Rural Counties' Environmental Services Joint Powers Authority

Technical Advisory Group

Randy Akana, Chair   Bill Mannel, Vice Chair

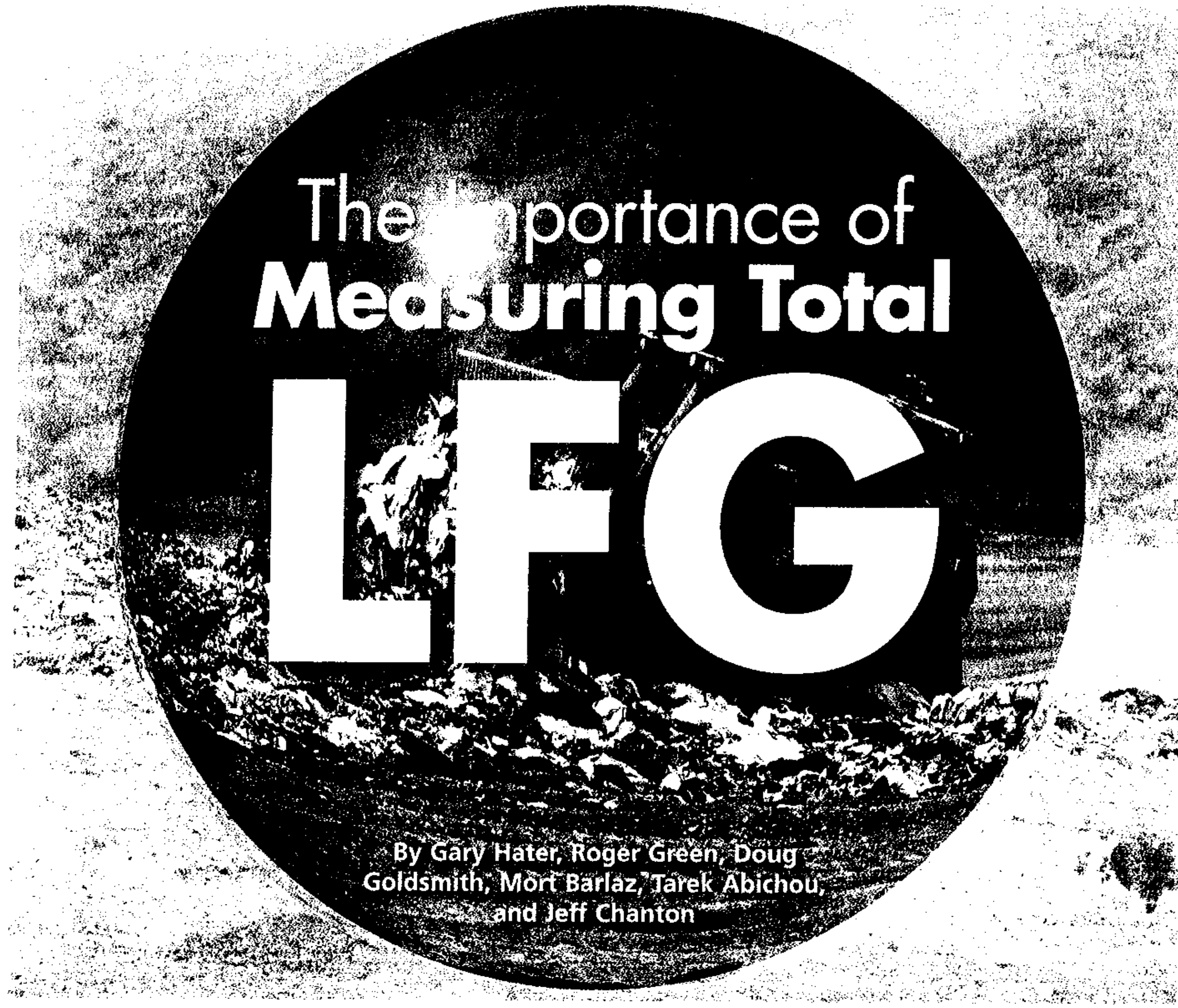
Second Floor Conference Room, 801 12th Street, Sacramento, CA 95814

