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From Initial Safety Considerations to a Final Safety Case: Forms and Purposes of Safety Analysis during a Disposal Project's Lifetime

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Stepwise Development

- Long-term projects
- Succession of Safety Cases
- Evolving sophistication

Simple evaluation of safety → comprehensive safety case





A safety case is

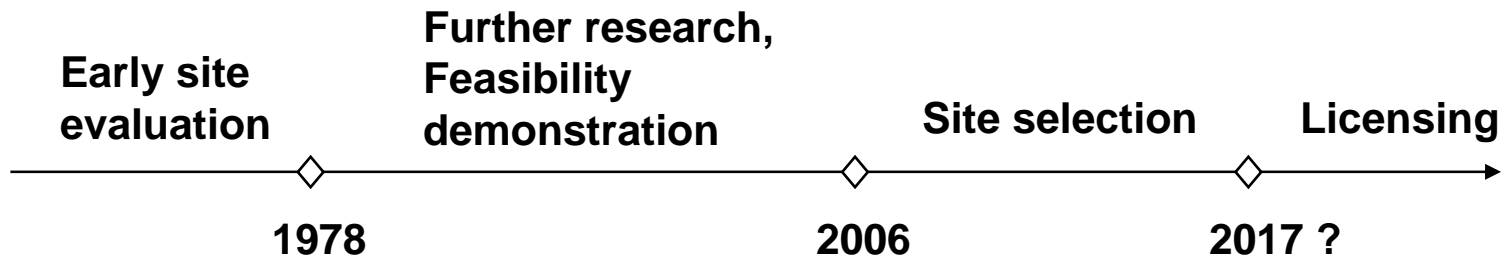
„the synthesis of evidence, analyses and arguments that quantify and substantiate a claim that the repository will be safe after closure and beyond the time when active control of the facility can be relied on.“

(Post-closure Safety Case for Geological Repositories, NEA 2004)



