- Significant Environmental Damage
- Not Retrospective
- Strict Liability (fault-based for biodiversity)
- Competent authority can remediate and recharge
- Preventative measures will be addressed in the Directive
- Joint and Several liability principal endorsed

- Defenses
  - Compliance with permit
  - Act of war, nature, God
- Legal proceedings can be taken by competent authority and others who have an interest.
- Subsidiary invoked in relation to implementation
  - It is expected that the EU will not impose an obligation to have financial security, (up to Member States).
- Significant Environmental Damage
  - Biodiversity Damage - Relative to Baseline
  - Water Pollution - Relative to Baseline
  - Serious harm to Human Health
  - Land Contamination - Restoration to ensure serious harm or potential harm to humans be removed - Relative to Baseline
- Restorative/Remedial Options
  - Natural Recovery (MNA!!)
  - Direct Intervention
  - Compensation for interim losses
- Cleanup Standard
  - The contamination must not lead to a serious threat to man and the environment.
- Cleanup Obligation
  - Land must be fit for actual and plausible future use.
- Choice of Restorative Option
  - Responsible persons/regulators permitted to employ cost-benefit analysis. Least-cost options preferred.

Environmental Liability and IPPC in Ireland

The legal provision for Environmental Liabilities is in Section 53 of the Waste Management Act 1996:

The Agency may require a permit applicant to -

(i) *furnish to it such particulars in respect of such matters affecting his or her ability to meet the financial commitments or liabilities that the Agency reasonably considers will be entered into or incurred by him or her in carrying on the activity to which the licence relates or will relate, as the case may be, in accordance with the terms of the licence or in consequence of ceasing to carry on that activity as it may specify,*

and

(ii) make, and furnish evidence of having so made, such financial provision as it [the Agency] *may specify (which may include the entering into a bond or other form of security) as will, in the opinion of the Agency, be adequate to discharge the said financial commitments or liabilities.*

NB: It is a criminal offense to deceive the Agency in respect of these matters.

Identification of Environmental Liability

- Environmental Impact Statements (benchmarking)
- Site expansion/redevelopment
- COMHA/SEVESCO II
- IPPC Licence Application (benchmarking)
- Audits
- Site status reports
- EMAS/ISO14001
- Due diligence
- Sale or transfer of land
- The appreciation of environmental liabilities on a site is founded in an understanding of the management of materials or substances either used or produced on-site.
- This would include fuels and energy, wastes, intermediaries and products, as well as the processes involving same.
- The evaluation of the environmental risk/liability presented by complex industrial operations requires a high degree of knowledge not only of the materials and processes, but also of the technical codes and standards as well as the legal regulations concerning emissions, waste disposal, water protection, hazardous substances, safety and fire hazard.
- Pollution may be caused not only by primary industrial processes, but also by ancillary processes such as heating, cleaning and washing. All these matters should be considered when undertaking an environmental liabilities risk assessment.

Providing for Environmental Liability in IPPC Permits

- Anticipated
  - Residuals/Decommissioning Management Plan (management, maintenance, aftercare, monitoring, containment, remediation, etc.)
  - Financial provision
- Unanticipated/potential risks
  - Notification
  - Emergency Response Plan
  - Bonding
  - Monitoring
  - Management, maintenance, repair, replacement
  - Training
  - Process modifications, materials substitution
  - Financial provision

Permit Condition for Decommissioning

- Following termination, or planned cessation for a period greater than six months, of use or involvement of all or part of the site, the licensee shall decommission, render safe or remove for disposal/recovery, any soil, subsoil, building, plant or equipment, or any waste, material or substance or other matter contained therein or thereon, that may result in environmental pollution.

NB: Site to be returned to established Benchmark standard.

Residuals or Decommissioning Management Planning

- Plan drafted
- Plan costed
- Approved by regulator
- Reviewed annually
- Financially underwritten
- Review formula
- Validation of implementation

Providing for Environmental Liability in IPC Licences

Condition 14 of the Permit reads:

14.1.1 The permit holder shall arrange for the completion, by an independent and appropriately qualified consultant, of a comprehensive and fully costed Environmental Liabilities Risk Assessment for the whole site which will address liabilities from <u>past and present activities</u>. A report on this assessment to be submitted to the Agency for agreement within twelve months of date of grant of this licence.