1:30 pm – 3:30 pm

Thursday, August 16, 2007

1. Review/Revise/Prioritize Agenda Items – Randy Akana, Chair
2. E and U-Waste Updates – Larry Sweetser
3. ARB Diesel Retrofit Update – Mary Pitto
4. CIWMB Financial Assurance Mechanisms for Long-Term Postclosure Maintenance and Corrective Action at Solid Waste Landfills Study – Larry Sweetser
5. AB 32 and Landfill Gas Monitoring – Larry Sweetser
6. Mandatory Collection – Mary Pitto
7. Treated Wood Waste – Larry Sweetser
8. Plans for September 1, 2008 Sharps deadline – Rachel Basore
9. Highlights of June-August Waste Board meetings -- Larry Sweetser
10. ESJPA Strategic Business Plan – Mary Pitto
11. Any other issues/items of interest or concern
12. Topic suggestions for next Technical Advisory Group meeting

-- adjourn --



The Importance of Measuring Total LFG

By Gary Hater, Roger Green, Doug Goldsmith, Mort Barlaz, Tarek Abichou, and Jeff Chanton

With the possibility of legislation looming on the horizon, landfill owners need to prepare for opportunities and challenges of climate change.

Over the past 20 years, scientific studies have shown a significant increase in atmospheric concentrations of carbon dioxide and other greenhouse gases (GHGs) that trap heat in the Earth's atmosphere. Large segments of the scientific community agree that the Earth is getting warmer faster and that human activities, primarily burning of fossil fuels and land-use changes, play a significant role in the increase in GHG concentrations. How the United States addresses this risk will be one of the most significant public policy challenges the waste industry will face at the federal, state, and local levels of government.

Democratic majorities in the US Congress are building momentum for federal climate change legislation in the next several years. In only two months, four bills have been introduced (three in the Senate and one in the House) and a fifth piece of draft legislation has been circulated in the Senate. However, in absence of federal legislation, many states, such as California, have or are initiating climate action plans aimed at inventorying GHG emissions in their areas and instituting mandatory policies to reduce emissions over time. These emerging programs present both opportunities and challenges for the waste management industry.

Nine northeastern states and California are the most advanced in developing regulatory schemes to inventory, cap, and trade GHG emissions. While the Northeast is focused on regulating GHG emissions from electric utilities, California, under its recently passed Global Warming Solutions Act, may choose to regulate MSW landfills. According to the March 2006 California Climate Action Team report prepared for the Governor and Legislature, landfills were one of five source categories identified as significant. A waste industry group recently formed with the objective of developing accurate and representative greenhouse emissions quantification protocols for waste management activities, not just for reporting requirements in California but in anticipation of national emissions reporting initiatives.

A number of protocols have been established to meet international or national requirements for estimating landfill emissions. Because these are the only protocols now in existence, they are likely to be applied if new methods are not developed. Key problems with these protocols include use of default values for methane oxidation that do not reflect the effects of various types of landfill cover and climate, and failure to account for sequestered carbon in the landfill.

One of the risks is that the protocols currently used for developing GHG emissions inventories from landfills at the national level, the modeling of gas generation based on the amount of waste present, would be applied to individual landfills. This approach may not give sufficient credit to landfills where the gas is aggressively collected and used as an energy source, and would likely result in overestimates of greenhouse gas emissions at some landfills. Under a GHG inventory scheme in which every pound of carbon emitted, converted to energy, flared, or sequestered will have economic consequences, an accurate method of inventorying GHG emissions must be adopted.

Waste Management Inc., with over 340 landfills in the United States, is the nation's largest landfill owner. Waste Management has embarked on a major research program to develop measurement techniques necessary to quantify methane emissions from its landfills. The resulting information will encourage landfill design and operational practices that reduce methane emissions. Waste Management is using state-of-the-art techniques that were not available even five years ago. In this article, we describe the measurement techniques, the program objectives, and initial results from work completed in 2006.

Nationally, it is a particularly attractive strategy to reduce methane emissions. Methane is by 20-fold a more powerful GHG than carbon dioxide. In comparison to carbon dioxide, the concentration of methane in the atmosphere is only 0.5%, yet its contribution to greenhouse warming is 25%. Methane's atmospheric lifetime is only one-tenth that of carbon dioxide—10 as opposed to 100 years—so the effect of mitigation strategies would result in a quick payoff in reducing the amount of methane in the atmosphere. Indeed, recent measurements have shown that the rapid increase in atmospheric methane observed in the late 1980s has abated, and there exists the potential to actually lower the atmospheric burden of the powerful GHG. Emerging programs may allow landfill owners who voluntarily collect and control landfill methane to sell GHG reduction offsets in a carbon-trading market.

