



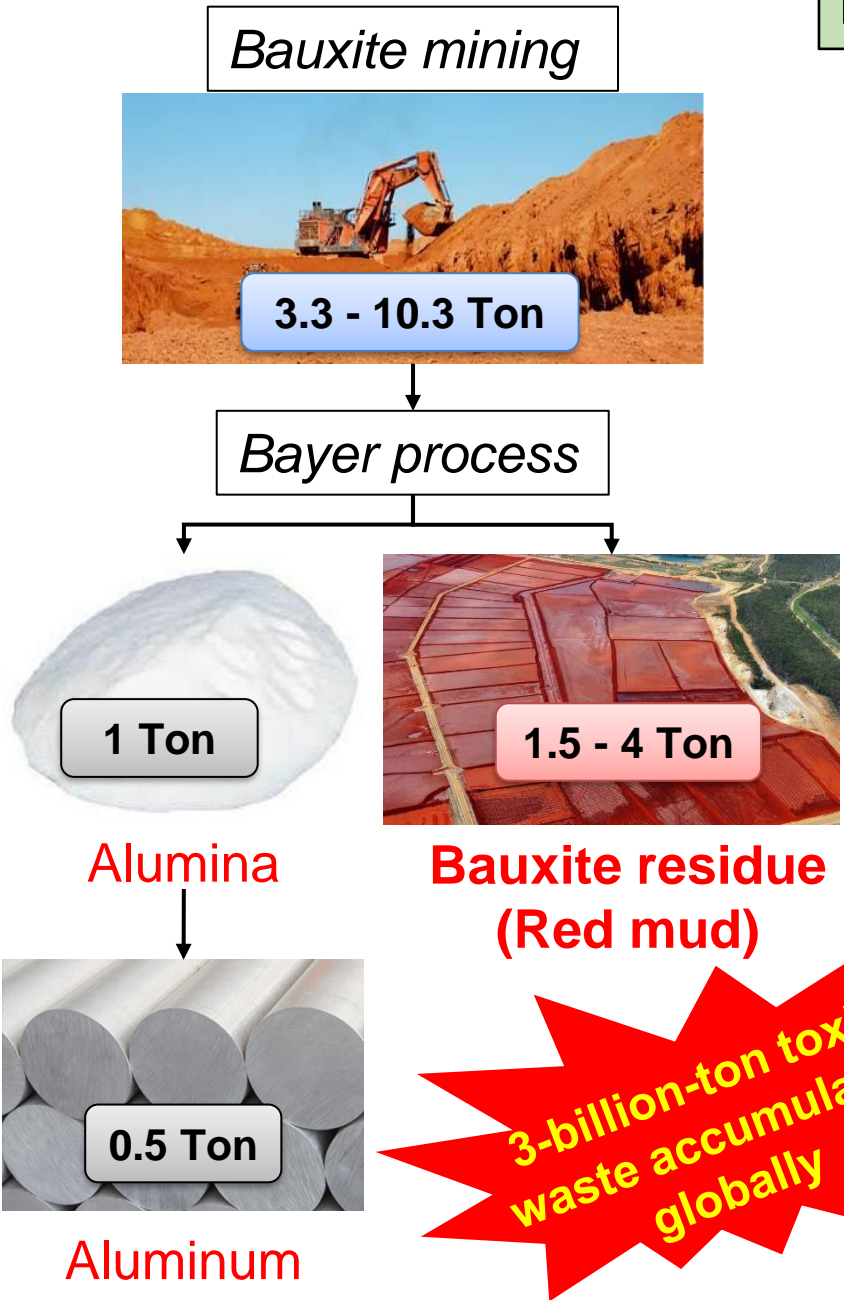
# Hydrometallurgical processing of bauxite residue for recovery of value-added products

