



Featured Technical Topic Summary **FGI Monthly Members Meeting** **Friday, January 10, 2025**



TOPIC: Flexible Geomembranes to Reduce Leachate Generation

Each month Tim Stark introduces a new technical topic for discussion and possible action. This month's topic is: **"Flexible Geomembranes to Reduce Leachate Generation"**. This topic generated significant discussion with the main "take-aways" listed below:

Flexible Geomembranes to Reduce Leachate Generation

- See photographs of applications using geomembranes to reduce leachate generation by Brian Fraser
- Contaminated soil applications with geomembrane cover – 30 mil thick woven coated polyethylene geomembranes
- Geomembrane cover also controls soil loss due to wind erosion
- Landfill temporary cover before final cover system installation – prevent bird migration, soil loss due to wind erosion, leachate generation due to rainfall – Washington state application
- Can reduce leachate from 1,200 leachate trucks/year to 12 trucks/year, which results in considerable cost savings
- Mining applications include slag cover for smelting process wastes to prevent chemical leaching and wind erosion
- Temporary covers for PFAS materials
- Another application is temporarily covering fly ash with a geomembrane
- Permanent final cover system for landfills
- Floating cover in Oregon to prevent rainfall from reaching a leachate holding pond or leachate treatment pond
- Typical materials
 - 5 years or less duration = woven coated polyethylene GM
 - 10 years = 30 – 40 mil LLDPE GMs
 - 30 years = 30 – 40 mil PVC GMs for final cover systems with soil cover
 - temporary covers = 12 – 34 mil string reinforced GMs
- NCRS standard for contaminated soil stockpiles – 20 mil reinforced GM for dredged material for cover
- Leachate containment with GMs to prevent migration
- Engineers are now considering the bottom liner and cover as a system and designs are considering ballasting as well as type of geomembrane
- If installing to prevent wind erosion, need appropriate ballasting with proper anchoring and tensioning and a soil perimeter berm
- Usually need a durability of at least 5 years
- Need to test field welded seams so need a CQA Plan
- Make sure cover and liner system panels are shingled to promote runoff if not welded
- Also consider surface water management techniques, e.g., berms, to reduce potential for leachate generation
- Another large application is new landfill cell construction – after installing the special waste layer, cover the new bottom liner system with a geomembrane, which covers $\frac{3}{4}$ of new cell with GM and fill cell in $\frac{1}{4}$ of new cell – typical size of a new cell is 5 to 20 acres
- FGI should consider Brownfield applications in the future
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