Miljöriktlinjer för nyttiggörande av askor - generella principer

U-rapport 1: Generella principer	sept
U-rapport 2: Beräkningsmodell	dec
U-rapport 3: Miljöriktlinjer	feb -05
Slutrapport	juni -05

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Miljöbedömningsnivå

	Materialnivå	Lokal miljö-bedömnings-nivå	Begränsad LCA nivå	Industriell system nivå
Miljö-aspekter, exempel	Totalhalt och lakningsegen-skaper	Bidrag emission till lokal förore-ningsnivån	Förbrukning av energi och rå-varor	Effekter på re-gional skala, t.ex ökade transporter
Förore-ningsas-pekten?	Ja	Ja	Delvis	Delvis
Resurs-aspekten?	Nej	Delvis	Ja	Ja
Bedöm-ningsverk-tyg	Kemisk analys	Materialflödes-analys, riskbe-dömning	Livscykelana-lys, MKB	Strategisk MKB, LCA

Roth, L. and Eklund, M., 2003. Environmental evaluation of reuse of by-products as road construction materials in Sweden. Waste Management, 23: 107-116

Utblick

Regulation of utilisation of residues in Denmark

- From 1983 through 2000 utilisation of MSWI bottom ash was based on criteria related to content (not leaching) of Cd, Hg and Pb and requirements on alkalinity and pH. Not based on risk assessment.
- Since January 1, 2001, it is based on Statutory Order No. 655 of June 27, 2000, on Recycling of Residual Products and Soil in Building and Construction Work. Based on risk assessment (groundwater protection).
- Processed building rubble (concrete, bricks, tiles) and uncontaminated soil are not covered by the Statutory order and may be used without restrictions.

)05?)

Workshop 15 okt 2004 : *Existing national guidelines and assessment methods for reuse of residues - experiences and consequences of implementation (www.energiaskor.se)*

Danmark

Principles of risk assessment

- Protection of groundwater against leached salts and trace elements
- Scenario and model calculations using 3-d groundwater flow and transport model (Visual Modflow and MT3D'96)
- Conservative assumptions: only dilution considered (no sorption), and constant source used, placement of application close to upstream boundary (divide)
- Assumption: The result of a batch leaching test performed at L/S = 2 l/kg is regarded as pore water conc.
- Background concentration of contaminants: 90 % fractile of national groundwater monitoring data
- Criteria at point of compliance (groundwater quality 30 m downstream of application): No special treatment should be necessary to produce drinking water

Danmark

Regulation of utilisation of residues in Denmark
Statutory order no. 655 of June 27, 2000

- **Category 1: Unrestricted use**
- **Category 2: Use with limited restrictions regarding cover and thickness**
- **Category 3: Use with more severe restrictions regarding cover and thickness**

Utblick

BMD - Principles

- **All mineral products (incl. soil as far as construction material), as far as used in open air in contact with water.** (Roofs, walls, roads, embankments, foundations,)
- **Same criteria for all products** (primary, secondary and mixed products.)
- **(No or) minimal leaching into the soil and water**
- **No mix of products into the soil, removal of products after construction lifetime**
- **Uniform set of test methods for all mineral products**
- **Evaluation by certification of products**

Nederländerna

Environmental evaluation construction products

-Acceptable calculated burdening:

~ ~ A quantity of a substance of 1% of Targe Value Soil in 1 meter of soil, released into the soil in 100 years per m^2

Emission (leaching test) x scenario formulae < Acceptable Immission
(marginal burdening level)

→ Expectations:

*** Stringent protection levels**

*** No risks on (severe) soil and groundwater pollution in different scenarios and different types of soils and surface water**

-* Room for reuse

Utblick

THE PRESENT SITUATION

- The use of natural mineral aggregates is 70 - 80 Mt/year
- Industry and construction activities produce large quatities of potentially usable by-products/wastes
  - total ca. 10 Mt/year used in earthworks
- An environmental permit (with pubic hearings) is needed for the professional reuse of wastes;
  - at the moment the situation is like in Wild West (or east)
- The legislation hinders the reuse?
- There is a need for a lightened practise

⇒ A DECREE TO EXEMPT SOME WASTES HAS BEEN UNDER PREPARATION FOR FEW YEARS

Finland

The Decree on the utilization of certain wastes in earth construction, DRAFT (1/5)