Project Scope

The overall goal of Waste Management's research program is that of measuring landfill gas (LFG) emissions under a wide variety of conditions:

- Slopes and flat surfaces
- Daily cover on an active working face
- Intermediate cover
- Final cover (with and without a geomembrane)
- Seasonal variations in methane oxidation and capture efficiency

Ultimately, Waste Management wants a database that describes methane emissions over the range of conditions one finds at both operating and closed landfills. This will make it possible to predict emissions from operating and proposed landfills with field-validated numbers instead of uncertain models. In 2006, the project team conducted field measurements at both a conventional Subtitle-D landfill (Springhill in Campbellton, FL) and a bioreactor landfill (Outer Loop in Louisville, KY). In 2007 and 2008, the team will conduct tests at five Waste Management landfills throughout the United States. The Waste Management team will test each of these landfills based on cover type and season. Several of these facilities have more than one cover type. Ultimately, the testing program will evaluate a minimum of 10 cover types over a minimum of two seasons.

Methane's atmospheric lifetime is only one-tenth that of carbon dioxide—so the effect of mitigation strategies would be a quick payoff in reducing methane levels in the atmosphere.

Waste Management has made a major commitment to this work, having purchased state-of-the-art instrumentation and committing research scientists and engineers to the project nearly full-time for perhaps six months of each year. Over a three-year period, the company expects to spend about $2 million on this effort, a cost well worth the investment to definitively measure surface emissions, methane oxidation rate, and methane collection efficiencies.

Laser Technology

The largest difficulty in obtaining reliable measurements of fugitive methane loss is its extremely spotty nature. The top of a landfill, for example, is hardly uniform. But researchers are adopting a method developed by the Denver-based ARCADIS to use an infrared laser to measure methane gas escaping the landfill surface.

The method uses a tunable diode laser from Boreal Laser Ltd. that takes advantage of the fact that methane absorbs strongly in the infrared light region (that's what makes it a powerful GHG). To estimate surface emissions, the methane concentration is combined with wind speed and direction in a computer model to calculate the mass of methane emitted from a selected area.

How Does Laser Technology Work?

To begin, the team carefully places a series of mirrors across and above the landfill surface to form a three-dimensional set of reflectors. The laser is programmed to move from mirror to mirror, shining its light at each mirror in turn. The laser beam bounces back from the mirror to a receiver that measures the signal strength. The reduction of the laser beam's intensity is proportional to the amount of methane along that pathway. Essentially, an entire portion of a landfill surface is placed within a giant open-path spectrophotometer. The data and mirror positions are input to a computer in the field. By summing the laser-mirror pathways and the concentration of methane along them, horizontal and vertical maps of the methane plume above the landfill can be depicted. Now factor in the wind speed and direction, and you have an estimate of the rate at which the methane escapes the landfill.

Checking and Cross-checking

Because the laser approach is so new, it is being subjected to rigorous testing and comparison. The Waste Management team made simultaneous measurements of methane emissions using the new laser approach, cross-checking it with a more traditional approach, static chambers. The chamber approach involves installing a frame into the soil and then returning later to place a chamber lid upon this frame. By placing the frame first, disturbance to the soil is minimized during the measurement period. To measure emissions, samples of air from the closed interior are collected over a 20-minute time period and monitored for the evolution of methane. In this study, we used chambers that were fairly small, about 4 square feet, but we used a lot of them. Day after day, we set out 72 chambers over a grid pattern that encompassed the area measured by the laser. Chamber measurements were made once daily over the test period while the laser measurements were made continuously over a three- to six-hour period.

For this report, work was conducted on a closed section of the Spring Hill Landfill. The section of the cover that was tested includes a geomembrane overlain by 2 feet of clay. The cover is seeded, and there is an active gas collection system in place. Individual chamber measurements were mostly below detection but occasionally were as high as 9,000 g CH_4 $m^{-2}d^{-1}$.

Elevated emissions were due to punctures in the geomembrane cover and were centered around leachate-injection wells and gas-extraction wells.

These emissions are easily repaired as part of the landfill's routine monitoring and maintenance activity. Emissions from the actual cover surface were non-detectable. The data were contoured in Surfer, and the geospatial mean flux was determined to be 26 g CH_4 $m^{-2}d^{-1}$.

Taking the estimate of 4.8 grams per second derived from the laser data and extrapolating it to the footprint area of the surface of the landfill (23,000 square meters) produces a value of 18 g CH_4 $m^{-2}d^{-1}$ The two approaches agreed within 30%.

