



Project Summary

New Jersey Industrial Waste Study (Waste Projection and Treatment)

R. E. White, T. G. Busmann, J. J. Cudahy, M. L. Foster, and
S. C. Meckstroth

The full report presents an estimate of the New Jersey industrial waste generated and shipped off site. The quantity of waste is specified by waste category and by industry (SIC code). The waste/employee/SIC factors developed in this study can be applied to develop off-site waste projections by waste category for any industrial area in the United States. Treatment technologies were defined for incorporation in regional facilities to treat and dispose of New Jersey off-site industrial wastes.

This Project Summary was developed by EPA's Hazardous Waste Engineering Research Laboratory, Cincinnati, OH, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

The situation in New Jersey, as well as in many industrialized states, has created the need to develop a plan for managing industrial waste. The results of the full study performed for New Jersey can be applied to other industrial areas. New Jersey was selected primarily because the major industries in the state offered to contribute significantly to such a study through their nonprofit organization, The Research and Development (R&D) Council of New Jersey. The R&D Council developed a waste survey, submitted the survey to industry, and stimulated the industry survey response that was vital to the success of this study. By establishing the industry

SIC code for each response and the number of associated employees, the quantity of waste/employee could be established by waste category for each SIC code. These factors were used to project the quantity of off-site waste by category for the state of New Jersey. These waste projection factors can be used to project the off-site waste by category for any industrial area in the United States where SIC code and employee data are available.

Results

The results of the study were developed for making decisions about the construction of regional hazardous waste treatment facilities for industry use. The data are needed to establish facility locations, treatment and disposal technologies, and preliminary design capacities.

The New Jersey R&D Council survey results indicated that 26% of the industrial waste generated is disposed of off site. Depending on either the waste category or the specific industry involved, the portion of waste going off site varies widely from near zero to 100%. The use of an overall percentage factor to project off-site waste from total waste generated would give grossly misleading results.

The survey indicated that, including trash, approximately nine million tons per year (TPY) of industrial waste is generated in New Jersey. Excluding trash, an estimated 648,000 TPY of waste is being disposed of off site. The off-site waste is projected to decrease by 14% during the next five years.

The study results indicate that the most practical disposal methods for the off-site waste will be as follows:

	<u>Tons Per Year</u>
Incineration	201,000
Secure landfill	61,000
Other land treatment	50,000
Resource recovery	61,000
Physical treatment	67,000
Chemical treatment	84,000
Biochemical treatment	34,000
	<u>558,000</u>

The most practical incineration systems for use at regional facilities would be multipurpose rotary kilns with high temperature secondary combustion chambers and gas cleaning systems. The kilns should be designed to handle all wastes, including steel drums, and should also be expected to incorporate energy recovery. Six 80- to 90-million Btu/hr kiln units would be required to dispose of the projected waste.

Large secure landfill facilities will be required with stabilization/solidification processes to provide maximum ground water and environmental protection. The primary hazardous component will be heavy metals, including heavy metals from incineration system ashes and precipitated metals from scrubber water and other precipitation systems. The possibility of recovering some metals is questionable and cannot be determined from this survey. It is estimated that approximately 60,000 TPY will require disposal in a secure landfill.

More than 80,000 TPY of acid and base are projected for off-site disposal. Neutralization and biochemical treat-

The potential for oil recovery should be considered in the regional facility design. As a minimum, high quality oil should be segregated to use as auxiliary fuel in the incineration system. Many of the most commonly used solvents are present in high volumes. Solvent recovery would require blending, distillation, and drying facilities. The extent of potential recovery cannot be established from this study.

A review of disposal costs in New Jersey indicated that the average 1982 charge for incineration was \$270/ton and that the average secure landfill cost was \$300/ton, not including stabilization/solidification, which would add at least \$40/ton.

Some of the disposal methods now being used may be unsatisfactory for long-term disposal. This is especially true of current hazardous waste landfill practices. Many off-site waste disposal methods currently used are completely satisfactory and are expected to continue. Recovery systems in the areas of

solvent, oil, and metals are already in operation and, in some cases, pay the waste generating facility for the feedstock received.

To establish practical regional facilities to serve New Jersey industry, one or two regional operations might be started with one 80- to 90-million Btu/hr rotary kiln capable of accommodating approximately 40,000 TPY with provisions to increase the state-wide capacity to more than 200,000 TPY with six rotary kilns, if needed. The initial secure landfill capacity might be 20,000 TPY, with room for expansion to a state-wide capacity of 60,000 TPY. The chemical/physical treatment capabilities for neutralization, precipitation, and biochemical treatment should also be nominal until the demand is established. It may be advisable to curtail the installation of recovery facilities for solvent, oil, or metals until the additional need for this service can be established. Consideration should be given to providing for the addition of a land farming system.

R. E. White, T. G. Busmann, J. J. Cudahy, M. L. Foster, and S. C. Meckstroth are with IT Enviroscience, Knoxville, TN 37923.

Mary K. Stinson is the EPA Project Officer (see below).

The complete report, entitled "New Jersey Industrial Waste Study (Waste Projection and Treatment)," (Order No. PB 85-216 521/AS; Cost: \$13.00, subject to change) will be available only from:

*National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: 703-487-4650*

The EPA Project Officer can be contacted at:

*Releases Control Branch
Hazardous Waste Engineering Research Laboratory—Cincinnati
U.S. Environmental Protection Agency*