



Industrial Waste Exchange

Help in Getting to Sustainable Operations

This primer helps companies find the right industrial waste exchange in order to achieve corporate sustainability goals.

The drive to achieve corporate sustainability goals can leave an industrial facility searching for alternatives to disposal of wastes from their production process. Ideally, manufacturing processes could be adjusted to eliminate the waste stream. However, when not possible to reduce, the next greenest waste alternative is reuse (see Figure 1). For more than four decades, industrial waste exchanges have provided a mechanism for connecting facilities that generate waste with other companies that can beneficially use that material (the industrial application of the old saw... one person's trash is another's treasure). During these 40-plus years, waste exchanges have changed in size and in service and utilized the latest technologies to stay applicable to current market needs. There are many choices available in today's waste exchange market, meaning there are several factors to consider in selecting an appropriate waste exchange.

A Very Brief History

The National Industrial Materials Recovery Association is credited as the first organized waste exchange. It was started in England in the early 1940s to conserve natural resources during World War II. The waste exchange ended with the end of the War. In response to the increasing cost associated with waste disposal in the early 1970s, waste exchanges reappeared in Europe and spread quickly to other countries. In 1973, the first waste exchange in the United States, Zero Waste Systems, began in California. Most of these early waste exchanges were typically run as information exchanges that provided listings of wastes available and materials wanted in a catalog format. They were operated as passive systems where no active effort was made to match a waste producer with a prospective purchaser. Some waste exchanges were operated as material exchanges where the actual waste was bought and then re-sold. At least 14 information exchanges and four material exchanges were in operation by 1978 in the United States.

Thereafter, some state environmental agencies developed waste exchanges as an outreach to the regulated community; some universities and non-profit environmental interests followed. For-profit waste exchanges (brokers) then began

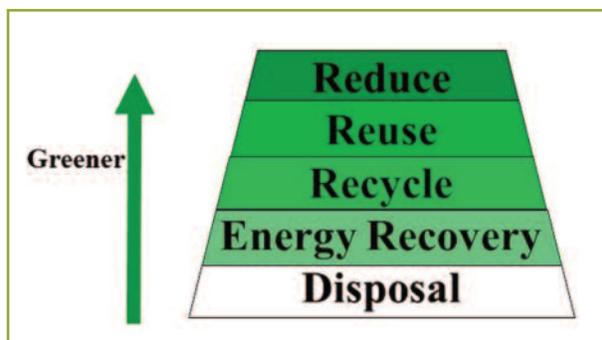


Figure 1. Green pyramid of waste alternatives.

offering to match waste producers with material purchasers. Wastes with easily-monetized intrinsic values began to be segregated into a recycling market.

The Internet brought major changes to the waste exchange market. As the waste exchanges moved from paper catalogs to online databases, wastes were exchanged more efficiently. There was an initial increase of waste exchanges in the local markets. Because recycling consumes energy and raw materials and produces waste residues itself, recycling is typically not as green as reuse but is often more profitable. The Internet facilitated the strengthening of the recycling network to the point where, because of the greater profit margin, that network separated functionally from the waste exchange market. Those specialized recycling networks left the waste exchanges with hard-to-place wastes of little-to-no apparent value. Because of the increasing cost of supporting the waste exchange networks, many of the university- and agency waste exchanges closed, started charging fees, or became part of larger waste exchanges. Newly-organized regional waste exchanges absorbed smaller waste exchanges to reduce the operating costs. Some for-profit waste exchanges depended on recycling operations for funding, charged brokerage fees for matching waste providers and users, or offered other catered services for a fee.

Today's Status

The concept of waste exchange is starting to be incorporated in the up-front design of industrial parks around the world. With this planning, referred to as industrial symbiosis, industries are co-located so that the various waste streams produced by one can be reused by another. Although few existing manufacturing facilities are fortunate enough to have an adjacent facility able to reuse their waste, today's waste exchanges still provide such manufacturers an opportunity to find a reuse alternative.

The waste exchange marketplace comprises a variety of non-profit and for-profit entities that differ considerably in size and service. Some agency waste exchanges—including the Southern Waste Information eXchange Inc. (SWIX) operated by the Florida Department of Environmental Protection; the Waste Trader operated by the North Carolina Division of Environmental Assistance and Customer Service; and the South Carolina Materials Exchange operated by the South Carolina Department of Health and Environmental Control—still exist. The Resource Exchange Network for Eliminating Waste (RENEW) began in Texas in 1987 and was expanded in 2007 to encompass the five states in U.S. Environmental Protection Agency (EPA) Region 6. RENEW still operates and does not limit listings or respondents to businesses in Region 6. References for other waste exchanges are often provided on websites of industry associations, although many such website links are inoperable because they have not kept up with changes in the market.