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# Background: Bayer Process



**3-billion-ton toxic waste accumulated globally**

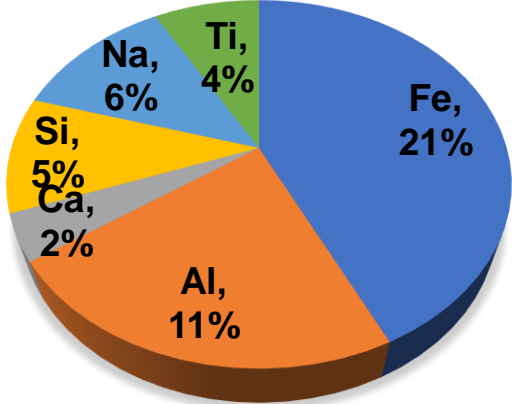


Bauxite residue spill  
Ajka, Hungary (2010)



3-7 ft flood wave  
affected 40 sq km land  
and life

# Bauxite residue utilization and challenges

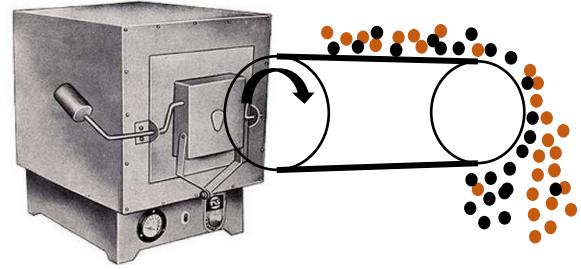


**Elemental Composition**



**Smelting**

- Alkali accumulation
- Poor slag fluidity

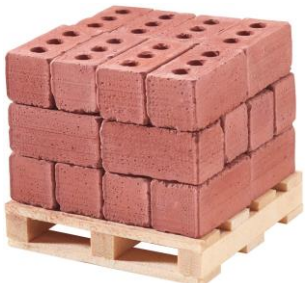


**Reduction roasting**

- Mixed phase formation
- Low magnetic separation efficiency



- Alkali segregation
- Low strength

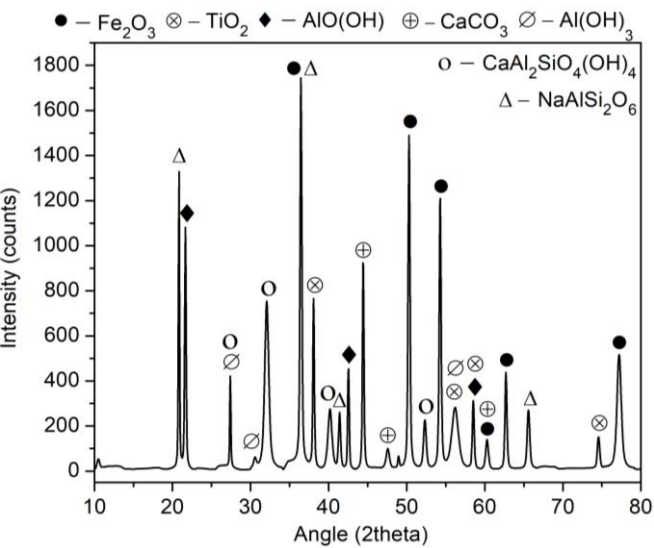


