INTRODUCTION

NATURAL ANALOGS

NATURAL ANALOG

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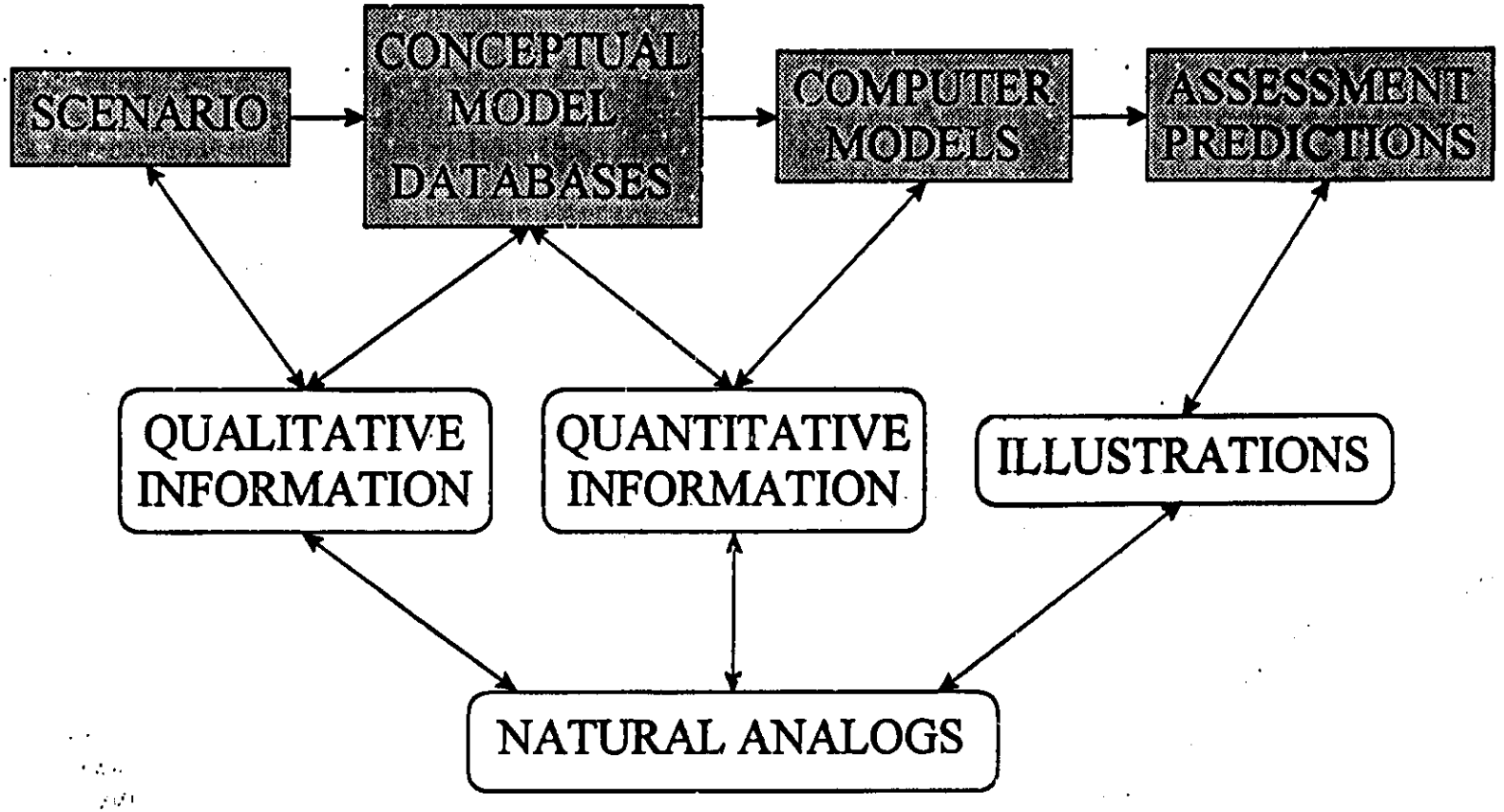
Natural system in which natural processes occur over long periods of time, where the materials, processes and conditions are similar to those in a disposal vault

NATURAL ANALOGS AND CONCEPT ASSESSMENT



USE OF ANALOG INFORMATION

- DEVELOPMENT of scenarios and conceptual models
  - compositions
  - processes
  - boundary conditions
- INPUT of data
  - mineral dissolution rates
  - corrosion rates
- TEST modelling tools
  - speciation codes
  - thermodynamic databases
- TEST actual assessment models
  - fuel-dissolution model
  - mass-transport model
- FEEDBACK to concept design
  - importance of barriers
  - microbial effects
- INFORMATION and EDUCATION
  - illustrative examples
  - natural perspective

ANALOG INFORMATION FOR . . .

