The Stuff We Throw Away

FILMSCRIPTS ON SOLID WASTE MANAGEMENT

This script is one of a series published to help lecturers, teachers, and group leaders prepare for viewing and discussion of solid waste management films. It is also intended for those in an audience who want a permanent record of the data presented in a film. It was written by Stuart Finley, Inc., the producer of the film, in close cooperation with staff of the Federal solid waste management program.

Titles and publication numbers of scripts for solid waste management films are shown below.

The Third Pollution SW-39c.1
Burn, Bury, or What? SW-39c.2
Recycling SW-39c.3
5000 Dumps SW-39c.4
In the Bag SW-39c.5
The Green Box SW-39c.6
The Stuff We Throw Away SW-39c.7
What's New in Solid Waste Management? SW-39c.8

Instructions for borrowing or purchasing these films are given with each script and are summarized in the brochure *Films Tell the Story*, available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

U.S. Environmental Protection Agency

1972

THE STUFF WE THROW AWAY

22-minute, 16-mm motion picture, sound, color. Order no. M-2048-X.*

THE STUFF WE THROW AWAY describes the massive problem of collecting and disposing of America's solid wastes. It illustrates a variety of new and improved techniques. These are being investigated and demonstrated under provisions of the Solid Waste Disposal Act. The film is designed to be useful to the lay public while providing technical guidance to municipal engineers and local officials.

SEQUENCE #1 – INTRODUCTION

New York City streets during 1968 sanitation strike

Once upon a time, there was a big American city that had a little problem . . . a garbage strike.

(super titles)
Lady walking by heap of plastic bags of refuse

As the days went by, the little problem got bigger!

Stack of bags of refuse

. . . and bigger! (pause) Stacks of sacks.

Ladies walk thru stacks of refuse

"How deep can this get?"

Fashionable apartment with refuse stacked out front

In the better parts of town, they had very high-class garbage.

Garbage littering slum streets; other scenes showing refuse on streets

But, in the low-rent areas, they had very common garbage. But, it's a funny thing . . . all over town . . . swanky areas and slums alike . . . things smelled just about the same . . . pretty stinky!

Finally, the people of this big city settled their little strike . . . and many of them, to this day, remember the moral of the story . . . that:

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"effective solid waste management is essential in this complicated twentieth century urban civilization."

SEQUENCE #2 – THE PROBLEM

Dump

Only if we protect and preserve the natural environment can man survive. Our discards . . . we call them solid wastes . . . jeopardize our continued existence. The landscape becomes littered with dumps . . .

Burning dump

then, to reduce the volume, we set fire to them and thus diminish one problem and create another even more insidious one . . . air pollution.

New York Strike pickup

Americans throw away over five pounds of refuse per person per day . . . a staggering total of nearly 200 million tons a year. Unfortunately, pollution is proportional to people. Collection and disposal problems become aggravated when people live in concentrated areas. It costs New York City $30 to collect and dispose of a ton of solid wastes.

Maui dumps into the ocean

Throughout the country, 13 percent of the population has no refuse collection service. This results in indiscriminate dumping which litters the landscape and creates health hazards. The President and the Congress have indicated great concern and programs are now underway to assist local communities. The federal program which includes a wide variety of research and demonstration grants is predicated on one fundamental principle . . . *we must develop a better system.*

SEQUENCE #3 – RESEARCH PROJECTS

Men loading and operating fluidized bed incinerator

Ever wonder how solid wastes could be handled more effectively? Some new ideas from the Environmental Health Service. Here in a University of West Virginia laboratory, a new concept of incineration is being investigated. Refuse, already ground to uniform consistency, is fed into a fluidized bed reactor . . . equipment commonly used by the chemical industry to obtain controlled reactions between gases and solids. Here, the modified pilot reactor becomes a furnace. The gas is air, moving up the column under pressure, and the suspended solids are a mixture of particles of burning refuse and inert sand which serves as a heat sink.