**Construction material**

- High acid consumption
- Product contamination

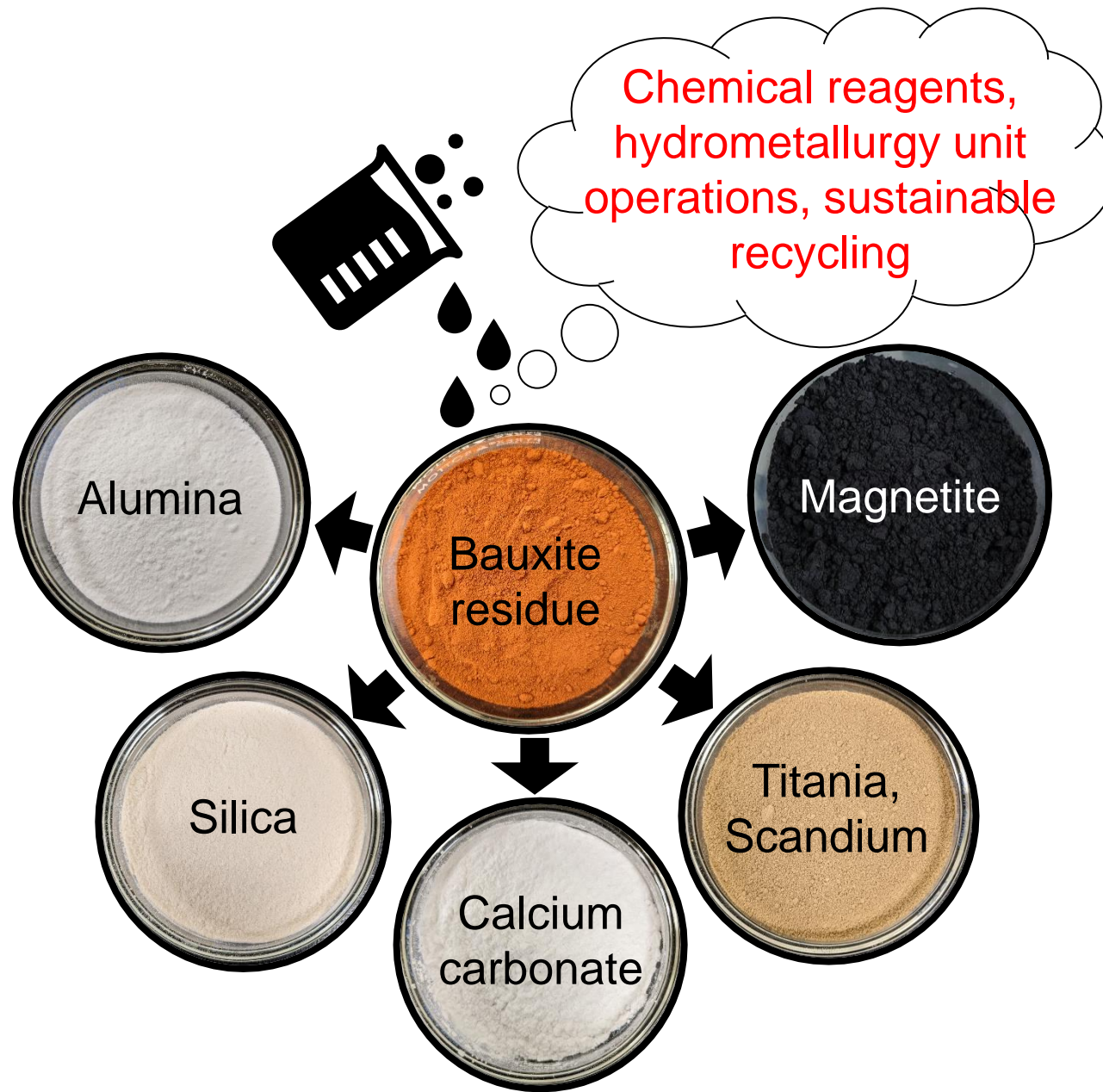
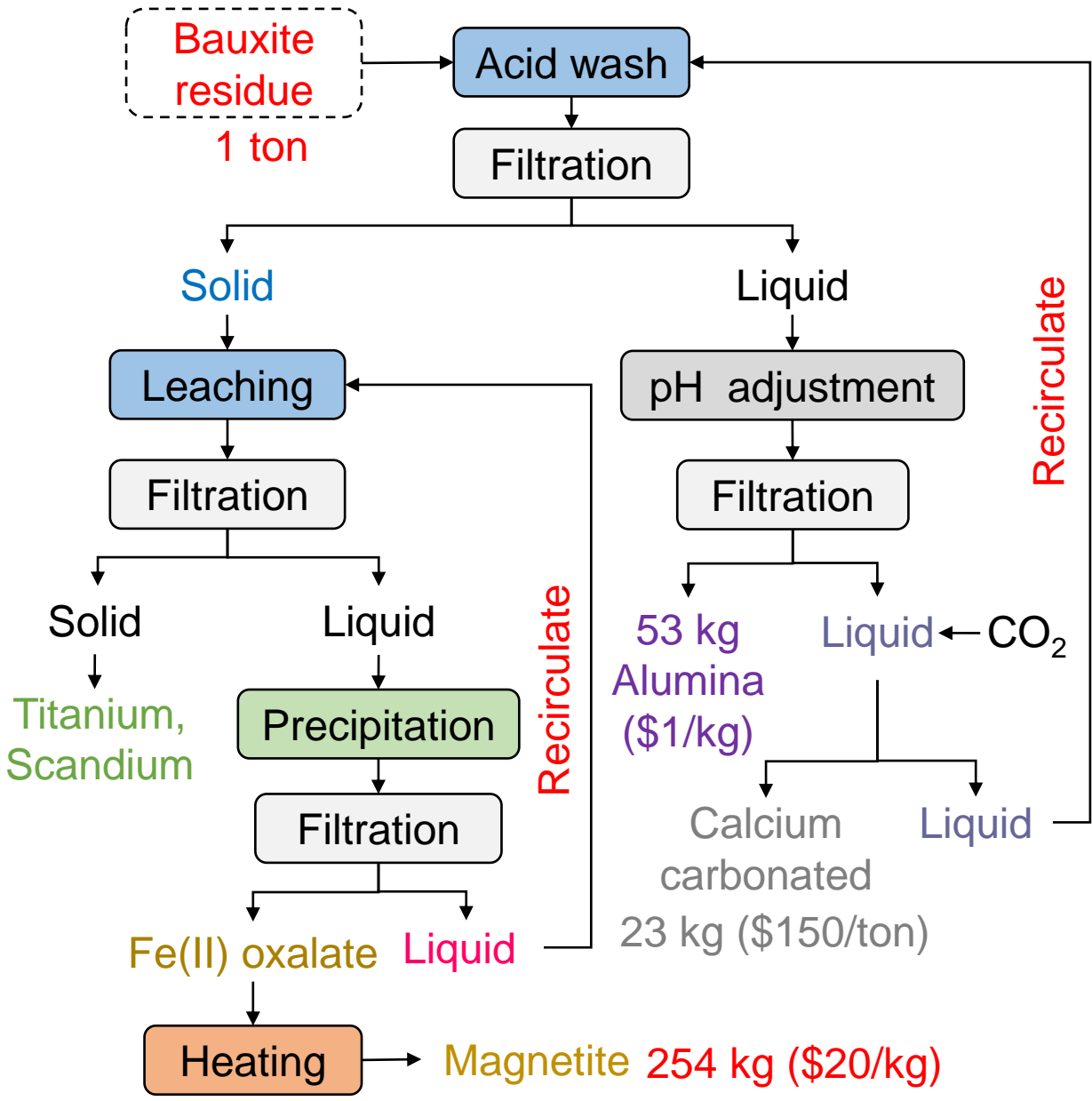


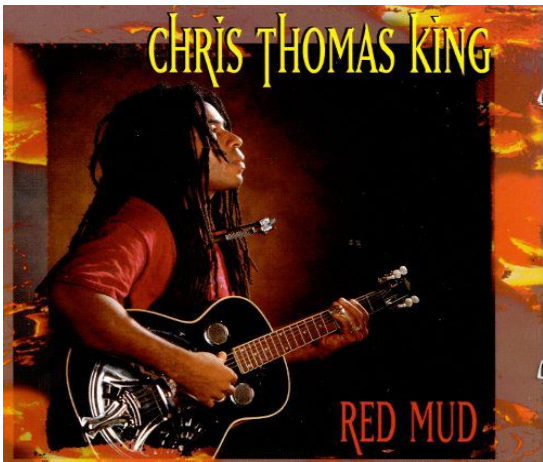
**Hydrometallurgy**



**X-ray analysis**

# Proposed economical recycling flowsheet





Thank you...

