

In conclusion, I would like to state that the Public Health Service is facing the technological problems I have mentioned today with vigor and enthusiasm. Some of the approaches we are using will succeed and some will fail. We are confident, however, that their undertaking will furnish technological facts for more effective solid waste management and a better and cleaner America.

I appreciate the opportunity to discuss the solid waste management activities of the Public Health Service with you today.

Mr. DADDARIO. Thank you, Mr. Vaughan.

Questions submitted to Richard D. Vaughan by the Subcommittee of Science, Research, and Development.

*Question 1. Solid wastes not only are precursors of air and water pollution but appear again as the result of waste treatment—i.e., the sludge from sewage plants and the residue from incinerators. Are these latter residues ultimately going to have to be buried? What is the forecast for burial site acreage in the Northeast megalopolis? Can these solids be dumped at sea?*

Answer. Most areas must use a form of land disposal for sewage sludges. In some coastal areas these sludges may be hauled to sea. At present, the ultimate disposal of the residue from incinerators is invariably upon the land. Present incinerators produce residues of varying quality, most of which must be disposed of by burial. There is no indication that this residue quality will be greatly improved and therefore, it is believed that residue burial will remain as a required practice. There is every expectation that much of the sludge and incinerator residues produced will always have to be disposed of by land burial. The total amount that will have to be buried will be directly influenced by the suitability of recovery and utilization processes as developed through the Solid Waste Program's efforts.

A summary of the present burial site acreage available in northeast megalopolis is unavailable at this time, a forecast of future sites would certainly produce an inaccurate appraisal of the situation.

There does not appear to be any technical impediment to the use of land for the proper disposal of sludge and incinerator residues either now or in the foreseeable future. The major limiting consideration is the cost involved in transporting and disposing of such wastes, not the amount of land available for their disposal. Studies are underway to solve this problem through better transportation methods, improved volume reduction methods, and advanced disposal techniques.

The technology concerning sea waste disposal is for all practical purposes nonexistent at this time. Until adequate technical information is available on the degradation and movement of these materials when dumped at sea it is impossible to adequately answer any question concerning the suitability and desirability of such disposal practices. It is possible that advanced technology may allow us to safely dispose of solid wastes at sea just as we now dispose of solid wastes in other environmental areas.

*Question 2. When solid wastes from municipal collection of trash is incinerated, what is the volume reduction? What is the weight reduction? What is the magnitude of the disposal problem of incinerator residue for a large incinerator?*

Answer. The volume reduction obtainable by municipal incinerators (as well as the weight reduction) depends almost entirely upon the configuration and operation of the particular facility. A 75% reduction in both weight and volume of municipal refuse is considered to be the average result of incineration today.

The magnitude of the incinerator residue problem is not only dependent upon configuration and operation, it is also dependent upon the size of the furnace and the amount and type of the refuse charged. Many very large incinerators minimize the residue problem by doing an efficient job of volume reduction. It is also just as common to see a municipal incinerator poorly operated, producing a very minimal volume reduction. If the present day incinerators could produce, under normal operating conditions, a sterile, stable residue, the problem of residue disposal would be considerably decreased.

*Question 3. What are the comparative areas required for composting versus incineration and other methods?*

Answer. Municipal incinerators and composting plants consisting of mechanical digesting facilities require approximately the same space for plant installation. The windrow method of composting, however, requires a considerably greater space since much of the digestion of the solid wastes takes place in open windrows upon composting aprons.