Demonstration tube of boiling water: man drops red balls in; CU balls suspended in tube

This is a simulation of the reaction occurring inside the furnace as the particles reach a fluidized state resembling boiling water at combustion temperatures. The development of fluidized bed

	incineration is one of many varied projects conducted with federal aid under programs of the Bureau of Solid Waste Management, a branch of the Environmental Health Service, Public Health Service, U.S. Department of Health, Education, and Welfare.* The incinerator is still experimental, but it already promises more complete and cleaner burning.
2 men examining residue	Demonstration project personnel examine the residue which constitutes only a small fraction of the original volume of the refuse. The fluidized bed incinerator stack emission contains far less particulate loading than conventional incinerators.
Attendants at hospital waste collection station	Another university research project is examining hospital wastes. Think how *diverse they* are. In addition to the ordinary ones . . . garbage, paper, and other dry combustibles and noncombustibles such as bottles and cans . . . hospitals generate unusual wastes related to medical treatment and surgical procedures that require special handling and disposal.
Man separating waste materials	In order to develop data on the nature and volume of the various waste materials and to devise better management methods, they are identified and carefully separated.
Man examining waste samples	Analysis of the different materials and their processing may even point to desirable changes in the design of hospital service areas and waste handling equipment.
2 men remove molten glass from kiln and pour into mold	Glass has few equals as a container. It's chemically inert . . . won't react with any other substance. That's good. But once millions of bottles and jars are discarded, they won't burn or degrade. They just lie there, taking up space. That's bad. This team of Clemson University scientists is making glass with a difference. . . .
Glass sample	It's soluble in water. But what good is it for holding . . . say, soda pop?
Glass goes into coating apparatus	Well, first it's put into a "chemical vapor deposition apparatus," and coated with a very thin film of inert material.
Coated sample	Then, it will hold anything.
Time lapse: broken sample disintegrates beside unbroken sample	*Break* the film . . . and the glass slowly dissolves. So does the solid waste handling chore.

*Now the Office of Solid Waste Management Programs, U.S. Environmental Protection Agency.

Man examining caged chickens; pan down to waste trough; water flushes through; filtration tank with man sampling

Chickens and other animals concentrated in commercial cages and feed-lots contribute increasingly to the solid waste load. In this University of California experimental closed hydraulic system, water flushes the manure to a high-rate oxidation pond. There, its nutrients are reclaimed photosynthetically in the production of algae. The digested sludge can be used as fertilizer, and the dried algae as supplemental food for ruminant animals. Resources from waste . . . through research.

Teacher and students at strip mine

These students inspecting an abandoned strip mine are a new breed. Their graduate studies emphasize environmental control. Several universities are expanding their curricula to provide qualified engineers in this crucial area . . . recognition that specialized training, as well as imaginative research, is essential for effective solid waste management and the total protection of our environment.

SEQUENCE #4 – COLLECTION TECHNIQUES

Bagged waste collections, Barrington, R.I.

Solid wastes are in the bag in Barrington, Rhode Island. The heavy paper container holds mixed refuse, and is deposited . . . bag and all . . . in a sanitary landfill. The simple, efficient system . . . after 3 years' demonstration is proving easier for householders, a time- and labor-saver for workers, cleaner and more sanitary for everyone. Townspeople favor the system, and a sharp increase in the volume of wastes collected indicates they're making greater use of a better service.

Container storage and collections, Chilton County, Ala.

In a rural community, house-to-house collection is economically unfeasible, and random dumping and littering is unbearable. Chilton County, Alabama, found a solution. It's keeping itself "clean and green" with a network of neighborhood storage receptacles. Residents deposit their household refuse whenever it's convenient.

Truck picks up container

The containers are emptied twice weekly, and the accumulations placed in a central sanitary landfill shared with the county seat of Clanton and 3 smaller municipalities. These cities continue to provide house-to-house collection but have closed their open dumps. Throughout the county, about 90 small random dumps and their rat populations have been replaced by about the same number of handy and tidy containers and one specially equipped truck . . . a pretty fair exchange.

Container-train system, Wichita Falls, Texas

The container-and-truck idea is applied in a different way in Wichita Falls, Texas. Here, the *containers* have wheels. The waste

load is transferred to the mother truck for disposal at a sanitary landfill, while a train of containers is used to make collections along the route. All data on routes, load weights, equipment and personnel usage are computerized daily. Data analysis relates the type and volume of waste generation to land-use . . . residential, commercial, and industrial . . . and will permit development of a complete management model, simulating the container-train collection and disposal system. With this model, optimum use and expansion can be projected as population grows and land-use patterns change . . . demonstrating a systems analysis approach to solid waste management planning.

