Stone Castle Recycling LLC, Utah
BAN Investigative Report -- March 19, 2014

History

Stone Castle Recycling has been on BAN's alert list since BAN spotted an intermodal container numbered TRLU6860413 sitting at their Ogden, Utah loading dock on December 11, 2007 and subsequently tracked it to Hong Kong. Hong Kong authorities found it to be an illegal import of hazardous waste and returned the container. This investigation was undertaken about the same time as that of BAN's investigation of Executive Recycling in Denver, which later led to a 60 Minutes Documentary and finally a federal criminal conviction. Early in 2008, BAN passed the information about the illegal export by Stone Castle to the US Environmental Protection Agency Criminal Enforcement Division. It is reported that Federal EPA did investigate Stone Castle later but the outcome of that investigation is not known at this time.

More recently, in 2013-14, the Utah Department of Environmental Quality (UDEQ) has taken actions against the company. Some documentation of these actions is currently posted on the UDEQ website. Following the fire, it is expected that UDEQ will be taking more actions against the company (see Recommendations below).

Fire at Parowan Site

Public attention has now been drawn to Stone Castle Recycling due to a dramatic electronic waste fire that took place on March 2, 2014 at their facility in the small town of Parowan, Utah. BAN visited the site on March 16, 2014, two weeks after the fire.

We were alarmed to find the site completely accessible without a barrier or cordon or warning signs to prevent children or others from entering what must be considered to be a highly toxic area.
A survey of the fire site revealed an estimated 300 gaylord boxes (large cardboard boxes) of electronic waste, including older large console (see Photo 5), wooden cabinet, projection, and cathode ray tube (CRT) TVs had been stored in the rear of the Parowan open lot. Also stored there were significant amounts of thrift-store reject toys and home appliances. The fire seemed to have started at the center of a large area of gaylord boxes holding large CRT televisions and appeared to have burned from the center outwards. About ¼ of the material in this large stockpile was burned before being extinguished by local fire fighters (see photo 1 and 3). The cause of the fire remains unknown. As reported in a local newspaper, the fire department has three theories:

1) arson, 2) ignition of methane coming from sewer, 3) self combustion of electronic equipment.

Fires of this type have been known to be started from solar energy striking lenses or lens-like glass or plastics (see Photo 2). In the case of the Stone Castle stockpiles, there were numerous projection lenses from...
numerous large projection TVs that could likely have focused the light of the sun to ignite cardboard, paper or plastic.

Such fires, however started, will proceed to burn the plastic housings. Heat will crack the CRT glass releasing the toxic phosphors (including cadmium compounds). Once started, combustion of electronic equipment and the plastic housings will liberate a complex mix of pollutants, including not only heavy metals, but polycyclic aromatic hydrocarbons and dioxins as well.

The presence of bromine in the plastics and circuit boards as flame retardant material is known to create very significant quantities of extremely hazardous brominated dioxins when burned. Much of the toxic
residues from this fire would remain in the pile and environs, possibly contaminating soil and groundwater with lead, cadmium, dioxins and PAHs, or could run into the sewer (there is a manhole directly beneath the burned pile). Downwind contamination – particularly of nearby residences is also of great concern. BAN documented that the fire was hot enough to melt CRT glass.

The charred and melted mass of electronics should now be considered hazardous waste and should be managed accordingly (see Photo 4).

**Cedar City Site**

Despite their website showing an office front at a St. George, Utah location and despite a standing RCRA site identification form filed in April of 2013 for the St. George site, it is now closed. Now there is a new facility in Cedar City. Sources say that the effort to vacate the St. George site was made possible by moving problematic waste to the Parowan site.

Sources reported that Stone Castle bought a plastics recycling operation but intend to use this new facility to disassemble TVs and break CRT glass.

A March 17 visit revealed few electronics in the yard but rather large amounts of baled and unbaleed plastics (see Photo 6). DEQ sources stated that there is already significant amounts of CRT glass stored indoors.
According to a letter filed with the Utah Department of Environmental Quality in response to a violation notice, as of January 14, Stone Castle had at their Clearfield facility 446 sealed and palletized containers each containing about 3,600 pounds of CRT glass. They had been warned on October 28, 2013, with a notice of violation that they needed to remove all CRTs stored outdoors to indoor locations by the end of January 2014.

However during BAN’s visit, we were alarmed to find numerous gaylords full of TVs (see Photo 7) and some broken gaylords spilling glass onto the ground outdoors (see Photo 8) in the back of the recycling facility.

Further, BAN discovered many more TVs scattered in disarray about one block away in a large vacant lot. There, about 500 additional gaylords and unboxed projection TVs were stored outdoors subject to sun, wind and rain. (see Photos 9, 10 and 11).
Photo 9. Yellow arrow points to triangular lot now filled with CRTs in weathering gaylord boxes and projection screen TVs.

We do not know whether this nearby stockpile belongs to Stone Castle as there was no signage on the fence or gate. However, due to the proximity of Stone Castle and the similarity to the TV scrap found at Parowan, it would seem likely.