- GENERAL CRITERIA
  - non-hazardous waste
  - mainly inorganic and as inert as possible
  - environmental applicability assessed reliably
    - the concentrations and leaching of the hazardous substances is well-known
  - technical applicability assessed
  - start with better known wastes (like crushed concrete and ashes), later examine and include others

Ramar för utarbetande av miljöriktlinjer för askanvändning

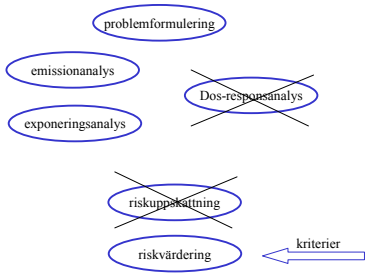
Deponeringsdirektiv (rådets beslut)

Bedömningsgrunder förorenad mark

Ramdirektivet för vatten (WFD)

Byggproduktdirektivet (CPD)

Riskbedömning



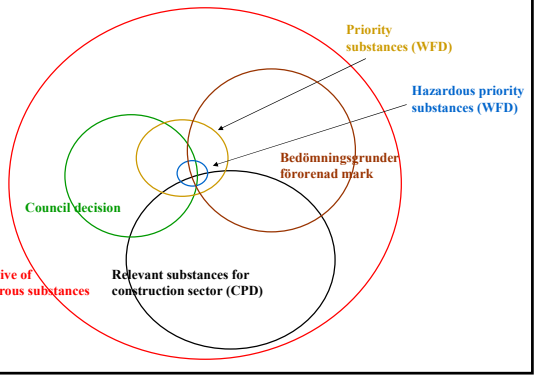
Hälso- och miljökriterier

- Ingen dos-responsanalys
- Ingen utveckling av nya hälso- och miljökriterier
- Befintliga toxikologiska hälso- och miljökriterier (förorenad mark/TAC-modell) skall tillämpas

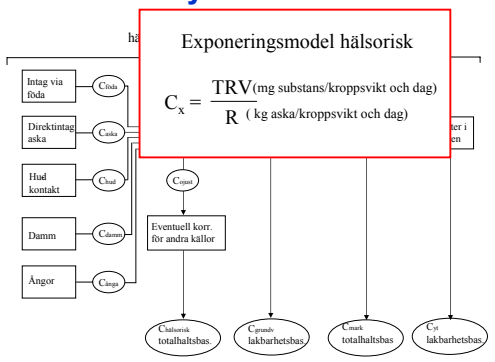
Konceptuell modell

Expone-ringsväg	Konstruk-tion	Drift	Underhåll	Postdrift	
				Anläggning kvar	Rivning
Damm	++		++	+	++
Hudkontakt	++		++		++
Gas/ånga	++	+	+	+	+
Intag	+		+		+
Lakning till grundvatten	++	+	++	+	++
Lakning till ytvatten	++	+	++	+	++

Ämnen



System



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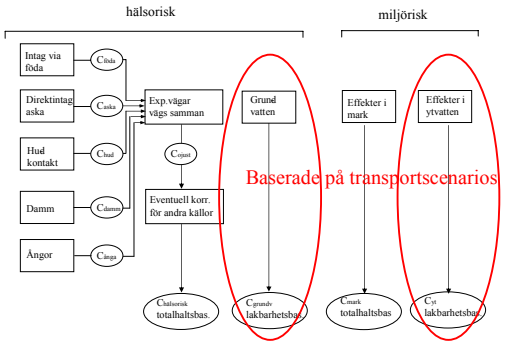
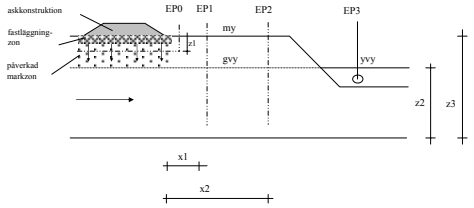


Transportscenario, exempel



Villkor och justeringar

- Beräknade riktvärden får ej:
  - Understiga bakgrundshalt i naturlig jord och i konventionella konstruktionsmaterial
  - representera orimliga geologiska eller geokemiska förhållanden
- Sunt förnuft och lagar, till exempel acceptanskriterier för farligt avfall

Lösa trådar

- Nedbrytning
- Erosion och partikeltransport
- Lakning vs totalhaltsbaserade riktlinjer
- Laktest organiska ämnen
- Val av exponeringspunkter