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Guest Editorial: Getting Serious about Implementing Integrated Waste Management

Waste management needs to incorporate conversion technologies as part of the solid waste infrastructure.

Eugene Tseng • October 25, 2018

There is a serious need to develop a more robust Integrated Waste Management that incorporates conversion technologies as part of the solid waste infrastructure in the US. The impact of the China Sword has accentuated a fundamental weakness in our existing solid waste management approach in the US. With the majority of the environmental movement's and state/federal policymakers' focus on "recycling" and not focusing adequately on the other aspects of the integrated waste



management hierarchy in a systems engineering approach, we have not built any flexibility/adaptability or durability into our infrastructure to account for the extreme change in recycling markets. The fundamental weakness of our current approach is that we have not taken into account a comprehensive systems engineering approach which utilizes all proven policy and conversion technologies available to build an infrastructure that can respond to significant changes in the recycling market, and/or major changes in the volume and types of solid waste being generated.

Managing municipal solid waste is more than landfilling: publicity, education, engineering, long-term planning, and landfill gas waste-to-energy are specialties needed in today's complex environment. We've created a handy infographic featuring 6 tips to improve landfill management and achieve excellence in operations. [6 Tips for Excellence in Landfill Operations](#). Download it now!

There are lots of successful international best management practice models that can serve as examples and roadmaps to a more robust solid waste management system. Sweden is so successful in recycling and waste-to-energy that Sweden imports waste for processing and conversion to energy. France has one of the newest regional integrated materials recovery facilities in Marseilles. Japan has some of the cleanest and most advanced gasification (with ash melting) facilities that are built in the center of urban areas. Collaborative government and industry "eco-parks" in Japan provide comprehensive processing of the various wastestreams generated and minimize the

overall disposal of residue in landfills, at the same time minimizing the overall GHG emissions from landfills and achieving maximum diversion from landfill.

On international technology assessment tours that I have led on behalf of our federal government, local government, and technology assessment teams from other countries, the general consensus from technical touring members is that even California is about 25–30 years behind state-of-the-art solid waste management practices.

A significant part of the lack of progress in implementing a systems engineering approach to integrated waste management is basically “governance,” lack of government/political leadership. I personally view the role of government as creating the infrastructure to enable the development of a more durable and flexible solid waste infrastructure that can respond to fluctuations in the international recycling markets and to a host of factors that impact waste composition and volume.

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Many of the solid waste policy/legislative and regulatory decisions in the US are not made based on science or based on internationally proven policies or commercially available technologies. Recycling and composting are often seen as the only preferred “environmental approach.” Conversion technologies are shunned politically and the regulatory infrastructure is stacked against conversion technologies. The regulatory infrastructure, especially in California, does not promote thermal processing. Thermal processing is controversial. Technical people look at thermal processing as recycling carbon (extracting energy), and many environmentalists look at thermal processing as the “landfill in the sky.”

People need to recognize that the primary directive in managing waste is public health, and we sometimes lose sight of that perspective, especially when we focus so much on environmental “sustainability” and recycling. We need to recognize that there are a lot of really nasty things that are disposed of in our municipal solid wastestream. In Japan, the national objective from a sustainability point of view is to develop a “recycling-based society” and minimize disposal in landfills to avoid generation of GHGs from landfills, but they understand the first order of business is protecting public health and the environment.

If this country is actually serious and determined to build a more robust solid waste infrastructure utilizing internationally proven policies and conversion technologies, the infrastructure can be built within a generation. This involves building both soft and hard infrastructure over a 20-year period. It is not just technology, but building a supporting regulatory infrastructure that promotes innovation and growth, building the financial incentives and infrastructure to allow development of projects, development of sensible

regulations, development of environmental education, and the development of the job training infrastructure that will be needed along with a comprehensive effort in the communications/awareness and outreach effort. This effort will create a tremendous amount of new opportunities and new jobs and basically expand and move an existing industry into an exciting new era for the US which will also be one of the largest economic growth industries for a long time to come. We need leadership and collaboration in government, environmental nonprofit sectors, academia, and industry.