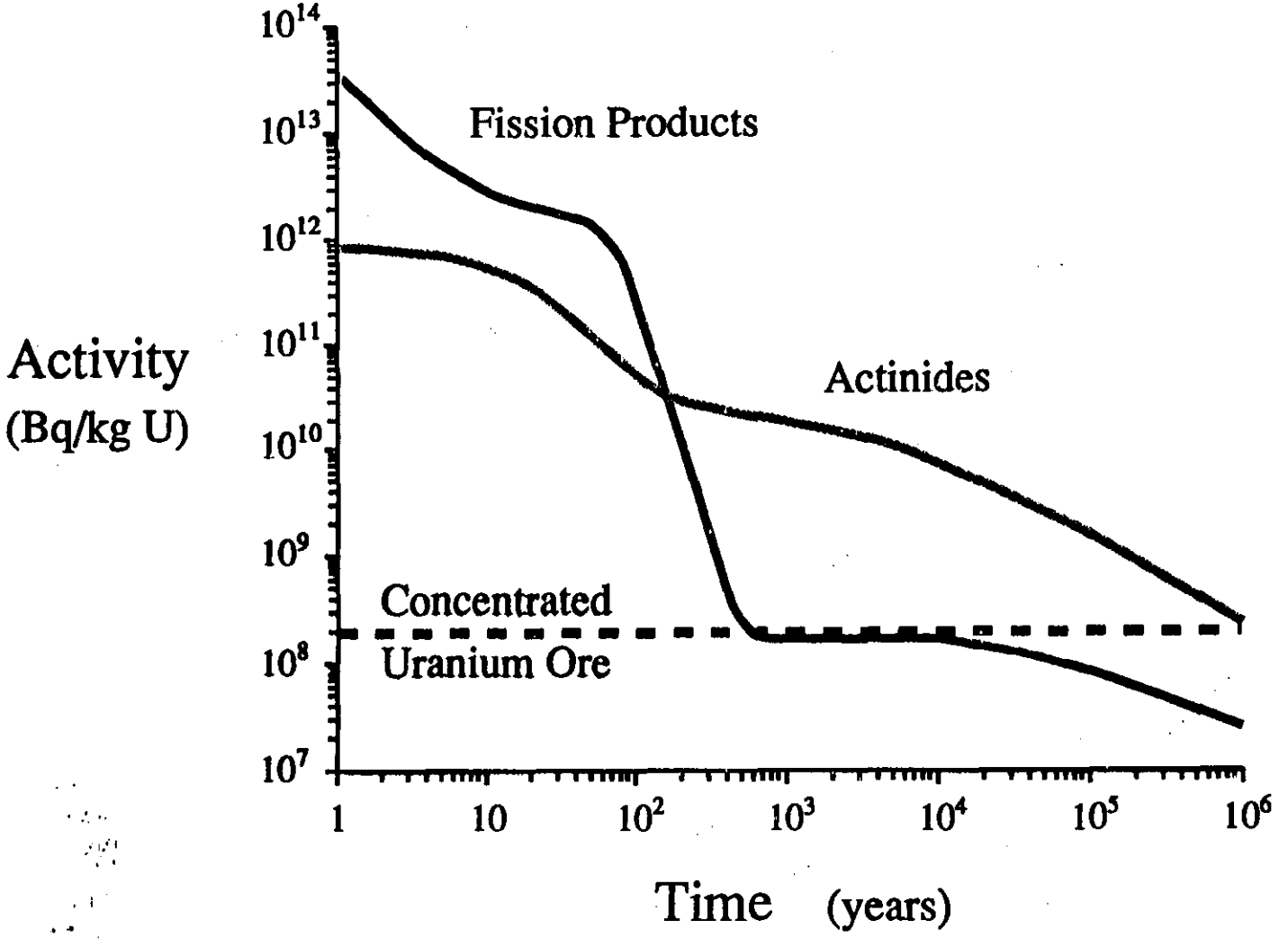
WASTE	Used fuel (UO_2 matrix)
	Nuclear reaction products
BARRIERS	Container - Titanium / Copper
	Buffer - Bentonite + Sand
	Backfill - Crushed rock + Clay
	Concrete
	Host rock - Granite / Gabbro
PROCESSES	Water interaction - Waste, Barriers
	Radionuclide migration - Redox
CONCEPT	Overall system

NATURAL ANALOGS

LIMITATIONS

- Complex natural systems
- Information qualitative - semi-quantitative
- Conclusions seldom unambiguous
- Can not be used for code validation

Radioactivity of Used CANDU Fuel



CONCLUSIONS

NATURAL ANALOGS

- Support our understanding of fundamental processes over long periods of time
- Provide confidence in our ability to do long-term assessments