In addition, estimates of soil methane oxidation are also being determined. Combining the emission and oxidation estimates with measurements of methane captured by gas extraction allows determination of a complete carbon balance and the methane-capture efficiency independent of the Landgem model.

In conclusion, our results indicate that landfill covers work: We observed low emissions from covered areas. The emissions were associated with hot spots around penetrations (gas wells, leachate injection pipes) and these are easily fixed.

Finally, we propose that by using a combination of measurement tools, the actual GHG emissions can be used to better calibrate our predictions of landfill gas–collection system efficiency.. **MSW**

Gary Hater is senior director of Bioreactor/Biosite Technology and New Technology at Waste Management Inc. Roger Green is a senior scientist with Waste Management Inc. Doug Goldsmith, Ph.D., is an independent consultant to industrial clients. Tarek Abichou, Ph.D., is an associate professor of civil and environmental engineering at Florida State University. Jeff Chanton, Ph.D., works on a variety of research problems that involve fluxes of methane and carbon dioxide. Morton A. Barlaz, Ph.D., is a professor in the department of civil, construction, and environmental engineering at North Carolina State University.

Charts and diagrams related to this article can be viewed online at

www.mswmanagement.com/mw_0705_ghg

PROP FACT Sheet

Mandatory Trash Collection

Instituting mandatory trash collection can be a divisive and difficult issue for a community. Opponents of mandatory trash collection cite a loss of resident control in deciding how to handle their garbage. Proponents of it cite the environmental benefits, including a decrease in illegal dumping and open burning. This fact sheet is intended to dispel some of the myths surrounding mandatory collection.

Myth: Mandatory trash collection eliminates a resident's right to choose a trash hauler.

Fact: Mandatory trash collection simply means that a resident must contract and pay for trash service. The issue of how a hauler is chosen is a separate matter that may or may not be addressed when mandatory trash collection is instituted.

Myth: Mandatory trash collection will put small haulers out of business.

Fact: Mandatory trash collection by itself does not dictate who may or may not haul garbage within a community. In communities with contracts, smaller haulers are given the option to bid on services. In private subscription communities, smaller haulers compete for business just like larger haulers do. The ultimate choice is driven by price and ability to perform a given service.

Myth: Mandatory trash collection will not affect illegal dumping issues within a community.

Fact: In 1999, PROP completed a survey of the factors influencing illegal dumping within the state of Pennsylvania. Respondents to the survey included county and municipal officials. This survey found that mandatory collection contributed to a significant decrease in illegal dumping within a community. Results showed that if residents were given access to disposal facilities and collection options, they generally used them. To read the full report, please visit our website: www.proprecycles.org.

Myth: Residents that don't generate any trash don't need a trash hauler.

Fact: With all of the packaging used in today's manufacturing processes, it is virtually impossible to find someone who doesn't generate any waste. Even the best composters and recyclers will generate a small quantity of garbage each week.

Myth: Trash haulers will not provide service to our municipality because it is too small. Our township is bounded by state forest land and is very rural, making it hard for trash haulers to provide service to our residents.

Fact: If a municipality opts for mandatory trash collection, it can require that all haulers servicing its community be able to provide affordable service before being allowed to contract with residents. In some cases a municipality is too small for curbside trash collection. In those instances, a municipality desiring to institute mandatory trash collection should investigate alternative service delivery methods, including siting a dumpster on public land for resident use.

Myth: We have a large number of residents on fixed incomes who won't be able to afford a large trash bill.

Fact: Variable rate structures or pay-per-bag fees are included in most haulers options. Encouraging or requiring haulers to offer a variety of rate structures within your community will ensure that small quantity generators and elderly residents on fixed incomes will be adequately serviced.

This fact sheet was developed by the Professional Recyclers of Pennsylvania, P.O. Box 25, Bellwood, PA 16617. For more information, visit our website, www.proprecycles.org, or contact us by email at prop@proprecycles.org. Funding for this fact sheet was provided through a grant from the Department of Conservation and Natural Resources' Forest Lands Beautification Program.

