8-7-2007

A New Rural Solid Waste Management Program for South Dakota

Roger Steinberg
South Dakota State University

A New Rural Solid Waste Management Program for South Dakota

By **Roger Steinberg,** Extension area environmental agent

On December 2, 1970, the Environmental Protection Agency was created, bringing together for the first time in a single agency the major environmental control programs of the federal government. The responsibilities of EPA include air and water pollution, pesticides, radiation, noise, and solid waste disposal. Solid waste management has probably received the least publicity of all these.

Garbage, trash, and **refuse** are different terms which point to the same thing—a problem. Americans throw away 3.5 billion tons each year—that's 5.3 pounds per day per person. It is estimated that by 1980 this will increase to 8 pounds per day per person. The problem is increased by the fact that two-thirds of what we discard in this time of convenience foods, multiple packaging, and household garbage grinding is likely to be paper, metals, glass, and plastics.

The goal of the Environmental Protection Agency, through its program MISSON 5000, is to eliminate the open municipal dump. The closing of open dumps will not only make our communities better places to live, but it is an essential step toward new environmentally sound principles in solid waste management.

There are four broad areas in this new concept of solid waste management:

(1) Controlling the quantity and types of waste.
(2) Efficiently collecting those that must be removed.
(3) Recycling those that can be reused.
(4) Properly disposing of those that have no further use.

These ideas are the foundation of the solid waste management programs of the Environmental Protection Agency. EPA has been aided in its work by two federal laws, the Solid Waste Disposal Act of 1965 and the Resource Recovery (Recycling) Act of 1970, which direct federal effort toward solving the solid waste problem.

Of all the presently authorized municipal and county dumps and land disposal sites, only five percent meet accepted standards. Of the rest, nearly one-half contribute to water pollution; three-fourths pollute the air; and many provide food and shelter for rats, flies, and other pests. They may also be breeding grounds for disease and accidents. All are ugly degrading features of the American landscape.

THE SOUTH DAKOTA PROBLEM: LOCAL PLANNING

The primary responsibility for solid waste collection, processing, and disposal rests with local levels of government. However, very few communities have implemented effective solid waste management programs. Municipal, town, or county government officials must provide needed leadership to establish a solid waste management program in their communities.

Local government is being forced to act not only from the federal level but now from the state by the South Dakota Solid Waste Act of 1972. The new law, soon to be implemented, says in part: "The committee (Public Health Advisory Committee) is impowered to adopt and promulgate rules, regulations, and standards for the collection, transportation, processing, resource recovery, and disposal of solid waste. Such rules and regulations shall include but not be limited to the disposal site location, construction, operation, compliance deadlines, and maintenance of the disposal process."

The act gives the committee power to issue, revoke, modify, or deny permits under rules and regulations set by the committee. The law requires all municipalities to develop and submit to the committee for approval a plan to provide a solid waste management system.

This law along with the Air Pollution Control Regulations for South Dakota, enacted January, 1972, which forbids open burning in the state by July 19, 1973, with exceptions for certain agricultural practices, will force many communities into action.

The First Planning and Development District at Watertown—the Model Rural Development Program—realized the environmental and legal problems in solid waste management facing the people and communities in the 10-county district, and sought

funds from the Environmental Protection Agency for a solid waste planning project.

In November, 1972, an MRD planning grant was approved—one of the first of its kind in the United States. The purpose of the grant is to study the problem of open dumps and municipal waste and seek alternative solutions to the solid waste disposal problem. A sanitary engineer has been hired with these funds.

SOME SOLUTIONS

Recycling

Over a long period of time, **recycling** and reuse of materials will clearly be the sensible way to reduce waste, conserve valuable resources, and cut waste disposal problems down to manageable size.

Recycling of solid waste from communities is hampered by the necessity of sorting and separation. There is a lack of practical systems for separating, classifying, and decontaminating this fantastically mixed bag of solid waste. The lack of markets for the salvage material in an economy long geared to the use of raw materials is another serious problem.

These problems will be solved in the future, however, and special emphasis in the MRD Solid Waste Planning Project will be given to reclamation, recycling, and other procedures or processes which will reduce the flow of solid waste into the disposal sites.

Composting

Another system of solid waste management is called **composting.** Composting is the controlled breakdown of the remaining organic materials to a sanitary nuisance-free humus-like material after the separation of glass, metals, and plastics. This end product is then used to enrich depleted soil as a fertilizer and soil conditioner. Some communities are presently using composting as a part of their solid waste management program.

