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Deciding on land use planning –
Management of QRA instruments
RIVM’s position

- An agency of the Ministry of Health, Welfare and Sports (VWS)
- Customers: mainly the Ministries of VWS, VROM (environment) and LNV (nature conservation, food & consumer safety)

Responsibility in policy-making

Independent research and implementation

RID WG Standardized Risk Analysis, 2008
expertise

environmental incidents

substances

DANGER Toxic hazard

radiation

FT 01

measurements

intoxications

environment & health

ecological risks

RID WG Standardized Risk Analysis, 2008
QRA-model: a change in position

Screening instrument

Prescribed planning instrument

RID WG Standardized Risk Analysis, 2008
Legal foundation risk criteria

- Goal: decide on an acceptable distance between an activity with dangerous substances and a populated area

- Location based risk gives minimum level of protection
  - limit value $10^{-6}$ per year
  - to be used for licensing and spatial planning
  - status: legal limit value

- Societal risk: legal accountability obligation
  - possibilities of people killed or injured
  - possibilities of material damage
  - possibilities of accident control
  - available safe alternatives

Political consideration of the risks versus social benefits and costs
Legal basis of risk criteria

Land Use Planning based on calculated risks

Stern demands on the QRA instrument
The past - basis for QRA calculations

- Guidelines
- Limited number of models
- Benchmark ...
Benchmark Risk Analysis Models (2001)
Results benchmark

[Graph showing various lines representing different entities or categories with numerical values on the y-axis and time or probability on the x-axis.]

RID WG Standardized Risk Analysis, 2008
Conclusions

• Problems
  - Difference in model results too large
  - Results not transparent
  - Results not verifiable

• Solution
  - Prescription of one software tool
  - Modification of the Guideline (Purple Book)
SAFETI-NL and RBM II

Legal standard since 1-1-2008

Appointment envisaged (NVGS)
Safety distances and QRA’s

Standardized risk - distance modelling

Standard installation

Risk distance table

Risk distances $10^{-5}$ and $10^{-6}$ + max. pop. density

4000 sites

Complex site or Seveso site

Standardized risk modelling

Risk contours $10^{-5}$ to $10^{-8}$ + Soc Risk

500 sites
Structured Model management

• Continuous improvement of models

• Model changes may have large implications

➢ Management structure needed for implementation of new models
Management requires …

• Consistency in assessment of risk analyses, 
  *e.g. by reviewing assessments*

• Consistency in everyday advises on starting points and in support of consultants, 
  *e.g. by a documented helpdesk*

• Increased consistency within and between models

• Management of change intended to increase the ‘realism’ of the instruments
Before introduction: Consequences
Advantages of consequence analysis

• Results are transparent
• Differences traceable to input
Balance between robustness ↔ specificity

• Robustness
  - Goal: always the same outcome
  - By: restricted input

• Specificity
  - Each establishment has unique properties…
  - Freedom in input?

• Result
  - Limited freedom in input
  - Uniformity in output
Structured Model management

- Helpdesk
- Competent authority
- Expert Group
- Policymaker
- User group

Model Management Group

- Policy decision
- Acceptance of Model changes

Project group
Probits

- Probits derived as described in the ‘Green book’

- Probit relations established for limited number of substances

Procedure

- Commission of experts gives advise on submitted proposals / proposes
- Inventory of consequences is made
- Submitted for decision > VROM
Use and support: Safeti-NL / RIVM

• User group
  >325 licences
  >250 course members of >125 organisations

• Helpdesk
  ~ 1900 questions within 18 months

• Website
  for updates, FAQs, protocols, PSU-files, news, …
Use and support: RBM II / Bouwdienst

- User group
  >600 users registered

- Helpdesk RBMII
  ~ 600 questions since 2005

- Website
  - for updates, FAQs, protocols, examples, news, …
Standard QRA models: profit gained?

+ Verifiable, reproducible results
+ Transparancy
+ Growing conformity between transport & establishments
+ Less susceptible to the ‘polishing’ of risk estimates

• Competent authorities: expertise still required!!

− Complexity: legislation based on sophisticated calculations
− Management of change