Mandatory Collection Web Links

COUNTY ORDINANCES:

- Amador County: www.co.amador.ca.us/agenda_minutes/2007/documents/Working%20Draft%20of%20Universal%20CollectionRA1.pdf
  *proposed ordinance

- Butte County: www.buttecounty.net/publicworks/Assets/pdf/ButteCountyCode-Chapter49.pdf
  *mandatory collection for rental properties through Unlawful Dumping Ordinance and Solid Waste Ordinance

- El Dorado County: http://co.el-dorado.ca.us/emd/solidwaste/4525.html#Mandatory

- Kern County: http://municipalcodes.lexisnexis.com/codes/kerncoun/

- San Joaquin County: www.sjgov.org/solidwaste/Ordinance.htm

- Santa Clara County: www.sccgov.org/scc_ordinance/31109000.HTM

- Sierra County: www.sierracounty.ws/county_docs/bos/Full%20Code.pdf?&MMN_position=84:84
  *mandatory service for developed property, excluding residential properties for one but not more than 4 families

- Whatcom County, WA: http://mrsc.org/mc/whatcom/whatco08/whatco0811.html

CITY ORDINANCES:

- City of Huntington Beach: www.surfcity-hb.org/files/users/city_clerk/MC0821.pdf

- City of Kent, WA: www.ci.kent.wa.us/CityCode/Kent0703.asp

- City of Marshalltown, IA: www.ci.marshalltown.ia.us/CityGov/Agendas/2006-2007/Betterment/Attach/ORD%20MANDATORY%20GARBAGE%20COLLECTION.pdf

- City of Poway: www.codepublishing.com/ca/poway/Poway08/Poway0868.html#8.68.030

- City of Red Bluff: www.amlegal.com/nxt/gateway.dll/California/redbluff/cityofredbluffcaliforniacodifiedordinanc?f=templates$fn=default.htm$3.0$vid=amlegal:redbluff_ca

- City of Rocklin: http://municipalcodes.lexisnexis.com/codes/rocklin/

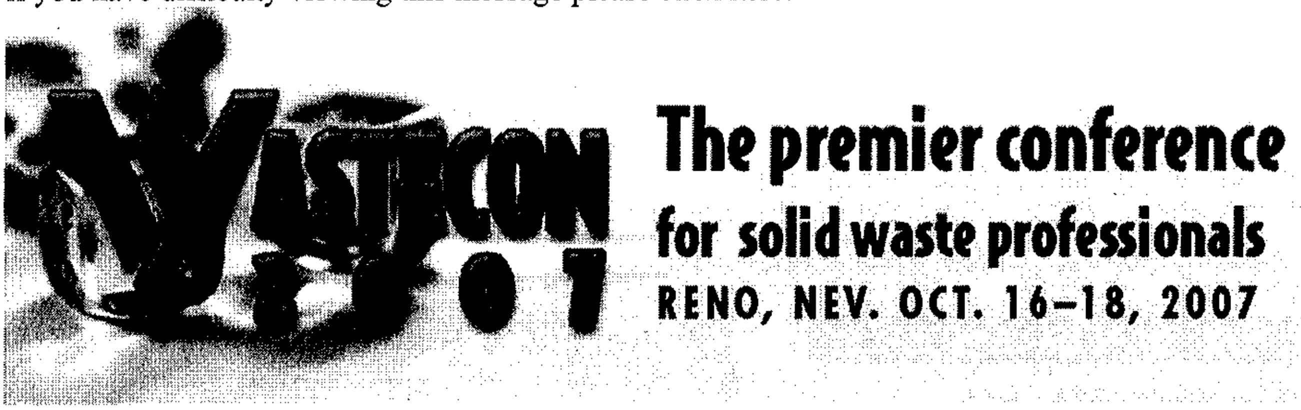
- City of Sacramento: www.qcode.us/codes/sacramento/
- City of San Dimas: http://municipalcodes.lexisnexis.com/codes/sandimas/_DATA/TITLE08/Chapter_8_12_GARBAGE/8_12_070_Collection__Fees__Man.html
- City of Santa Maria: www.ci.santa-maria.ca.us/3033-MuniCodeTitle8.pdf
- City of Stockton: www.ci.stockton.ca.us/SMC/Chapter07/Ch07_PartII_Div01.cfm
- City of Tulare: www.ci.tulare.ca.us/municipalcodes/Tulare_Municipal_Code/Title_7/16/030.html
- City of Turlock: www.ci.turlock.ca.us/outsidelink.asp?link=http://www.codepublishing.com/CA/Turlock
- City of Vacaville: www.ci.vacaville.ca.us/_codes/index.php?c=MuniCode&p=/Title_8

For a full list of CA city/county ordinances, visit the Institute of Governmental Studies Library: http://igs.berkeley.edu/library/calcodes.html#T

Mary Pitto

From: WASTECON News [wasteconnews@swana.org]
Sent: Wednesday, July 25, 2007 10:11 AM
To: Mary Pitto
Subject: Network with the Best in the Business at WASTECON 2007

If you have difficulty viewing this message please click here.



