AVCO Systems Division
Lowell Industrial Park
Lowell, Massachusetts
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FACT SHEET

NONFERROUS METALS POTENTIALLY AVAILABLE FROM MUNICIPAL SOLID WASTES

THE PROBLEM - NONFERROUS METALS ARE LARGELY IMPORTED

1. U. S. is a net importer of nonferrous metals and ores, with a steadily increasing dependence on foreign sources for most nonferrous metals.

NET IMPORTS AS PERCENT OF DOMESTIC USE (1)

Metal	1950 Net Imports	1960 Net Imports	1970 Net Imports	1972 Net Imports
Aluminum	71%	77%	86%	90+%
Copper	35%	9%	8%	20+%
Zinc	37%	54%	60%	50+%

2. Increasing dependence upon foreign metals threatens the military strength of the Nation in times of national emergency, and adds to the balance of payment deficit.

IMPACT OF NONFERROUS METAL IMPORTS ON THE U.S. BALANCE OF PAYMENTS, 1972 (1)

Imports of Minerals, Raw and Processed	$14 Billion
Exports of Minerals, Raw and Processed	$ 8 Billion
TRADE DEFICIT	$ 6 Billion

3. While importing increasing quantities of its requirements of nonferrous metals, the U. S. is wasting substantial quantities of nonferrous scrap metals already here, but not being recycled.

RECYCLING RATES FOR SELECTED MATERIALS, 1969 (2)

Material	Short Tons Available for Recycling, 1969	Short Tons Recycled, 1969	Percent Recycled, 1969	Short Tons Not Recycled, 1969
Aluminum	2, 215, 000	1, 056, 000	48%	1, 159, 000
Copper	2, 456, 000	1, 489, 000	61%	967, 000
Zinc	1, 271, 000	182, 000	14%	1, 089, 000

4. The scrap metal which was wasted could have been used if it were recycled economically, with concomitant improvements in U. S. industrial strength and balance of payments.

SCRAP CONSUMPTION AS PERCENT OF TOTAL U.S. PRODUCTION, 1969 (2)

		Mineral Source, Short Tons				
Material	Metal Produced 1969 Short Tons	Domestic Ore	Imported Ore or Metal	Other	Recycled Metal	Recycled Metal Content as % of Production
Aluminum	5, 523, 000	455, 000	3, 898, 000	140, 000	1, 030, 000	19%
Copper	3, 271, 000	1, 469, 000	274, 000	153, 000	1, 375, 000	42%
Zinc	1, 748, 000	459, 000	911, 000	--	378, 000	22%

A SOLUTION - RECOVER NONFERROUS METALS FROM MUNICIPAL SOLID WASTES

1. In 1972, it is estimated that Americans will generate 225 million tons of solid waste in their homes, businesses and institutions -- an average of six pounds per day per person (3). It has been projected that by 1980, over 300 million tons will be discarded annually.

2. At present, most of this solid waste is simply dumped, adding to the mountains of wastes already filling available dumping sites to overflowing. Only 1% is now being processed for full recovery of its resources,

including the fuel value of the combustible products, and recovery of its metals -- iron and steel, and nonferrous metals such as aluminum, copper and zinc.

PRESENT DISPOSAL PRACTICES FOR MUNICIPAL SOLID WASTES [4]

Open Dumps	69%
Sanitary Landfill	22%
Incineration	8%
Resource Recovery	1%

3. Depending upon the geographical location, estimates of the nonferrous metal content in municipal solid wastes range from 0.5% to 1.6% of the raw waste as received. These metals, while representing only a small proportion of the total waste stream, would make a substantial reduction in the Nation's shortfall of available metals if they were fully recovered and recycled.

KEY NONFERROUS METALS IN MUNICIPAL SOLID WASTES

Metal	Typical Weight [4] Percent of Metal in Municipal Solid Wastes	Estimated Total Metal Available in 225 Million Tons of Municipal Solid Wastes	Percent of Metals now Imported which Could be Replaced by This Scrap
Aluminum Alloys	0.7%	1,600,000 Tons	41%
Copper Alloys	0.15%	340,000 Tons	12.4%
Zinc Alloys	0.1%	225,000 Tons	25%

4. Sale and recycling of the recovered nonferrous metals from municipal solid wastes would be a substantial offset against the costs of modern refuse disposal. It is estimated that municipalities expend $6 billion annually for collection and disposal of solid wastes [5]. These expenditures will increase substantially as municipalities are forced to shift from the less costly open dumps and sanitary landfills to incinerators and partial or complete resource recovery plants. The recovered metals, at present prices, would bring over

$800 million, which could be applied to the costs of municipal resource recovery plants.

CURRENT SELL PRICES FOR KEY NONFERROUS METALS POTENTIALLY RECOVERABLE FROM MUNICIPAL SOLID WASTES

Metal	Quantity Potentially Available	Current[6] Value as Scrap	Total Value
Aluminum	1,600,000 Tons	$260/Ton	$416 Million
Copper	450,000 Tons	$760/Ton	$342 Million
Zinc	225,000 Tons	$290/Ton	$ 65 Million
	2,275,000 Tons		$823 Million

5. Other recoverable materials in municipal solid wastes, such as combustibles which may be used as fuel, ferrous metals, and glass, have a value of around $2.50/ton of waste[7], or about $560 million if fully recovered at today's dumping rate. The combined sales of nonferrous metals ($823 million) and the above materials would yield over $1.3 billion to be applied against the costs of modern resource recovery facilities.

FACT SHEET REFERENCES

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5. "Cities and the Nation's Disposal Crisis", a Report of the National League of Cities and the U. S. Conference of Mayors Solid Waste Management Task Force, National League of Cities, United States Conference of Mayors, Washington, D. C. March 1973.

6. Closing Wholesale Prices for Nonferrous Scrap Metals, April 22, 1975. American Metal Market, April 23, 1975.

7. "Resource Recovery from Raw Urban Refuse", Bureau of Mines Report of Investigations RI 7760, 1973.