

IN-SITU VITRIFICATION



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In-situ vitrification

- 1. Definition and basic facts
- 2. Principle of the method
- 3. Usage and results
- 4. Limitations and future

Key words: Vitrificaton, ISV, contaminants, melting, treatment

Vitrification

- A process of converting a material into a glass like solid (usually run in special facility)



In-situ vitrification (ISV)

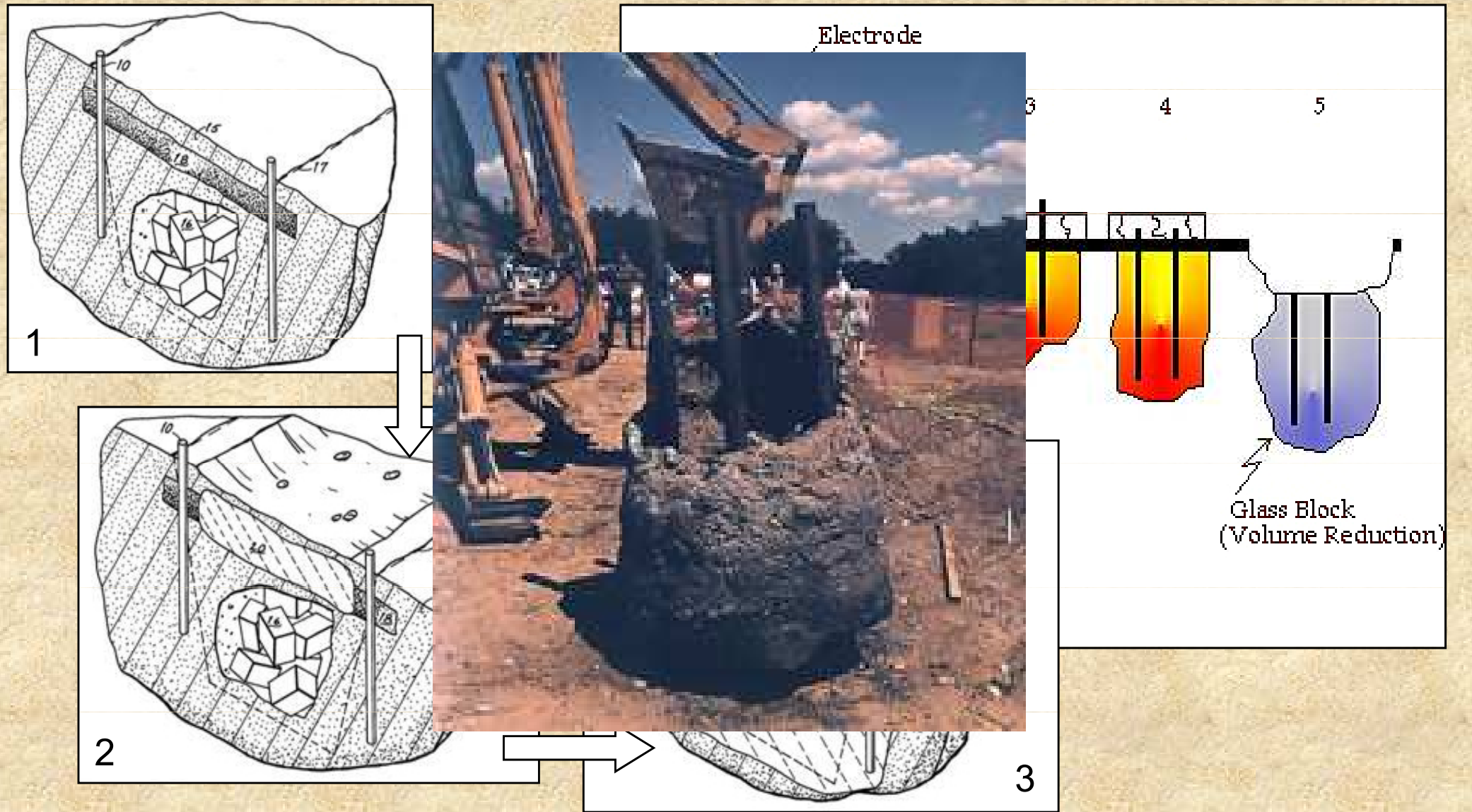
- A commercially available thermal **mobile process** for purposes of permanently destroying, removing and/or immobilising hazardous and radioactive contaminants

Basic facts about ISV

- Relatively new method
- Pacific Northwest National Laboratory
- Applicable to contaminated soils, waste, etc
- Tested in USA, Japan and Australia

Principle of the method

- Electric melting of contaminated soils



Principle of the method

- Vitreous monolith- 50-80% of silica
 - durable, leach resistant product



Photo provided by Geosafe.



Photo provided by Georgia Tech Research Institute.

Measuring the monolith created by the planar melt cold test at Los Alamos National Laboratory.

Cross section of a vitrified monolith from the Savannah River Site demonstration.

durable-odolný; leach- vyluhovat



Limitations and future

- Reach of conventional ISV
- High moisture, man-made or natural borders
- Dissolved gas \Rightarrow pressure problems
- New technical improvements



Plasma torch suspended above borehole prior to the Savannah River Site demonstration.

Summary

- ISV is applicable to all classes of contaminants and its mixture
- ISV is primary technology for treating soil
- ISV is relatively safe and represents low risk to the environment
- ISV have some usage limitations