Welcome to **WASTECON News**, your source for the latest information on everything WASTECON. Over the next few months, we'll bring you i
updates to our program as we prepare for WASTECON 2007, Re

Network with the Best in the Business at **WASTECON 2007**
and enjoy...

Exhibit Hall Guests: SWANA's 2007 Award Winners	**Wednesday Night at the National Bowling Stadium**

Register Online!
*save money with online registration

Register Before August 10, 2007, to **WIN Fabulous Prizes**
*All current registrants already have a spot on the drawings. The **cut off is Aug. 10, 2007**, for new registrants.*

MEET SWANA'S AWARD WINNERS!

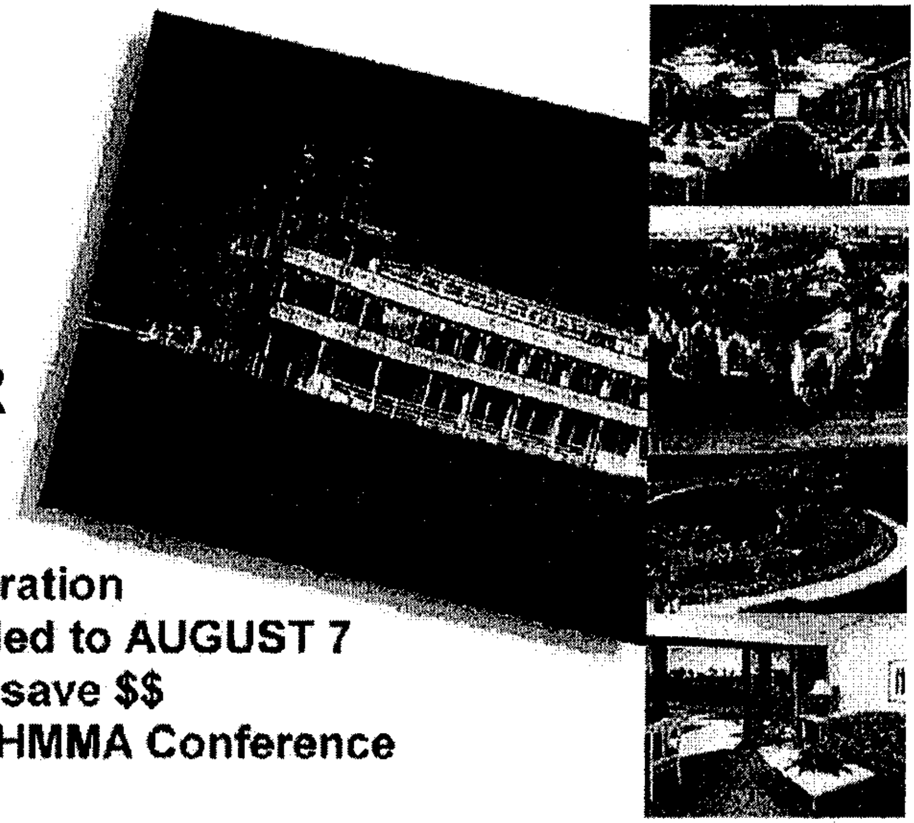
Wednesday, Oct. 17, 2007 | 1:15p.m. - 4:00p.m. (hosted by BOMAG)

Don't miss your chance to **network with the best in the business**!

Find your way down to the **Exhibit Hall on Wednesday** to meet SWANA's Professional Achievement and Exce Award Winners. The winners of the Professional Achievement Award have contributed to the association, solid management and public health/ environmental protection. **Chat with them about their experiences** working in the waste management industry. SWANA's 2007 Excellence Award winners operate outstanding programs and instituted trend-setting solid waste programs. They will be available to share information about their programs w WASTECON attendees.

Discover how these professionals found success in the solid waste industry.

BAHIA
RESORT HOTEL



REGISTER NOW!!

Early Bird registration
has been extended to AUGUST 7
Register now to save $$
22nd Annual NAHMMA Conference

Bahia Resort in San Diego, CA
October 8 - 12, 2007

Registration, Hotel, Agenda, Tours, Training and Sponsorship information are all available on the NAHMMA website www.nahmma.org

__,_._,___

Messages in this topic (1) **Reply** (via web post) | **Start a new topic**

Messages | Files | Photos | Links | Database | Polls | Members | Calendar

YAHOO! GROUPS
Change settings via the Web (Yahoo! ID required)