

Environmental Research Foundation

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WHAT IS A BOTTOM LINER?

It may be one or more layers of clay or a synthetic flexible membrane (or a combination of these). The liner effectively creates a bathtub in the ground. If the bottom liner fails, wastes will migrate directly into the environment. There are three types of liners: clay, plastic, and composite.

WHAT IS WRONG WITH A CLAY LINER?

Natural clay is often fractured and cracked. A mechanism called diffusion will move organic chemicals like benzene through a three-foot thick clay landfill liner in approximately five years. Some chemicals can degrade clay.

WHAT IS WRONG WITH A PLASTIC LINER?

The very best landfill liners today are made of a tough plastic film called high density polyethylene (HDPE). A number of household chemicals will degrade HDPE, permeating it (passing through it), making it lose its strength, softening it, or making it become brittle and crack. Not only will household chemicals, such as moth balls, degrade HDPE, but much more benign things can cause it to develop stress cracks, such as, margarine, vinegar, ethyl alcohol (booze), shoe polish, peppermint oil, to name a few.

WHAT IS WRONG WITH COMPOSITE LINERS?

A Composite liner is a single liner made of two parts, a plastic liner and compacted soil (usually clay soil). Reports show that all plastic liners (also called Flexible Membrane Liners, or FMLs) will have some leaks. It is important to realize that all materials used as liners are at least slightly permeable to liquids or gases and a certain amount of permeation through liners should be expected. Additional leakage results from defects such as cracks, holes, and faulty seams. Studies show that a 10-acre landfill will have a leak rate somewhere between 0.2 and 10 gallons per day.

FEDERAL REGISTER Feb. 5, 1981, the EPA first stated its opinion that all landfills will eventually leak:

"There is good theoretical and empirical evidence that the hazardous constituents that are placed in land disposal facilities very likely will migrate from the facility into the broader environment. This may occur several years, even many decades, after placement of the waste in the facility, but data and scientific prediction indicate that, in most cases, even with the application of best available land disposal technology, it will occur **eventually**." [pg. 11128]

FEDERAL REGISTER May 26, 1981, pgs. 28314 through 28328, the EPA argued forcefully that all landfills will eventually leak. Another EPA quote:

"Ultimately, waste reduction and resource recovery probably provide the best alternative to land disposal," said the EPA [pg. 28325]

Scoring Criteria Worksheet

Identified need/resolution of problem (15 points)

- Is there an adequate explanation as to why the proposed project is needed?
- Is the specific waste stream targeted by the project clearly identified?
- Is the overall goal or objective of the proposed project clearly stated?
- Does the project address a gap in services?

Well-planned, organized, and technically feasible project (15 points)

- Does the project include adequate levels of customer incentives (convenience, avoided disposal costs, etc.), public education, or public input, as appropriate to the particular project?
- Are all of the major steps or tasks involved in the proposed project clearly presented and adequately described?
- Are responsible entities for accomplishing each step or task identified?
- Are all aspects of the proposed project described in sufficient detail to ensure its overall feasibility or workability?

Regional coordinated effort (10 points)

- Where feasible, is there a plan for cooperation of effort with other entities/organizations in the region?
- If a regional approach is not feasible, is an explanation offered? Have all opportunities for regional cooperation been explored?
- Have steps been taken to avoid duplication of effort?
- If appropriate, will program and equipment costs be shared with other organizations?
- Does the project promote cooperation with private industries?

Cost effectiveness of project (10 points)

- Are the costs of the proposed project presented in unit terms, such as cost per ton, costs per customer, or cost per capita, as applicable?
- Is the cost of effectiveness of the project supported with relevant data such as cost per ton, cost per customer, cost avoided, or cost per capita, as applicable?
- For pilot or demonstration projects, how will higher initial costs contribute to long term offsets or market development?

Direct services vs. administrative overhead (10 points)

- What portion of the funding will go directly toward project expenses?
- Are personnel costs for startup projects only?
- If project costs are administrative is it fully demonstrated that those costs are integral and essential for program success?
- Are administrative and overhead costs requested reasonable for execution of the project?

Sustainability of proposed project (15 points)

- To what extent has the applicant demonstrated ability and intent to sustain the program beyond the term of the grant?
- Does applicant have a strategy or plan to reduce waste generation and/or the need for future assistance?

Local commitment to the project (15 points)

- Has the applicant demonstrated a commitment to the success of the project through allocation of resources (personnel, equipment, funds, etc.)?
- Has the applicant presented sufficient documentation of the success of previously funded projects in order to warrant further funding?

Innovative solution/progressive approach (10 points)

- Does the project encompass an alternative or innovative solution to addressing a problem?
- Does the project expand, improve upon or add solid waste or recycling services in the applying jurisdiction?

Paints, Cleaners, Oils, Batteries, Pesticides, Antifreeze, mercury bulbs,

“Americans generate 1.6 million tons of HHW per year. The average home can accumulate as much as 100 pounds of HHW in the basement and garage and in storage closets.”

HHW

Office of Waste Management, University of Missouri Extension

Thousands of consumer products are hazardous, but for ease of remembering, they can be broken into the following general categories:

1.

Automotive products

Examples: gasoline, motor oil, antifreeze, windshield wiper fluid, car wax and cleaners, lead-acid batteries, brake fluid, transmission fluid.

Home improvement products

Examples: paint, varnish, stain, paint thinner, paint stripper, caulk, adhesives.

Pesticides

Examples: insecticide and insect repellent, weed killer, rat and mouse poison, pet spray and dip, flea collars, mothballs, disinfectant, wood preservative.

Household cleaners

Examples: furniture polish and wax, drain opener, oven cleaner, tub and tile cleaner, toilet bowl cleaner, spot remover, bleach, ammonia.

Other

Examples: household batteries, cosmetics, pool chemicals, shoe polish, lighter fluid, prescription medicines, arts and crafts materials, light bulbs, computer monitors, TV sets