

A Sustainable Environment: Our Obligation to Protect God's Gift

by
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Extend the Life-Cycle of Resources by Adding Value

Over the past ten or twenty years, we have become more and more aware of conserving our natural resources because we are consuming too much. I have previously written about the ecological footprint that determines that amount of the earth's resources that each person or each country is consuming. In 1960, the world was consuming 50% of what the earth could provide in terms of food, clothing, shelter, water, energy and disposal. In 1980, we were consuming 100% of the earth's resources, and today we are consuming 150%. In other words, we really need 1 ½ earths to provide the essential needs of the world's population. So more than ever, we really need to conserve and become sustainable.

One of the first lessons we learned was about the three R's: reduce, reuse and recycle. This means we must reduce the amount of resources that we use, reuse that resource as much as possible even for a different application, and recycle. We can also add another R, that of redesign products so they become more efficient. But unfortunately, we are still disposing large quantities of our waste into landfills. In the U.S. alone, we generate over 1,600 pounds of waste per person per year.

About twenty years ago, I was managing a business for a large waste management company that converted non-recyclable paper and plastic waste into fuel. Waste paper and cardboard that was plastic coated, wax coated, or chemically treated could not be recycled so it was typically disposed in landfills. In addition, some waste plastic film could not be recycled. So this business shredded the paper and plastic film and pressed it into a pellet that was sold as a fuel. Basically, it was cheaper and cleaner than coal, so it was added to stoker grate coal. This company was paid for the disposal of the waste and was paid again to sell the fuel. Unfortunately, at that time the parent waste company was more interested in filling its landfills, and this business was closed.

In the meantime, however, these same waste companies started a new energy business from their landfills. Much of the waste disposed in the landfills begins to decompose over a period of five to fifty years and results in the production of gases, most of which is methane. Originally, the companies would insert pipes into the landfill to release the gas pressure and would flare the gas so it wouldn't create a smell. Basically, the methane would be combusted and converted to carbon dioxide. Later, the companies decided to capture the gas and use it as a fuel to power a generator. So now the gas formed by the decomposition of the waste is converted to electricity. However, this process, while environmentally sound, takes some time as it requires many years for the waste to decompose into methane. Why wait when you don't have to wait?

Most of the large companies today have instituted programs to reduce their waste generation as much as possible; in fact, trying to achieve zero waste. This has had a major

impact on revenues for the waste companies. As organizations and people become more environmentally conscious, the waste companies are collecting and disposing less waste. To compensate for this decrease in revenues, the waste companies are looking for ways to obtain an increase in value from the waste they do collect.

Much of the waste still disposed by commercial entities has some heat value and can be combusted for energy. The business model of today's waste management companies has changed from twenty years ago when the objective was to send as much waste as possible to the landfill. But in effect, what they were doing was the reverse of our extraction of fossil fuels, like oil and coal, from the earth. They were inserting the fuel into the earth's crust and only recovering a portion of it as a landfill gas after many years of decomposition. The plastic waste, which has very high heat value, will reside in a landfill for many years without decomposing at all. So plastic is waste whose energy content is lost forever.

Today, some of the waste companies are considering the processing of the collected waste to convert it to fuel pellets that are sold as a coal substitute for stoker grate power plants. What this means is that less waste will go into the ground (landfill) and an equal amount of fuel (coal) will not be extracted from the ground. This makes a lot of sense as the waste can be converted into energy immediately rather than waiting for only a portion of it to decompose over 5 to 50 years. The waste companies should then go to the next step, and start extracting waste from the landfills that have not yet decomposed and convert it to fuel. A new business model for the waste companies should include "landfill mining".