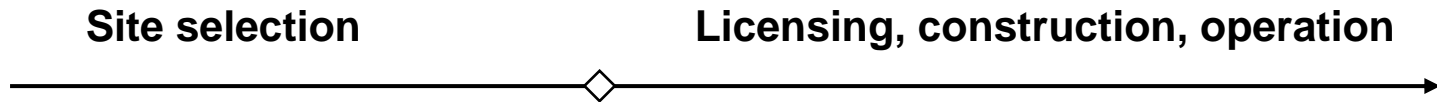


The Swiss disposal programme



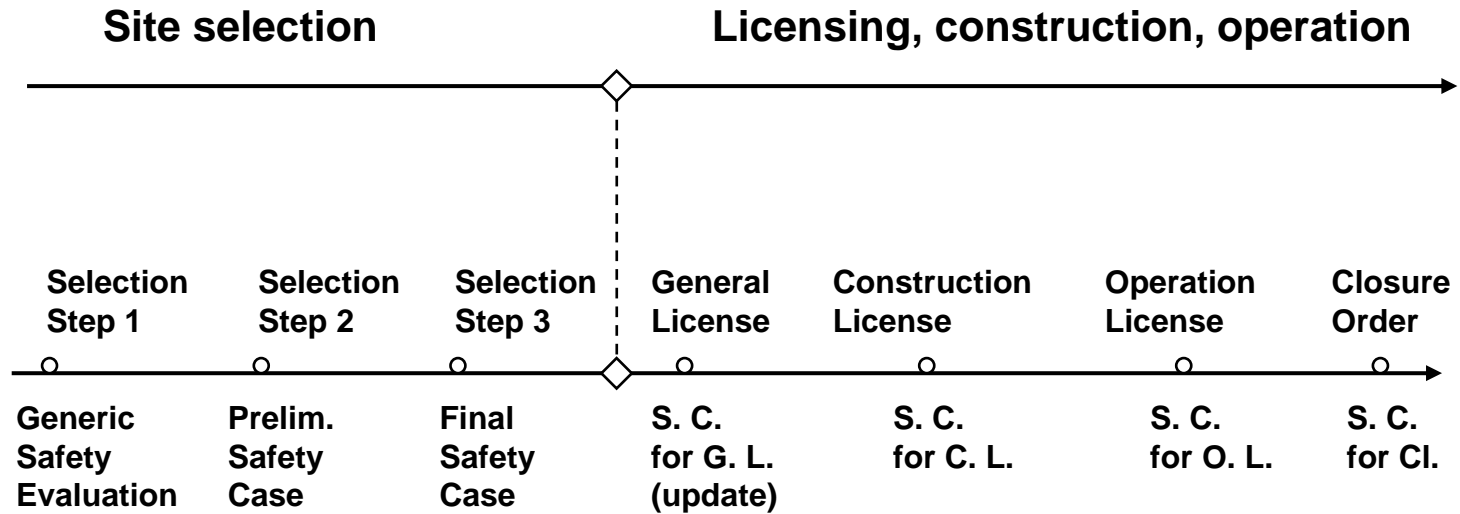


Evaluation of the safety in different steps



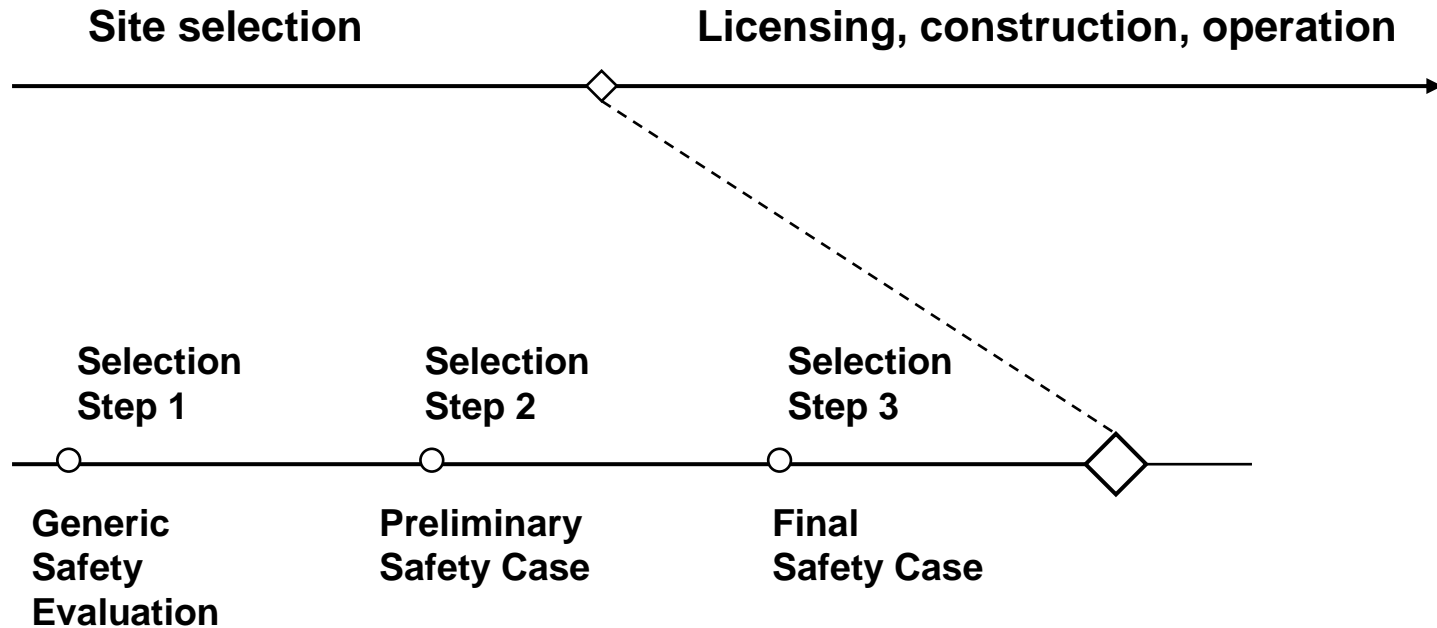


Evaluation of the safety in different steps





Evaluation of the safety in different steps





Generic Safety Evaluation

- not site-specific
- defines requirements on geology
- calibrates qualitative judgements
- quantification facilitates public verification





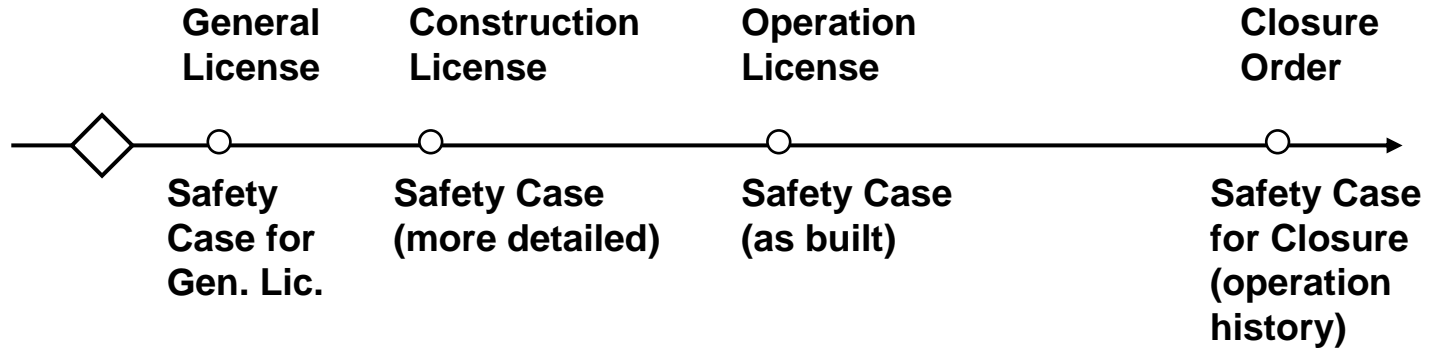
Preliminary Safety Case

- site-specific
- used for site comparisons
- problems with different conservativity
- but best estimates are not sufficient





Safety Cases to Support Licensing



- fully developed safety cases, but evolving in details
- management of uncertainties
- technical decision making
- public discussion and political decision making



Evolution of the Safety Case

Programme development spans decades

Safety analysis is needed

- early in programme, to guide site selection





Evolution of the Safety Case

Programme development spans decades

Safety analysis is needed

- early in programme, to guide site selection, and
- repeatedly, to adjust to evolving knowledge and demands:
 - ⇒ increasing detail of technical project definition
 - ⇒ change in societal values
 - ⇒ better data, evolving scientific background

