

produced from refuse-sludge mixtures is less apt to contain viable pathogens and seeds than normally digested sewage sludge. However, few studies of these factors have been made in the United States.

PHS is interested in the public health aspects of solid wastes composting and of the use of finished compost in various applications. PHS proposes to study plant operation and sanitation methods to avoid production of odors, propagation of flies and rodents, and disease hazards to the workers and visitors. PHS also will direct studies on the survival of pathogens and indicator organisms throughout the composting and curing periods. This is particularly important when raw sludge is used in the process.

Implementation of the project

During 1960-1964, TVA-PHS conferences were held in Savannah and Atlanta, Georgia; Knoxville, Tennessee; Washington, D.C.; and Muscle Shoals, Alabama. PHS and TVA agreed in August 1964 to undertake a joint research and demonstration project on solid wastes composting. Engineers of TVA, with state and local health department representatives, surveyed refuse and sewage sludge disposal at six cities in the Tennessee Valley area. Agricultural specialists of TVA made surveys of the use of chemical and organic fertilizers in the same six areas. Johnson City, Tennessee, was selected as the preferred site for the proposed research-demonstration composting plant and it agreed to join PHS and TVA in the project.

The TVA Division of Agricultural Development initiated a project on "The Use of Municipal and Industrial Organic Wastes in the Production of Soil Amendments and Fertilizers" in March 1963. A continuing study of the disposal of organic municipal and industrial wastes as soil amendments consists of surveys in various sections of the United States to determine the scope and nature of the problem and the current status of research and development in this field. Studies are being conducted on economical means of converting composts into forms suitable for large-scale disposal and to determine the agronomic values of such products. TVA will conduct experiments on the preparation of acceptable composted products, in testing and demonstrating their value and effect, and in determining the market potential for various uses, directed specifically to the operation of the demonstration plant after its completion.

Wiley was transferred in November 1964 to the TVA Division of Health and Safety in Chattanooga to collaborate with TVA in detailed planning of the project. Later, he will move to Johnson City to provide technical guidance in plant operation and to coordinate research activities. A cooperative project agreement on the "Joint U.S. Public Health Service-Tennessee Valley Authority Composting Project, Johnson City, Tennessee," was signed on February 15, 1966, by representatives of the two Federal agencies and Johnson City. Under the agreement TVA will design, construct, and operate the plant with technical guidance from the PHS and will be reimbursed by PHS for expenses of the project. The city will be reimbursed for services and expenses above normal as a result of the operation of the research-demonstration composting project.

Compost plant design

The composting plant will be constructed on a site provided by Johnson City adjacent to its sewage treatment plant. The compost plant will be of the wind-row type capable of treating all mixed refuse and raw sewage sludge from the city of 33,000 population. Certain commercial and industrial organic wastes also may be treated. The plant is designed to operate 5½ days a week, single shift, and is expected to process an average of 58.5 tons a day of mixed refuse with a maximum of 70 tons a day and sludge quantities of 9,100-13,200 gallons a day (five percent solids) or 3,800-5,500 pounds a day of dry sludge solids. Refuse processing equipment is designed to handle 10 tons an hour.

The accompanying flow diagram and perspective view show the processing steps and layout of the plant. Refuse will be delivered to the plant in 53-cubic-yard compaction trailers. All incoming refuse, discarded wastes, and compost will be weighed on truck scales adjacent to the office and laboratory building. The receiving hopper has a capacity of about 3,500 cubic feet or about one-half day's collection. A 6-foot-wide plate conveyor, moving about one foot a minute, carries the refuse past a vertical leveler and drops it onto a 3-foot-wide elevating and sorting belt conveyor traveling at right angles to the plate conveyor. The receiving building will be roofed and enclosed on three sides. The belt conveyor will be enclosed between receiving and processing buildings.