Incineration

Another possible method is **incineration.** Burning in closed incinerators reduces the bulk, but some refuse is still left. It is expensive because of the pollutant traps that must be installed on the stacks, and there is a problem because of compliance with new air pollution laws. Some large cities, however, have been quite successful in economically operating large incinerators for the burning of refuse.

Sanitary Landfill

The **sanitary landfill** is an engineered method of disposing of solid waste on land. It involves spreading of waste in thin layers, compacting it to the smallest practical volume and covering it with soil at the end of each working day.

Surface dumping endangers South Dakota air and water, provides homes for rats and flies, and is visually offensive. This is one of the 95 percent of dumps that do not meet federal standards.

The sanitary landfill has many benefits. The land might be used to create parks and other recreational developments. Quarries, gravel pits, and ravines can be used for solid waste disposal. A properly managed sanitary landfill eliminates all the problems mentioned previously with open dumps.

Sanitary landfills can be described according to the shape and location of the space used. Three methods are generally used. In each, the solid waste is covered with soil or other material in the fashion of a layer cake at the end of each working day:

In the **area** method, the refuse is deposited in horizontal layers on relatively flat ground, compacted and covered over sides and top daily.

With the **trench** method, land is excavated in the shape of a trench. Refuse is deposited in the

trench and compacted by a bulldozer; then the trench is layered until filled.

The **ramp** method of filling land usually employs existing ravines or quarries in which refuse is deposited in daily layers against the side of the ravine or quarry.

As a part of his duties, the sanitary engineer hired through the MRD grant will assist in detailed planning of site location, capacity, type of landfill, cost, identification of potential water pollution problems, and the potential for resource recovery.

THE KEY: COOPERATION

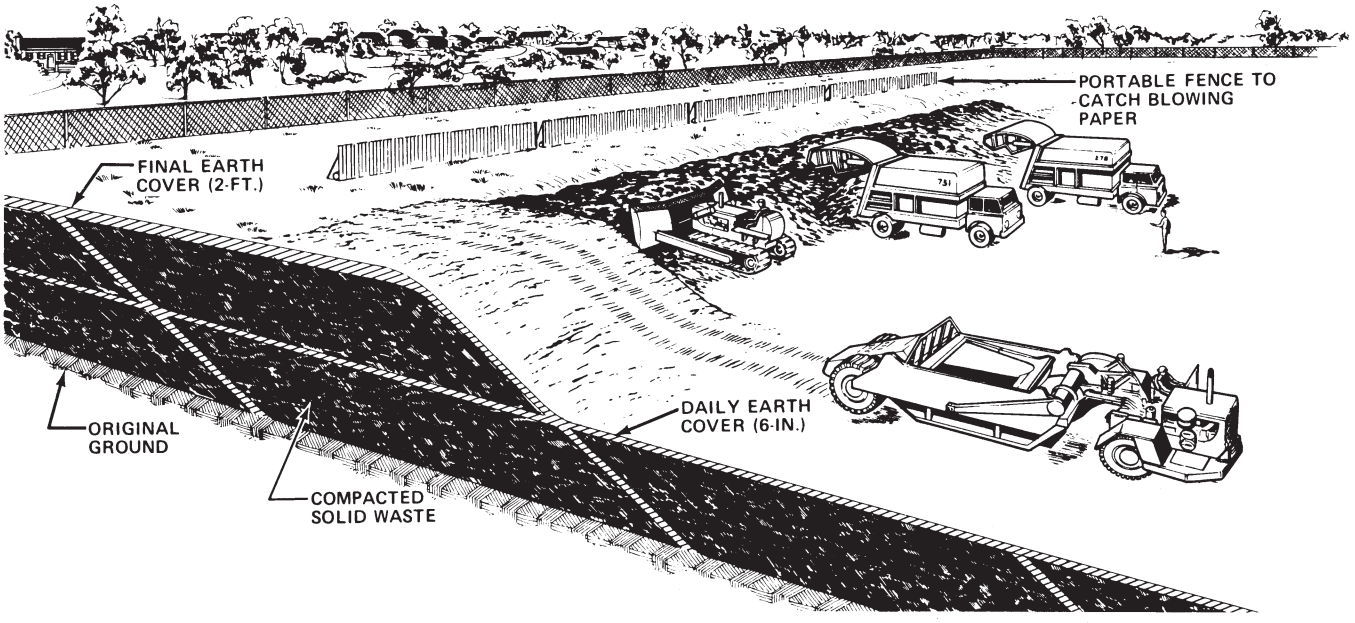
Because the cost of new solid waste management systems may be greater, new forms of cooperation between neighboring cities and communities may be needed.

