GBB

SOLID WASTE MANAGEMENT CONSULTANTS

WASTE OUTLOOK

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In This Issue

Accidents Don't Just Happen

By Terry Schweitzer, GBB Vice President

Vehicle accidents and personal injuries do not just happen and should not be assumed to be an integral part of the occupation costs of collection, disposal or recycling. Plain and simple - accidents are caused by humans. Herbert W. Heinrich was an American industrial safety pioneer who published a book titled "Industrial Accident Prevention, A Scientific Approach" in 1931. He determined that in a workplace, for every accident that causes a major injury, there are 29 accidents that cause minor injuries and 300 accidents that cause no injuries. Frank Bird, a US safety researcher, also concluded that there are another 600 near misses per major accident. No matter what theory you subscribe to, there is a correlation that continued unsafe acts will eventually lead to serious accidents and fatalities.

What is the common thread with all this? Human behavior. Some experts in the field of safety claim Heinrich's work as the basis for the theory of Behavior-based safety. They feel that as many as 95 percent of all workplace accidents are caused by unsafe acts: taking shortcuts, being over confident, beginning a task with incomplete instructions, poor housekeeping, ignoring safety procedures, mental distractions, and failure to plan.

One approach for reducing accidents involves understanding organizational weaknesses. We must rationalize that unsafe behavior does not

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Waste Characterization – GBB in the Field

By Eric Weiss, GBB Consultant I

In In my last contribution to the GBB Waste Outlook Newsletter, I discussed my role helping to update the Advanced Conversion Technology database. Gathering this data in the office was interesting... but not as interesting as gathering data out in the field.

The solid waste management industry thrives on creating value out of what most consider to be value-less waste. As a consultant in this industry, it is beneficial to understand the technical details (or what we call the "minutiae") of the Municipal Solid Waste (MSW) stream. A great way to gain an understanding of these waste streams, I have learned, is to participate in a waste characterization study.

A waste characterization study is a key exercise when developing strategic decisions regarding solid waste management. The data-sets that GBB produces as a result are used as a foundation to advise our clients on the most effective and efficient integrated solid waste management strategies. A waste characterization study is able to show the materials, by weight, that are thrown away within a certain region.

To complete a waste characterization study, GBB will send a few consultants out to the field to oversee a team of waste sorters that separate the waste into 30 or more material categories including paper, plastic, metal, textiles, organics and electronics for about a week. Afterwards, the consultants come

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GBB News

Renewable Energy Expert Stephen Simmons Joins GBB as Vice President

Formerly a GBB Principal Associate in 2012 and 2013, Mr. Simmons is a sustainable development business leader with more than 30 years of experience in the energy and environmental services sectors. He has worked with leading international energy operating companies and engineering/consulting firms.

Ljupka Arsova Promoted to GBB Senior Consultant

With over 8 years of experience in the solid waste management industry, Ms. Arsova specializes in anaerobic digestion and advanced technologies for processing organic and mixed solid waste. Her experience goes beyond the U.S. borders in assisting clients through strategic, technical and economic feasibility analysis; feedstock availability projections; and supporting procurement processes.

Unique Understanding of Solid Waste Management on Island Communities

As a result of being appointed Receiver, GBB assembled a multi-disciplinary team of solid waste, procurement, landfill engineering, financial, and communication experts who, in April 2008, presented the U.S. District Court with a roadmap to accomplish the Consent Decree projects reforming Guam's solid waste management system. Since then, GBB has performed a 180-degree turnaround, transforming the island's solid waste management system from the ground up on an integrated and sustainable path with a state-of-the-art landfill, dump closure system, leachate management, residential transfer stations and a revamped waste management collection program that will service the island for at least another 40 years.

In December, Chris Lund, P.E. (GBB Senior Vice President and Receiver Senior Project Engineer for the GBB Guam Receivership) talked about the Guam receivership as a panelist on the *be Waste Wise* webcast entitled "Protecting Public Health and Ecosystems in Islands Through Waste Management."

See the webcast at:
www.tinyurl.com/lund-webcast

> *"The court compliments the Receiver [GBB]'s continued efforts to ensure GSWA [Guam Solid Waste Authority] remains financially sound. The Receiver's strong fiscal management will assure successful completion of the Consent Decree projects."*
>
> **Chief Judge Frances Tydingco-Gatewood**
> *Statement in a Court Order dated October 26, 2015*

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Accidents Don't Just Happen

occur on its own in organizations; the unsafe behavior was caused by the organization itself. An organization must get past the what, when, where and how an accident happened and understand why it happened. Underneath every human cause lies a deeper cause called latent causes.

