United States
Environmental Protection
Agency

Environmental Research
Laboratory
Corvallis OR 97333

Research and Development

EPA-600/S3-84-059 Sept 1984

EPA

Project Summary

An Assessment of Solid Waste Disposal Practices in Rural Communities in Alaska

Timothy Tilsworth

A study was conducted of solid waste management practices in remote communities of Alaska during 1980-1982. This study was conducted in cooperation with the Alaska Department of Environmental Conservation.

Solid waste management problems were identified for small communities in cold regions and analyses were conducted to determine viable alternatives, including open dumps, modified landfills, and incineration. A very limited sampling program was conducted to determine solid waste characteristics. National and international literature was reviewed, including that of Canada. The project included site visits to several small villages, consultation with regulatory officials and discussion with several Canadian agencies and communities. A national survey was conducted relative to state regulations pertaining to small community practices.

The results of the study identified many problems existing in small communities in cold climates and found that in many cases state regulations are either not enforced or, if they are, considered inappropriate in view of the community's very limited resources. The study includes an analysis of solutions and alternatives available.

This Project Summary was developed by EPA's Environmental Research Laboratory, Corvallis, OR, 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

Environmental engineering in Alaska often requires unique and/or modified design concepts because of the severe climatological conditions and other limiting factors and constraints which include a widely dispersed population, permafrost, land litigation problems, a lack of an economic base for many small communities, and a severely restricted transportation system.

The severe climatological conditions in Alaska can seriously affect modes of operation for solid waste disposal systems Low temperatures impede biodegradation and restrict the latitude of operational options. Excessive precipitation can result in solid waste leachate, and limit or reduce the number of acceptable disposal sites Frozen ground is expensive to excavate. If not properly managed, it can subsequently produce a water quality problem in addition to erosion control problems.

An appendix to the final report details solid waste disposal conditions for Alaskan villages, and provides basic information for some 206 Alaskan community solid waste operations The final report also documents prevalent social conditions and provides a bleak view of the solid waste management conditions Of the villages included in the survey, 70 had populations less than 100, 180 had populations less than 500, 200 had populations less than 1000, and six had populations greater than 1,000. A large percentage of these sites were categorized as open dumps, and many were located in continuous/discontinuous permafrost.

Solid Waste Management in Alaskan Communities

In Alaska solid waste is usually disposed of by landfilling and open dumping. Unhealthy and unsightly open dumps exist in most small villages of Alaska where 76% of the communities use open dumps, 11% use modified landfills, and the remaining 13% use ocean or river disposal. A few communities use incineration, but all incinerator operations are in federal facilities. A statewide survey initiated in 1977 by the Alaska Department of Environmental Conservation (ADEC) found that open burning was practiced at 22% of the communities and that only 12% had any form of centralized collection system Bears were problems at several sites and littering was widespread Several of the landfills were designed and operated by the United States Public Health Service and the Alaska Department of Transportation and Public Facilities.

In 1981, the Northern Region of the ADEC inspected 25 remote solid waste dumps. Numerous problems were identified including dead animal remains, honeybucket wastes and possible contacts with potable water supplies. Additionally, several sites were inhabited by fox which could be rabid. Many villages did not have centralized disposal sites and indiscriminate dumping occurs throughout and around the villages.

Most of the disposal facilities do not meet the RCRA criteria established for sanitary landfills for a variety of reasons, and are in violation of state and federal laws. The attendent problems include open burning, littering, discharge into waterbodies, nuisance factors and lack of vector control.

Results and Recommendations

The final report fully documents conditions in 200 Alaskan communities with populations less than 1000. About three-fourths of those communities use open dumps as a means of solid waste disposal. Few, if any, solid waste disposal facilities in Alaska meet the RCRA criteria for sanitary landfills.

Where cost prevents the use of expensive solutions such as incineration, the final report recommends operation of modified landfills and/or regulated and controlled open burning. Indiscriminate open dumping of solid waste and human sewage must be replaced by controlled, supervised and approved methods of disposal Given the present state-of-the-art in Alaska, RCRA goals cannot be attained for most of the State's small remote communities However, these goals should be retained as an ideal to be met in the future

Timothy Tilsworth is with Engineering Experiment Station, University of Alaska, Fairbanks, AL.

***James C. McCarty** is the EPA Project Officer (see below).*

The complete report, entitled "An Assessment of Solid Waste Disposal Practices in Rural Communities in Alaska," (Order No. PB 84-187 970; Cost: $10.00, 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:

Environmental Research Laboratory
U.S. Environmental Protection Agency
Corvallis, OR 97333

United States
Environmental Protection
Agency

Center for Environmental Research
Information
Cincinnati OH 45268

Official Business
Penalty for Private Use $300

☆ U S GOVERNMENT PRINTING OFFICE, 1984 — 759-015/7779