14.1.2 The permit holder shall make financial provision [indemnity] in a <u>form acceptable to the Agency</u> to cover any liabilities incurred by the licensee as a consequence of environmental pollution arising on the site. The sum <u>assured</u> must always be capable of covering the liabilities identified in condition 14.1.1.

14.1.3 The amount of indemnity, held under condition 14.1.2 shall be reviewed and revised as necessary, but at least annually.

Review of Financial Provision

Unless otherwise agreed, any revision to the perpetual aftercare fund shall be computed using the following formula:

$$RPAC = (EPAC \times WPI) + CiCC$$

Where:

RPAC	=	Revised Perpetual Aftercare Cost
EPAC	=	Existing Closure/Perpetual Aftercare Cost
WPI	=	Appropriate Wholesale Price Index [Capital Goods Building and Construction (i.e. Materials & Wages) Index], as published by the Central Statistics Office, for the year since last closure cost calculation/revision.
CiCC	=	Change in Compliance Costs as a result of change in site conditions, changes in law, regulations, regulatory authority charges, or other significant changes.

Forms of Assurance/Indemnity

- Bonds
- Deed of indemnity
- Corporate pledge
- Trust fund
- Insurance
- Combinations
- Other
- **Funds must be ring fenced (secured for purpose).**

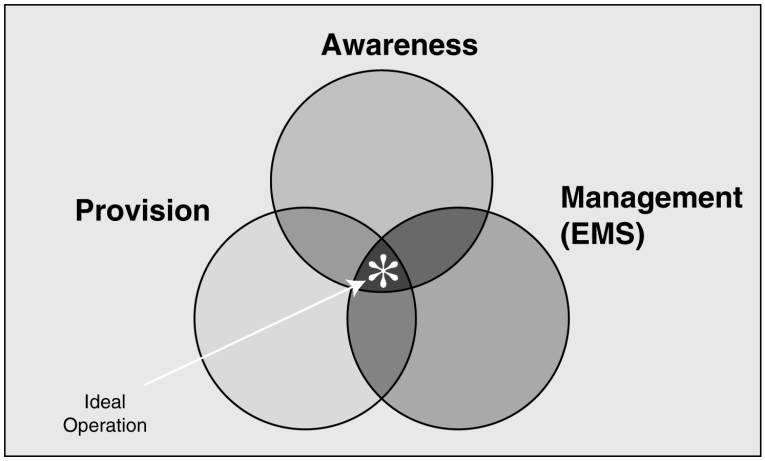
EXAMPLES

- Anglo American Mine (closure and aftercare) [13M €, 2M €, Bond with Deed and Trust)
- Asahi Ireland (residuals) [Deed, Unlimited]
- Roche Pharmaceutical (residuals) [3M €]
- Aughinish Alumina - Bauxite Processing (closure and accidental emissions) [5M € and 2M €]
- Phizers Pharmaceutical (Viagra!) - (residuals, 3.8M €)
- Financial provision is almost essential to provide assurance for regulatory acceptance of MNA.

The Benefits of Environmental Liability Risk Assessment

- Identification of Environmental Liabilities
- Yields good information for inclusion in site Environmental Management and continual improvement programs
- Regulatory compliance
- Public confidence
- Assists purchase of adequate/appropriate insurance
- Investor/Stakeholder confidence
- Benefit to pre-acquisition and due diligence audits

If I have liabilities, ...
I wanna' be in PAM's place!



Concluding Remarks

It is my experience that:

- Better environmental liability (risk) management can reduce company operational costs (e.g. reduced insurance premia, reduce losses of raw material, waste minimisation, cleaner technology, reduced regulatory charges, and even reduced litigation costs!).
- Once a company starts to measure its potential environmental liabilities and embarks on a process of progressive risk management, it will demonstrate to bankers, other stakeholders, insurers and accountants that risks or liabilities are under control and its asset base is valued correctly.
- Financial provision for environmental liabilities is a regulatory essential. It is in the public interest.