As example, while I was District Manager for a solid waste collection company, we had a driver shortage. We decided to put our "best" driver with our two "best" helpers and give them two routes because we knew they could "bang it out." While on route, a needle stuck one of the helpers on that crew while collecting garbage. We conducted a Latent Cause Analysis (LCA) and understood that 1) accidents and injuries are not a part of doing business; 2) management was indirectly contributing to safety failures by our actions and words; and 3) safety failures, including unreported unsafe acts, were trying to tell us something. We learned that we did not always think about safety in our decisions and were more focused on productivity, and communicated as such with front-line employees. We eliminated the use of "speed" words such as fast, hurry and quickly, and replaced them with safety and efficiency words. We aligned our actions with safety, instituted daily safety briefings, and empowered employees to report unsafe conditions. The LCA findings changed the mindset of all the employees, dramatically reducing unsafe acts and accidents.

Accidents don't happen, they are caused by humans. It's important to realize that the cause can be organizational; where the organization directly or indirectly influences employees to take shortcuts. It is important that management/ supervision be constantly aware of how it acts and directs employees to work safely. By conducting a LCA whenever a safety failure occurs, the organization can change human behaviors and prevent accidents.

The full version of this article originally appeared in the newsletter for members of the Municipal Waste Management Association.

Speaker's Corner
"MRFs: Mastering an Inconsistent Waste Stream"

The Solid Waste Association of North America's Quad State Conference took place in September in Pigeon Forge, TN, reuniting waste management professionals from Virginia, the Carolinas, and Tennessee.

John Carlton, P.E., BCEE, GBB Senior Vice President, made a presentation entitled "MRFs: Mastering an Inconsistent Waste Stream."

View a PDF of the presentation: www.gbbinc.com/CarltonSWANAQuadState2015

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Waste Characterization – GBB in the Field

back into the office and crunch the numbers to assess what kind of value this waste stream might have.

Many times, clients want to gain a deeper understanding of the recyclable materials that are thrown away in the garbage so that they can create targeted public education and outreach programs. Other times, clients want to calculate the heating value of the waste to gauge the feasibility of building or maintaining a waste-to-energy facility.

I can say two things definitively from my experience in the field – collecting primary data requires more than technical knowledge or "book-smarts," and organic waste is the material that makes garbage gross.

A waste characterization exercise allows GBB consultants to build a team, educate and train a group of laborers about the details of the components of the waste stream, and gain experience managing a project. Many times, after a week of hard work, the team of laborers and consultants finds themselves sharing words about how they will make more of an effort to recycle- and how to do it correctly - because they really understand the difference between the types plastic resins, paper fibers, and metal compositions and are empowered to help their community and environment.

Many times, the team's consensus is that organic waste is the nastiest, noxious, wettest, smelliest material the team encounters in the field. Organic waste, which consists of food waste, dirty diapers, and anything else that drips or squishes, is not only the largest portion of

the municipal waste stream, but also the portion of MSW that is most damaging to the environment. After handling tons of organic waste (literally!), I am on a mission to help clients understand the best way to segregate and process organic wastes using the most effective technologies possible.

With my combination of market research of conversion technologies as an intern, and my field work as a consultant, I have gained great understanding and perspective of the solid waste management industry. As it turns out, GBB doesn't only provide its clients with the tools to convert waste materials into valuable resources... but GBB also equips its consultants with technical knowledge and market understanding of processing/ conversion technologies so they themselves can become valuable human resources!

See the presentation that Eric made at the SWANA Quad State Conference, in September:

"The Importance of Waste Sorts for Transforming Waste to Resource - Lessons Learned from Fayetteville, NC"

www.gbbinc.com/WeissSWANAQuadState2015

Upcoming Events

GBB will be present at the following industry events. We look forward to seeing you there!

Lorman Webinar
February 17, 2016

Stephen Simmons and Ljupka Arsova, Presenters
"Renewable Energy from Waste in the U.S.: Status and Trends for the Future"

SWANA Florida and Recycle Florida Today 2016 Joint Summit
Orlando, FL
February 21-23, 2016

Harvey Gershman,Attendee

Lorman Webinar
April 13, 2016

Lori Scozzafava, Presenter
"What's Ahead for Solid Waste Management?"