For-profit waste exchanges either rely on a recycling network to offset the cost of their waste exchange or operate as a paid broker promising to assist in locating a user for a fee. Waste exchange brokers also offer options that may be valuable for some companies. For example, one for-profit waste exchange offers to provide a network across all 50 states, into Canada and across Europe; recycling offset credits; and market price summary reports. The recycling offset credits are claimed to demonstrate the economic and green impact benefits of recycling to society. The market price summary reports are claimed as a resource for determining the current value of a recyclable waste.

Some waste exchanges can seem to resemble an online yard sale, combining household items, excess inventory, and industrial wastes; others deal with excess inventory being donated to charities; still others specialize in building materials. If a quick turn-around is needed for an industrial waste, a waste exchange focused solely on those wastes will likely be more efficient and, consequently, preferable. The existence of waste exchanges demonstrates that the concept has been successful in some, but not all, applications and indicates that there are some key factors for selecting a waste exchange.

Considering Using a Waste Exchange?

Regulatory Requirements

The first factor is the regulatory requirements that are applicable to a waste. Waste exchanges do not provide relief from proper and prescriptive handling of regulated wastes. Various sections of the Resource Conservation and Recovery Act (RCRA), among others, do that, including requirements for beneficial reuse and/or reclamation of hazardous wastes.

Value

Does the waste already have an established reuse or recycling market; if not, does the waste have an as-yet non-monetized intrinsic value? Historically, some large-volume waste streams have well-established beneficial reuses. For example, spent reactant from some power plant flue gas desulfurization (FGD) scrubber units yields FGD gypsum that is used in wallboard/wall panel manufacturing, cement production, and agricultural soil amendment. Spent foundry sand is used in road construction.

Economics

What is the limiting distance a waste can be shipped economically for reuse? If the waste has little intrinsic value or requires expensive treatment to extract that value, long-distance shipping may not be economically-viable. In these situations, it would make little sense to advertise the waste on an international waste exchange.

Confidentiality

Some companies may be concerned about advertising their waste availability. These companies may be better served by a waste broker. There are also some non-profit organizations that claim to offer confidential options.

The Takeaway

Industrial waste exchanges have gone through significant changes in the past four decades. Wastes with proven value are now typically segregated into separate, material-specific recycling networks. Before selecting a waste exchange network, the producer or user must ensure compliance with applicable regulatory requirements and only then consider the recognized



In Next Month's Issue...

Air Quality in Megacities Around the World

The April issue will feature articles on air quality issues in selected megacities around the world. These cities experience (or are projected to experience) significant population and economic growth with concomitant increase in air pollution due to lack of proper planning and control strategies. The articles will provide an overview of the air quality issues, the trends, current initiatives, and potential path forward for improving the air quality in those regions of the world.

Also look for...

Asian Connections
EPA Research Highlights



Figure 2. Waste reuse and the triple bottom line.

intrinsic value of the material, the economic break-even point and the need for confidentiality.

Smart and efficient waste reuse is now considered by many manufacturers in front-end loading design of processes, plants, and manufacturing complexes to produce environmental and economic benefits. However, industrial symbiosis is not typically feasible for existing industries, which may benefit from the services of a waste exchange.

It may take time to sort through and find an exchange that meets a company's requirements. Finding the right exchange can be a contribution to greener materials management and achieving corporate sustainability goals. Reuse of waste can result in a positive impact on all three elements of the triple bottom line of sustainability: planet, profits, and people (see Figure 2). **em**

Ashley Sapyta is a technical principal, **Mike Marcus** is a vice president and technical principal, and **Jonathan Locklair** is a staff professional, all with S&ME Inc. E-mail: asapyta@smeinc.com.

A&WMA Buyers Guide

Tap into the incredible network of the Air & Waste Management Association with the A&WMA Buyers Guide. Powered by MultiView, the Guide is the premier search tool for environmental professionals. Find the suppliers you need, within the network of the association you trust.

Start your search today at awma.org.



AIR & WASTE MANAGEMENT
ASSOCIATION



MULTIVIEW