Cooperation in other rural areas has led to economical and successful county-wide solid waste container collection systems and central sanitary landfills. Many projects have been successful even without federal and state aid. Citizens in these areas, having learned the environmental benefits and high level of services from such systems, are giving these projects their full support.

The key to solid waste management is public involvement and cooperation. This program is the responsibility of your local government. It needs your suggestions and support.

Truck unloading at city dump. Note the smoke that contributes to air pollution. Discarded food in partially burned containers also becomes more accessible to rodents.

Area sanitary landfill method. The bulldozer spreads and compacts solid wastes. The scraper hauls the cover material at the end of the day's operation. Note the portable fence that catches blowing debris. (Drawing from "Sanitary Landfill Facts," U. S. Department of Health, Education, and Welfare.)

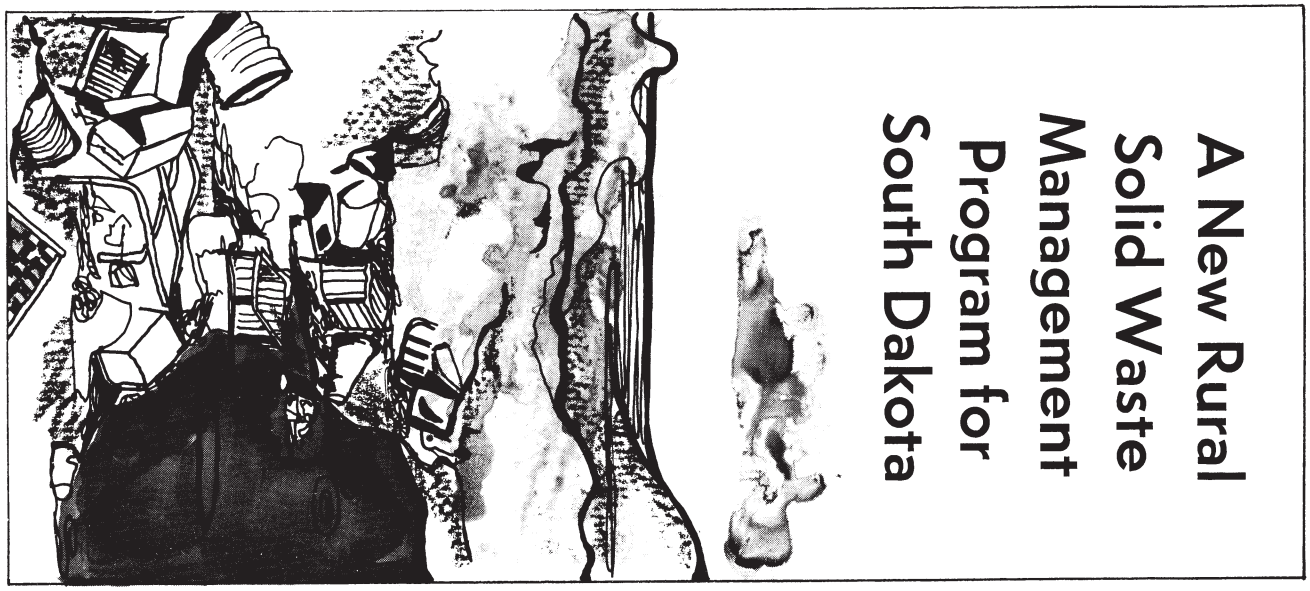


More details and further information about solid waste management, sanitary landfills, recycling, or community planning can be obtained from:

Office of the First Planning and Development District
Model Rural Development Program
401 First Avenue NE
Watertown, South Dakota 57201
OR
Area Environmental Agent
Ag Hall
South Dakota State University
Brookings, South Dakota 57006

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. Duane Acker, Director of Extension Service, South Dakota State University, Brookings. The South Dakota Cooperative Extension Service offers educational programs and materials to all people without regard to race, color, religion, sex or national origin, and is an Equal Opportunity Employer.

Cooperative Extension Service
South Dakota State University
U. S. Department of Agriculture



A New Rural Solid Waste Management Program for South Dakota

FS 591