SWANA New Jersey Annual Spring Conference
Atlantic City, NJ
April 18-19, 2016

John Carlton, Attendee

North Carolina SWANA Spring Conference
Greensboro, NC
April 25-28, 2016

Chris Lund, Attendee

Food Waste-to-Low Carbon Energy Conference
Bordentown, NJ
April 27-28, 2016

Ljupka Arsova, Speaker
"International Status of Food Waste-to-Energy"

Visit the conference / tradeshow section of our website for an updated list!

Recent GBB Assignments

In the past few months, GBB has been selected for several new assignments, including:

- **Evaluation of Collection Services and Automation**
  City of Midland, MI
- **Residential Collection Route Optimization and Modeling**
  City of Spokane, WA
- **Waste Characterization Study**
  Mecklenburg County, NC
- **Independent Assessment of Equipment Value**
  New Hanover County, NC
- **Recyclables Collection Routes Optimization**
  Orange County, NC
  (as subcontractor to Draper Aden Associates)
- **Procurement Assistance**
  Virgin Islands Waste Management Authority
- **Evaluation of Local Market Average of Waste Disposal Fees**
  Wallingford Regional Solid Waste Project Board, CT

We very much appreciate the opportunity to assist these clients with their needs.

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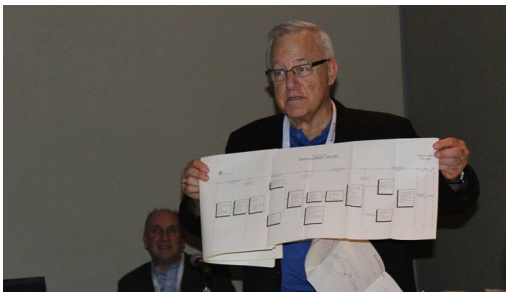
3rd Annual Renewable Energy from Waste Conference Brings Together Industry Decision-Makers

The third edition of the Renewable Energy from Waste (REW) Conference took place this past fall in Orlando and brought together key industry players. The half-day pre-conference workshop, focusing on public sector planning and implementation of waste conversion projects, featured Mark Hammond (Solid Waste Authority of Palm Beach County CEO and Executive Director), who provided his perspective as a public agency executive, along with Rick Sapir (Hawkins, Delafield & Wood LLP Partner) and Harvey Gershman (GBB President) who provided guidance and lessons learned from their decades of involvement in the industry as advisors.

The two-day main program, with over 30 speakers, offered an environment to discuss a comprehensive range of waste conversion technologies, providing critical insight into the necessary technologies, regulations, and financing options shaping the industry. As in the past, the conference concluded with the guided tour of a local renewable energy facility. This year, attendees got a behind the scenes tour of the Harvest Power Central Florida Energy Garden, an anaerobic digestion facility on Disney-owned property. The facility, with a capacity of 130,000 tons of material per year,



manages the food waste and fats oils and grease separated from Disney World and other hotels, produce growers and food processors.

Renewable Energy from Waste magazine and GBB are already working on the 2016 edition – stay tuned for more details!

Two key presentations of the 2015 event are available for download:

"Take Aways – REW Conference"

Harvey Gershman, GBB President;
Kristin Smith, REW Managing Editor

www.gbbinc.com/SmithGershmanREWTakeAways2015

"Progress Report on Waste Conversion in North America"

Harvey Gershman, GBB President

www.gbbinc.com/GershmanREW2015

Small Scale Waste-to-Energy Project Considered by the Metlakatla Indian Community, AK

In April 2015, through a formal procurement process, the Metlakatla Indian Community (MIC) selected GBB to evaluate the feasibility of a small scale waste-to-energy (WTE) facility as part of their Solid Waste Management Plan (SWMP) update for which they had received a grant from the U.S. Department of Interior. The MIC's aim was to evaluate WTE technologies that offer an affordable solution providing local jobs, creating energy, and capable of processing at least 5 tons per day of MSW as currently generated, with an allowance for feedstock increase to around 10 tons per day.

After a site visit, in southeast Alaska, and a review of the existing plan, the GBB Project Team headed by Senior VP John Carlton, P.E., BCEE, provided guidance in updating the SWMP and investigated recycling options. As part of the effort the team reviewed and considered small scale WTE strategies that would reduce or eliminate the need for the municipal dump and create energy (electricity, heating or cooling) for MIC facilities such as schools, medical clinic, and fish plant. This led to the next step in which the GBB Project Team prepared and published a Request for Expression of Interest and Qualifications for the small scale WTE system. In late November, the GBB Project team presented its report, including economic evaluations of three scenarios and recommendations, at the MIC Special Session of Tribal Council Meeting. The MIC is currently evaluating its options.