SEQUENCE #5 – LANDFILLING TECHNIQUES

Kenilworth dump and sanitary landfill, Washington, D.C.

An open dump is bad enough. A burning one is worse. Fire consumes some of the combustible waste, but scourges the area with smoke and ash . . . and rats and flies survive it. Here at Kenilworth, in the heart of metropolitan Washington, D.C., a burning dump was transformed into a model sanitary landfill under a Health, Education, and Welfare demonstration grant. Deliveries of refuse and incinerator residue were spread and compacted, and completely covered with 6 to 8 inches of earth by the end of each day.

The completed fill, contoured and graded, is being developed as a recreational area by the District of Columbia and the National Park Service . . . demonstrating the value of the sanitary landfill technique in reclaiming a blighted area.

Strip mine and landfill, Frostburg, Md.

Another kind of scar on the landscape . . . an abandoned strip mine. Suppose it could serve as a burial ground for solid wastes and be reclaimed in the process? Sanitary landfill demonstrations are being conducted at this mine site and 2 others in Allegheny County, Maryland, by the County, the State, and the Cities of Frostburg and Cumberland. They provide centralized service to 60 thousand people, have eliminated Cumberland's open burning dump and smaller scattered ones, and will eventually restore these old mining sites to their natural beauty.

Above-grade landfill, Virginia Beach, Va.

Here's a small *mountain* of refuse near the Atlantic Ocean at Virginia Beach . . . an innovative sanitary landfill conceived by the state director of Virginia's solid waste activities. It will take all of the city's refuse for several years to build "Mount Trashmore," as wags call it, to a height of about 60 feet above ground level . . . a bowl around an artificial lake and something of a landmark in an area of flat terrain. A very useful landmark, though. Grading already anticipates its ultimate purpose. Some

day this will be an expanse of seats . . . an amphitheatre with a soap box derby track and other facilities for the enjoyment of this coastal resort's residents and visitors.

Some coastal communities are considering disposal of their solid wastes by dropping them well off shore at sea, but too little is yet known of the ecological effects of this practice. Certainly, most of the nation has no choice but to use the land for disposal. In the process, the land can be despoiled, or it can be protected and enhanced. Sanitary landfill techniques make the difference.

SEQUENCE #6 – THE MOLE AND THE MONSTER

D & J Press, Niagara County, N.Y.

This prototype press is known as the "monster." Perhaps it should be called the "magician." It makes solid wastes disappear. The machine receives refuse by the truckload and, in a series of coordinated operations, compacts it, extrudes it in the bottom of a trench, all the while digging the trench, backfilling it, and compacting and levelling the earth. This new variation on the sanitary landfill concept is being used on a hundred-acre site by the Niagara County, New York, Solid Waste Agency. Its members include eight of the county's twelve towns, as well as the Cities of Lockport, North Tonawanda, and Niagara Falls. The Agency disposes of the solid wastes of a quarter of a million people, and is demonstrating and evaluating a novel new landfilling machine.

"Mole," King County, Wash.

Here in King County, Washington, which also includes the City of Seattle, solid wastes are being loaded into another prototype landfill machine . . . this one constructed to the County's own specifications. The "mole" performs about the same functions as the "monster" except that the trench is excavated and backfilled by auxiliary equipment.

The "monster" and the "mole" represent new concepts in sanitary landfilling and a great deal more experience in their operation is needed. They may prove feasible and economically practicable largely under conditions where established sanitary landfill techniques cannot be used . . . but in such special situations, their contributions to good solid waste management will be invaluable.

SEQUENCE # 7 – MILLING AND COMPOSTING

Reduction mill in operation at Madison, Wisc. various scenes

The possible advantages of grinding solid wastes in a hammer-type reduction mill before deposit in a landfill are being demonstrated by the City of Madison, Wisconsin. Milling refuse substantially reduces its volume and effectively extends the life of the fill site.

The mill is simply constructed, easy to operate, and quite reliable. The milled product spreads easily on the fill, compacts and grades well and settles less than unmilled refuse. The product is *not* odorous, and a control area . . . left without earth cover . . . has attracted no rats. Observations so far indicate that the *quantity* of material rejected by the mill is quite low, and that the use of milled refuse considerably improves the *quality* of the landfill.

