

Abstract

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America's cities, farms, and industries are producing increasing amounts of byproducts. Biosolids and solid residues from our cities, animal manures from our farms, and coal combustion residues and other byproducts from industries require environmentally safe and cost-effective methods of disposal. The byproduct use problem presents a challenge and an opportunity for U.S. agriculture. Animal manures and many municipal and industrial byproducts may have substantial value if properly used in agriculture. The development of methods to optimally integrate byproduct use into sustainable agricultural practices could provide a partial solution to byproduct disposal problems.

This report emphasizes potential agricultural uses for major byproduct sources, including municipal byproducts (biosolids and solid residues), industrial byproducts (coal combustion residues and other selected byproducts), and animal manures. Individual chapters address each major byproduct source by providing information about amount produced, composition of the waste, current uses, problems and opportunities associated with agricultural and horticultural uses of the byproduct, and research needs. An executive summary provides an overview of the issues involved in using byproducts in agriculture and describes the research needed to transform municipal, animal, and industrial byproducts into an environmentally safe agricultural resource.

The audience for this publication includes scientists and administrators in research, education, and industry, and policymakers.

Keywords: aggregate fines, air quality, beef cattle manure, best management practices, biosolids, calcium silicate slag, coal combustion byproducts, composting, dairy cattle manure, flue gas desulfurization, fluidized bed combustion, gypsum, horticultural uses, incineration ash, land application, municipal solid residues,

nitrogen, phosphogypsum, phosphorus, poultry manure, recycling, swine manure, water quality, wood ash

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