Photo 10. Empty lot TV stockpile about one block from the Stone Castle facility. Copyright BAN 2014.
Source of Waste

Much of the accumulated material has been acquired from the Church of Latter Day Saints (Mormon Church), and most specifically their Deseret Industries thrift store chain. Direct evidence found at the Parowan fire site (see photo 12), the nature of the material and additional information from outside sources leads BAN to believe virtually all of the Parowan material, and much of the Clearfield material originated from Deseret Industries which Stone Castle took for free. Currently, Stone Castle’s website boasts that their clients include the FBI, the US Forest Service, the Church of Latter Day Saints and Deseret Industries.

Lack of Certification

Stone Castle’s website discusses certifications and mentions R2 and e-Stewards. The site claims that they are presently “going through the Certification process.” BAN can confirm that they are not currently Certified as e-Stewards and we have no indication that they are currently attempting to go through the e-Stewards process.
Conclusions

The Stone Castle Recycling case demonstrates once again that major customers (in this case, even the Mormon Church) can be lulled into a false sense of comfort by the word “recycling.” Likewise they might unfortunately still believe that recyclers should not be paid for providing the service of managing hazardous end-of-life equipment. As a result, large corporations and institutions often fail to conduct proper due diligence and budget properly for disposing of their hazardous post-consumer waste.

This case is also yet another example of a crisis of design of our consumer products. By virtue of the mass scale of consumption, design decisions that do not give careful regard to ensuring toxic-free products, design for recyclability and re-use, will come back to haunt future generations.

In this case a crisis of design has created a national CRT management crisis. This particular waste stream, being of little value, and possessing high environmental liability, is currently without a scalable sustainable recycling solution. Unfortunately, the only recycling solution that is currently available in the marketplace that re-utilizes leaded glass involves the manufacture of new CRTs -- a market which is shrinking rapidly in favor of new flat-screen TVs. Currently, the demand for this recycling method is less than the supply of obsolete discarded TVs and monitors and may soon disappear altogether.

Because of the known liabilities responsible consumers are often willing to pay an environmental fee for proper recycling. Or as appears to be the case with Stone Castle’s deal with Deseret, they agree to take the TVs for free along with more valuable
materials. But because recycling CRTs costs money to do, recyclers often accede to the temptation to forestall the recycling or never do it at all. This has led to an epidemic of stockpiling of CRTs in the US. All too often these stockpiles result not in recycling but in abandonment, legal disputes, or in this case, a fire.

Finally we must conclude that regulators are largely “asleep at the wheel” with respect to this crisis. Regulators seem to be unaware of the true hazards involved in this waste stream and particularly if the problem suddenly catches fire. While most are aware that there is lead in the glass, that is the least of the environmental and human health concern. While lead can leach out of glass over centuries, far more attention needs to be paid to more hazardous outcomes relevant to this case:

1. Contamination via phosphor compounds such as cadmium sulphide
2. Dioxin emissions from the burning of brominated flame retardants and PVC
3. Polycyclic Aromatic Hydrocarbon emissions from burning of hydrocarbons

Furthermore, with respect to the CRT and electronics waste stream, regulators all over the country, are not in our view proactive about enforcing the CRT rule and the other relevant statutes of the Resource Conservation and Recovery Act (RCRA).

**Recommendations**

1. Most urgently, the charred and melted mass of electronics must be fenced off from the public, and samples taken of soil and of the waste itself.

2. Also urgently the burned residual material and contaminated topsoil should be carefully contained and removed and managed as hazardous waste. This job should in no way be left up to the recyclers who are not permitted or trained to properly remediate dioxin, and heavy metal contaminated wastes and soils. This must be done with full protective clothing and Personal Protective Equipment. The material should be sent by approved transport to a hazardous waste landfill. All costs should be born by Stone Castle LLC.

3. Remaining operations and CRT storage at Stone Castle should be carefully scrutinized for violations of RCRA and fire abatement laws. All violations should be more rigorously prosecuted and penalized. All unburned stockpiled electronics anywhere in the state should be moved indoors as a matter of urgency.

4. RCRA Enforcement Agencies all over the US should review all of their jurisdiction’s electronics recycling sites including ancillary warehouses and yards to properly survey and monitor all stockpiling. All such sites need to be registered and operating under an approved waste management plan.

5. Assessment of hazards from phosphor exposure (including lead and cadmium compounds) must be part of the surveys. Note that cadmium does not reveal itself in TCLP tests and other tests need to be deployed.
6. Electronic waste should never be allowed to be stored outdoors and should be considered a source of fire hazard wherever it is stored.

7. Policy makers would be wise to encourage or legislate planned storage sites located at landfills where CRT glass can be sequestered in safe, monitored, retrievable storage following a thorough cleaning of phosphor when viable cost-effective recycling is not readily available. In this way, we can minimize dangerously stored CRTs and CRT glass, can prevent it from leaching or burning, and it can be ready for mining in the future should such technology and markets become viable.

8. In the big picture, we must move to a society that requires product design to be predictive and conscious of the impacts of mass consumption and the resulting harm from products at the end of their useful life, and therefore incorporate toxic-free inputs and processes, and ensure product longevity, reusability and recycling in all design decisions.

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