

Recycling Construction and Demolition Materials

Americans generate far more than 100 million tons of construction and demolition [C&D] debris each year as homes, office buildings, bridges and other structures are built, renovated, repaired and demolished. The debris largely consists of wood, asphalt, drywall and masonry, and most of it is disposed in municipal solid waste landfills or in special C&D landfills devoted exclusively to this type of waste.

Gypsum drywall or sheet rock, with a composition that is ninety percent gypsum and ten percent paper, is used for most modern interior wall surfaces in residential and commercial construction projects. Gypsum itself is simply a mix of calcium sulfate and water. It is a natural mineral found in sea beds that can be moistened to create a malleable paste that will harden to form a fire resistant solid when dried.

Recycled gypsum drywall can be used to create new sheet rock, or as an ingredient in cement. Moreover, it can be used in fertilizers and as an additive to soils since it provides crops with both sulfur and calcium. In contrast, when deposited in landfills it can leach into the groundwater, resulting in sulfate contamination, or it can produce hydrogen sulfide which has a terribly foul odor. As is true with most materials, it is better to recycle gypsum drywall than to discard it in a landfill, if recycling can be performed economically.

Eleven million tons of another popular building material, asphalt shingles, are discarded in landfills each year, again reflecting the need for more ambitious recycling programs so that the material substance of these shingles can be recovered and used in beneficial ways.

Roadway pavements made of asphalt have lower initial costs than those made of concrete, and they can be repaired more rapidly with fewer traffic disruptions. Fortunately, a high level of petroleum-based liquid asphalt can be recovered from shingles that are recycled in hot-mix asphalt processes for building such roadways. And recycled shingles also are used for driveways and parking lots, and as a patch material on roads.

The shingles usually are first separated from other recycled materials such as wood and paper, then ground and sifted to produce small chunks of relatively uniform size. Finally, a magnet is used to remove nails from the ground materials.

Asphalt shingles have been recycled for many years in Europe, and there are a growing number of commercial operations throughout the United States that are dedicated to recycling construction wastes. One of those firms is Construction Recycling Solutions, co-founded and co-owned in Fort Wayne by Candace Imbody and Jeff Zolnik.

Ms. Imbody noted in a recent email to me that “95% of new construction waste can be diverted from the landfill. We collect waste such as drywall, lumber, metal, plastic, masonry and cardboard and process it for other uses. Since (January) we have diverted 1000 tons of new construction debris from the landfill.”

“We have the capability of managing the waste streams of both commercial and residential building job sites. We are not trash haulers...rather we gather biodegradable materials and plastic that would normally go into the landfill and find a reuse for it. Also somewhere along the way, we started studying asphalt shingles from roof tear offs. Now we gather those and grind

them for use in paving and sub-base. We have been participating in a project with Purdue University and (the Indiana Department of Transportation) to incorporate asphalt shingle tear-offs in the Superpave.” Superpave is a nationwide hot mix asphalt design system that is expected to result in far better roadways for 21st century drivers.

Candace further observes that “Also in the works is a proposal to use the ground (shingles) in our Rivergreenway repave.....From the rooftops of Fort Wayne to the Rivergreenway ... gotta love that for recycling! “

Indeed, such recycling of construction and demolition debris by Ms. Imbody and her colleagues is critical to the future environmental health of our nation.

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