Windrow of compost being turned

Milled refuse is also being *composted* in several projects such as this one conducted by the Joint U.S. Public Health Service-Tennessee Valley Authority Composting Project at Johnson City, Tennessee. Composting is not the one miraculous solution to all disposal problems; but it does convert organic refuse to a useful product, and in some situations may be more practicable than landfilling or incineration.

SEQUENCE # 8 – INCINERATION PROBLEMS

Dirty incinerator operation

Incineration is like the little girl children sing about. When it's *good*, it's *very, very* good . . . but when it's *bad*, it's *horrid*. About 360 incinerators handle almost 10 percent of the nation's total waste load; but no more than 50 of these facilities are adequate. Some of the others can be remodeled. The rest should simply be replaced. And additional ones will be needed as the volume of solid waste increases.

SEQUENCE #9 – INCINERATION TECHNIQUES

Shippensburg, Pa. incinerator plant; interior shot front end loader pushing refuse into chute; TS refuse moving on conveyor

Borough Mgr. Smith opening and looking into incinerator porthole; TS flames inside

The Shippensburg, Pennsylvania, Sanitary Authority is demonstrating a new type of incinerator because it must dispose of the solid wastes of some 12,500 people without a suitable area being available for a sanitary landfill. The combustible refuse goes into a facility specially designed to meet air pollution control standards and eliminate environmental health hazards while reducing the refuse to the smallest possible volume.

MS perforated drum

The heart of the furnace is this stainless steel perforated drum, revolving in a steady stream of air . . . like a giant clothes dryer . . . to achieve maximum combustion.

Inside revolving drum

The rotary grate incinerator, as it is called, may prove to be an efficient, economical means of solid waste disposal for many relatively small urban areas.

Cincinnati experimental incinerator; top of stack smoking; WS zooms out to whole unit

An incinerator stack shouldn't smoke. This one doesn't except when it's made to. It's part of an experimental furnace built to study the control of emissions.

Smoking fire bed with ring of air nozzles (2 scenes)

Through the nozzles ringing this fire bed, directed streams of air can be introduced for cleaner burning.

Technicians operating and monitoring; zoom out to WS of unit with no stack emission visible

As investigators alter combustion conditions, they monitor the composition of gases flowing upward through the stack and into the atmosphere. Seventy percent of America's municipal incinerators do not have adequate air pollution control devices. This Environmental Health Service staff research project is representative of the efforts to advance the technology of incineration.

SEQUENCE #10 – CONCLUSION

Fresno, Calif. grape vineyard zooming out to include windborne ash and smoke; TS of burning dump

A grape vineyard next to an open burning dump just doesn't make any sense.

"No Dumping" sign full screen, zooming out to closed dump

Fresno refuse trucks on collection rounds (3 scenes)

The dump is closed . . . as all local cities, the county, the state, and the federal government cooperated to devise a unique trailblazing study of the solid waste problems facing a 12-hundred-square-mile area including the city of Fresno, California. Uncoordinated methods of handling municipal, industrial, and agricultural wastes were analyzed; and a total, integrated waste management plan devised. Most plans are concerned simply with handling wastes. The Fresno Study, using systems analysis, focuses on managing solid wastes to achieve the desired end product throughout the urban-rural region: unblighted land . . . clean air and water . . . a pleasant, healthful environment.

TS compactor at landfill, zooming out to pan of long line of trucks; CU of truck, followed by another pan of trucks

Sanitary landfilling and composting are emphasized . . . with very little incineration . . . and greater resources recovery is a future goal.

The more we consume and use . . . the more we throw away . . . an endless stream of solid wastes with technical problems and environmental dangers that have become national in scope. These research, development, and training activities are a portion of the national search for new and improved methods.

There are many more projects, and there will be many others, all supported, in part, by the U.S. Department of Health, Education, and Welfare under the Solid Waste Disposal Act, providing federal assistance to the technological advancement of solid waste management. Whether local and state governments and private enterprise can apply the advancements depends on the willingness of the American people to bear the cost. Saving the environment will be expensive; but then, another one isn't available . . . at any price.

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