Highlighting the “waste” side of A&WMA, this issue provides insights on waste-themed issues ranging from waste prevention to more sustainable landfill design and operations.
“Waste Not, Want Not!” Its intended meaning? If you don’t waste your resources, you are more likely to always have enough. This venerable maxim, dating from the 1700s, reflects ageless wisdom that remains embedded today in the resource conservation component of sustainability concepts.

Regarding solid waste management today, just how much waste do we generate and what is its fate? According to the U.S. Environmental Protection Agency (EPA), the waste generation rate in the United States presently stands at more than 3/4 ton per person per year. What becomes of all the waste we generate? In the United States, just over one-third is recycled or composted; approximately 10–15 percent is post-recycling waste that is presently converted to energy; and the remaining fraction, about 50 percent, is disposed in landfills.

Sustainable waste management is often illustrated as a pyramid, depicting a preferred hierarchy of waste management methods. At the top of the pyramid, as most preferred, is to minimize the generation of waste in the first place. Examples include reducing packaging, reusing materials that would normally be discarded, and diverting food waste to homeless shelters instead of discarding. After reducing waste generation, the next-down preference in the hierarchy entails recycling and composting of waste to reduce disposal and reclaim useful materials. Following recycling in the preference pyramid is the recovery of energy from post-recycling waste, via combustion, gasification, or anaerobic digestion.

In total, about one-half of the waste generated in the United States is currently diverted from disposal via reuse, recycling, and energy recovery. While this is a significant fraction, the flipside is that the remaining 50 percent is post-recycling waste that must be disposed, principally via landfilling. This means that landfills remain an essential and fundamental underpinning for the pyramid. While landfill disposal occupies the bottom of the preference pyramid, landfill professionals continue to make effective progress in advancing sustainable design and operating practices in order to increase landfill safety, minimize pollution migration into the environment, and recover energy from landfilled waste.

This month’s issue of EM spotlights the waste side of the Association, offering six waste-themed articles. The first article, by Ashley Sapyta et al., provides an historical perspective on industrial waste exchanges as a mechanism for connecting manufacturing industries that generate waste with other manufacturers that can beneficially reuse those waste materials. The article goes on to discuss the key factors to consider in selecting an appropriate waste exchange.

Moving on to a discussion of landfills, the next article, by Edward Galvin and Eric Steinhauser, provides an update on the role of landfills in waste management. Harkening back to the waste management hierarchy summarized above, this article addresses the continuing essential role of modern landfills as the “foundation holding up the pyramid,” describing the latest design practices for increased landfill sustainability.
Following this is an article authored by Nicholas Yafrate and Scott Luettich that addresses a unique landfill operational challenge. This is the uncommon, but costly problem of “hot landfills” resulting not from subsurface fires, but from abnormal biological or chemical reactions within the landfill. The authors explore the symptoms, causes, and mitigation methods for such elevated-temperature landfills.

Next come three articles that address landfill gas (LFG) emissions issues. For any given landfill, it is crucial to accurately project the amount of LFG that is generated and emitted over time, since LFG emissions are an important greenhouse gas contributor (methane). Melanie Sattler and Arpita Bhatt profile the various models available for quantifying LFG generation and recovery for purposes of control, use as an energy fuel, or mitigating climate change. The authors recommend specific models be used for design of LFG control/recovery systems versus assessing landfill contributions to climate change.

Next, an article by David Greene summarizes EPA’s new regulations limiting emissions of LFG from new and existing landfills. Such regulatory control of landfill emissions is needed because LFG is fractionally high in methane, a potent greenhouse gas, and also because LFG contains toxic pollutants and odorants. Besides summarizing who is subject to the new rules and how to comply, Greene’s article also provides a warning to landfill operators regarding important ambiguities in the new regulations.

Rounding out this series of articles, Lisa Damiano and Stephen Zemba offer an assessment of the environmental trade-off incurred when LFG is recovered and combusted in an engine-generator, producing renewable energy that offsets greenhouse gas emissions from fossil energy generation. The article explores whether the greenhouse gas mitigation benefit resulting from operation of the engine-generator exceeds the public health risk due to formaldehyde emissions resulting from LFG combustion in the engine. The issue is important because, should regulators begin requiring formaldehyde controls on the engines, then energy recovery from LFG, with attendant greenhouse gas mitigation, may no longer be economically feasible.

It is hoped that this waste-themed issue will provide EM readers with a greater understanding of solid waste management processes and how waste managers are achieving more sustainable practices for waste prevention and management. em

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Call for Nominations for the 2017 Exceptional Education Contributor Award

*The Deadline is April 7, 2017.*

**Do you know someone who has made an outstanding contribution to education in the environmental industry? Nominate them, or yourself, for this prestigious award!**

Nominations are encouraged for individuals from all backgrounds who have contributed to A&WMA’s educational mission. **Criteria used to evaluate the nominations are:**

- A&WMA leadership positions with educational responsibilities (40%)
- Specific initiatives and/or contributions that have supported A&WMA’s educational mission (60%)

The award recipient will be recognized and given a plaque at A&WMA’s 2017 Annual Conference & Exhibition Student Awards Ceremony in Pittsburgh, PA.

Please submit electronic nominations that describe the candidate’s contact information, professional background, and contributions pertaining to the two award criteria cited above. Self-nominations are also encouraged. The nomination should be no more than 4 pages long with 11 point font.

Nominations should be submitted to Robin Lebovitz, A&WMA Education Programs Associate, at rlebovitz@awma.org by **Friday, April 7, 2017.**