



Pros & Cons of Lead based Glass Disposal Methods

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Landfilling

Depositing covered electronic devices (CED) such as monitors and TVs into a landfill does nothing but create hazardous waste. Televisions get picked up curbside by today's garbage trucks and are instantly crushed in the back of the garbage truck along with the rest of the solid waste put out at the curb by US residents. The solid waste garbage loads go directly to a landfill to be weighed. The hauler is charged a "tipping fee" for the weight (i.e. \$43 per ton-up to as high as \$175/ton), and then it's driven over to the landfill hole where the garbage truck loads are dumped daily. The tipping fee is ultimately paid by the residents in the real estate taxes, or direct billing from the haulers.

This method has ZERO effect on creating jobs. The obvious problem with it is the huge potential for "pollution" to leech out of the landfill flute's and seep into the ground water causing irreversible "untold" health risks for future generations due to the LEAD, PBDE, CADMIUM, MERCURY, BERYLLIUM, and a few more hazardous elements. The not-so-obvious problem is that we are throwing out hundreds of millions of dollars in plastics, and precious and non-precious metals. Therefore there is absolutely no conservation of resources and instead produces tons of hazardous waste pollution.

Shredding

The shredding method shreds the lead based funnel tubes into lead based pebbles. The pebble like material is then sent to a refiner who uses it in their furnaces as "slag" which aids in ensuring that the furnaces do not overflow with material bubbling out of the furnace. Slag is used to prevent this from happening when melting precious metals (non ferrous) or non-precious metals (ferrous). Ultimately, after one use the slag is now what the industry calls "dirty glass" but it is in a much smaller format since it was chemically altered in a furnace.

When you shred the glass, it can only be RE-USED once and then it goes to a landfill. By definition "smaller particulate" is easier to leech out. This type of disposal will cut down the size of the material going into the landfill but won't rule out the possibility that some might leak or seep into the ground water from the landfill's flute. Very expensive shredding equipment (1 million+ dollars) is used to shred the monitors or televisions.

This method does not create jobs, it eliminates them. The tradeoff is purchasing an asset worth \$1,000,000 or more to do the processing of what would otherwise require a minimum of 40-60 people working 3 shifts. Shredders can process far in excess what a human being could process by hand per hour but the downside is that it still results in LEAD and other hazardous materials going to a landfill. Since it is the second most expensive process of the 4 methods listed, and ultimately ends up in a landfill after one use, it's a waste of our most precious resource, MONEY.

Exporting

Selling or sending lead based glass to 3rd world countries with the "hopes" that they will recycle it properly is the most inexpensive method of the 4 listed, and the most lucrative for Recyclers running profitable businesses. However, we all must ask ourselves the following questions: Do third world countries even dig holes (land fills) to put their garbage in? Do third world countries have an EPA? Do third world countries have a governing body like OHSAS to protect the labors doing the work from health and safety issues? In most cases the answer is "no" to all three questions.

We would like to think it gets handled properly without poisoning the third world countries' citizens who are extracting the precious metals and non-precious metals from boards and the copper and aluminum bearing parts but the reality in many cases is something exactly the opposite. We also like to think the third world countries are not just dumping the

glass on top of barren land, but there is a high degree of probability that it is happening. Third world countries are less capable than we are of handling the lead based glass properly.

The US is not 100% capable due to a lack of capacity and plants to handle the volume that will be disposed of in the near future via recycling regardless of the fact that the US follows OHSAS rules and EPA guidelines, etc. We would and could quickly build the plants and the infrastructure required in one year's time, but we also need the help of our federal legislature to pass national E-waste legislation on "best practices" in addition to a program that works in all the states to help keep jobs in the US for this new burgeoning industry.

Although, exporting is one of the cheapest methods used to dispose of lead based glass, the HUGE downside is that it eliminates jobs in the US and is a questionable practice of the US transferring our pollution to third world countries.

Glass to Glass Recycling

Glass to Glass recycling involves "de-manufacturing" complete monitors, terminals and televisions into their individual pieces/categories and parts to be re-sold to commodities buyers who sell the re-used materials back to the original equipment manufacturers (OEMs). The de-manufacturing process produces plastics, low grade boards, color gun necks, aluminum bearing parts, copper bearing parts, and the lead based CRT tubes separated in the proper glass category sorts required by the manufacturers who buy back the glass materials. They currently re-use the glass material in new analog monitor and TV production.

De-manufacturing the glass materials involves separating the front panel glass from the funnel tube glass which contains 4-8 pounds of lead depending on the size of the monitor and/or television. Glass to Glass processing requires Processors to "cancel" the glass by breaking it up into rock-like chunks to be stored in gay lord boxes and then properly sealed via "hazardous material" standards (hazmat) to avoid lead based dust particles from escaping into the air. The separation of the different types of glass can also be done with machines that cut the glass via "laser beam type" technology.

Once it is packaged to EPA standards, it is then shipped in 40 foot containers back to one of the 9 plants in Asia (owned by the TV manufacturers and monitor manufacturers). It is then re-used in the manufacturing of more analog lead based glass products. That is why it's called "glass to glass" recycling; It truly follows a complete circle of End of Life (EOL) management whereby everything gets re-used and nothing goes in land fills or gets discarded as waste.

The main raw materials by weight and volume are lead and silica (glass). EOL practices which follow the product's full life circle, from beginning to end, re-using 100% of the materials are by definition "GREEN". Therefore, the only method for recycling lead based glass that is truly "GREEN" is "glass to glass". The glass-to-glass recycling method creates 20 jobs for every 500 units of lead based glass processed daily. This method creates 60 jobs per glass de-manufacturing plant, running three work shifts to process an estimated 400,000 televisions per year or in the case of the laser beam technology machines an estimated 800,000 per year.

The US is sitting on a minimum of 274 million televisions that will be disposed of in the next 2-8 years due to the FCC mandate on switching the television signal from analog to digital technology in 2009. The US will need 40-70 "Green" de-manufacturing plants ("glass to glass") constructed to handle and dispose of the televisions properly nationwide if legislation banning lead based glass from land fills passes nationally. This figure is for televisions only, and does not take into account the lead based computer monitors; however, an additional assembly line could be added to accommodate monitors and terminals and we could also double the labor to handle the quantities of lead based analog monitors.

This method is the only GREEN method in existence, albeit the most expensive of the 4 methods to recycle lead based glass. Although it costs money to be GREEN, it produces many jobs and exponentially has so many WIN/WIN arguments that it should be mandated.