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A Brief Look at the Evolution of Tailings Innovation

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First Annual OAM Workshop

Canada

Tailings: what do we do....

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Generate



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Water Covers



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AMD



Treat AMD



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R&D

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Impound



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Soil Covers



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More Waste



Monitor

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Regulate...

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Evolution of Tailings Innovations



Late 40's

- Concept of mine reclamation
- Mostly to control dust
- Limited success with vegetation

50's/60's

- Understanding deficiencies
- Agricultural practices
- Lime, fertilizer, seeding
- "simple" grass covers



60's-70's

- Successional approach/trees
- Make it "green"
- Recognition of acid mine drainage
- *"Vegetation will help control AMD"*
- Soil covers
- Seismic stability in dam design
- Erosion
- Thickened tailings
- Water management
- ALARA/BATEA
- CLRA (Recl. Assoc)



80's – 90's

- Focus on AMD
- Tailings backfill
- Water covers
- Predicting post-closure H₂O
- Passive treatment
- High Density Sludge (HDS)
- Liners – synthetic/clay
- Closure Plans & bonds
- End land use
- NUTP
- RATS
- MEND/NOAMI



Evolution of Tailings Innovations cont...



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2000's

- Dry Stack
- Dam Safety
- ESG
- Climate Change Impacts
- Traditional Ecological Knowledge
- Green Mines Green Energy (Biosolids)
- Towards Sustainable Mining
- Canadian Minerals and Metals Plan
- Global Industry Standard on Tailings Management
- Mining Value from Waste (reprocessing)

Today

- Circular Economy
- Resource vs Waste
- Inventory
- Full(er) Utilization
- Liability Reduction
- Critical Minerals



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