



Project Summary

Industrial Residue Management Alternatives for Allegheny County (Pittsburgh) Pennsylvania

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Major generators of wastewater treatment, air pollution control, and production process residues in Allegheny County (Pittsburgh), Pennsylvania, were identified and contacted for the determination of current and future amounts of residues generated. Data developed through the survey and a literature review were utilized to estimate total residue generated by all industrial sources within the county. Estimates for 45 categories of industrial residues are presented for 1977 and 1983.

Information is presented on current industrial residue reclamation, treatment, and disposal practices in the county. A computer analysis of costs for transporting wastes to several proposed central treatment facility locations within the county was performed.

Three alternatives for managing projected residue quantities within the county were formulated. A cost analysis of the alternatives established that an environmentally acceptable management plan for all residues generated within the county could be implemented at a total cost comparable to maintaining existing practices.

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This Project Summary was developed by EPA's Robert S. Kerr Environmental Research Laboratory, Ada, OK, 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 objectives of the study were as follows:

1. Determine distribution, volume, and characteristics of industrial wastewaters and sludges in Allegheny County.
2. Determine best practical treatment for industrial sludge volume and characteristics for the area treatment plants.
3. Investigate future expansion as to types of wastes and volumes.
4. Develop alternatives for collection, transport, storage, disposal, and recycling of the area wastes.
5. Develop a complete county treatment management system.

All major industries in Allegheny County with greater than 500 employees and wastewater flow greater than 0.1 mgd were contacted by letter or telephone. Additional information sources were previous surveys, permit applications, discharge permits, estimates made from values cited in the literature for specific treatment processes, and production and employment

data. It was understood that among the utilized data, there would be information obtained by the Allegheny County Sanitation Authority (ALCOSAN) through direct sampling and analyses and that this ALCOSAN information would account for at least 50 percent of the total industrial wastewater flow in the county.

The grantee obtained data from 234 industries, of which the data were verified for 131 industries by the ALCOSAN laboratory or, for the steel companies, by the EPA's Denver Enforcement Laboratory. The total volume of industrial wastewater flow reported by the 234 industries was 1,392 mgd; the total volume reported by the 131 sources was 1,377 mgd, or 99 percent of the total.

Conclusions

1. Large quantities of sludges and other process residues from wastewater treatment, air cleaning, and industrial manufacturing operations are produced each day in Allegheny County, and the disposal of these residues places a significant burden on industry. As residue quantities increase and disposal options become more constrained because of new laws and regulations, the disposal costs will increase.
2. Steel mills and other primary metal industries, plating and coating operations, foundries, nonferrous metal industries, food industries and others with residue disposal requirements will be most directly affected. The lack of a satisfactory disposal program for residues could adversely affect jobs in Allegheny County.
3. Treatment processes and residue disposal alternatives which will meet the regulatory requirements likely to be in force within the next 20 years have been evaluated. Preliminary cost estimates based on residue quantities in 1985 have been developed for three alternatives. These alternatives are:
 - **Alternative A**—Initial program using existing technology, excluding residues for which disposal practices are considered best state of the art.
 - **Alternative B**—Later program using technology under development, again excluding residues for which disposal practices are considered best state of the art.
 - **Alternative C**—Similar to Alternative B but excluding most residues

from steel industry and from publicly owned sewage treatment plants. Steel industry and publicly owned sewage treatment plant residues are of such magnitude that solutions other than centralized facilities may be selected.

For the categories of wastes included in Alternative A, current quantities and disposal costs are presented. Costs and quantities for the three alternatives and comparable current costs and quantities are presented with and without transportation.

Using available technology (Alternative A), a system can be implemented with annual costs approximately the same as current levels but with the new system handling approximately 40 percent more residues.

Preliminary assessment of Alternative B, which depends to some extent on technology development and therefore requires further evaluation, indicates that annual costs and costs per ton should not exceed the costs for Alternative A. Alternative B would require a considerably larger capital cost but would be handling a substantially larger amount of residue. Both alternatives (A and B) include environmentally acceptable treatment, handling, and disposal techniques.

Alternative C, which does not include most of the steel wastes but is directed at the smaller generators of wastes, would cost less than one-half of current costs on an annual basis but would handle only about one-third of the wastes currently being handled. Unit costs for

Alternative C would be higher than the unit costs for the other alternatives considered because of losses in economies of scale.

4. Assuming no change in the current disposal techniques and no increase in current unit cost estimates, the annual costs for disposing of future quantities in a facility that would meet environmental standards is within the range of and probably less than existing cost.
5. Unit costs—per ton of residue handled, treated, and disposed of decrease with increasing quantity of residue managed in a central system. The value of recovered resources such as metals, acids, and solvents, is likely to reduce unit costs even further. The range of types of residue to be managed in the county has the effect of reducing unit disposal costs, since the value of recovered resources from one treatment-disposal unit operation could offset costs of others.

Recommendations

Given the current climate of intense public and regulatory scrutiny of hazardous waste disposal practices, the county should act immediately to insure that acceptable treatment, disposal, and recycling outlets remain available. Lack of such a comprehensive plan could result in the stagnation or decline in the industrial base of the county in the next decade.

The development of a county-wide residue management and disposal system should proceed to the next phase—preliminary design. This phase should include securing agreements with residue suppliers, final selection of unit processes, and more detailed cost estimates.

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The complete report, entitled "Industrial Residue Management Alternatives for Allegheny County (Pittsburgh) Pennsylvania," (Order No. PB 83-133 488; Cost: \$22.00, subject to change) will be available only from:

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