

It's safer to recycle, not dump, toxic electronics

April 27 2009, By George Bryson

Standing in the bed of a pickup truck backed against the concrete ledge of the dump, the silhouette of an adult male teeters for a moment, a small but bulky television set held high overhead.

Then like some Pleistocene hunter, he thrusts his body forward and lets the TV fly. It clears the ledge with feet to spare and crashes on the concrete floor. Later its shattered remains will be bulldozed into a large pile, bound for the Anchorage, Alaska, landfill.

Scenes like that, municipal waste workers say, are getting repeated more often these days as residents -- prompted by a national deadline to switch to digital TV technology -- choose to replace their old sets with new ones.

Unlike Americans in most states, however, Alaskans have a choice of how to dispose of their old TVs. They can recycle them, or they can toss them in the dump.

In some states, like Washington, Oregon and California, it's illegal to throw bulky old computers or pre-digital TVs in a local landfill. Why? Because they're toxic. The cathode-ray tubes inside their monitors are heavily enameled with lead, which can cause irreversible neurological damage to humans.

But no such law exists in Alaska, hence the choice: To recycle or to dump. Choose the latter if you want, but here's what happens next.

OFF TO THE DUMP

TVs and electronic waste in general take up a lot of space at the 82-acre Anchorage Regional Landfill, which opened 22 years ago and is now more than a quarter full.

For that reason, let alone the toxicity issue, municipal officials encourage residents to recycle their TVs and other so-called e-waste.

"Electronic waste has been increasing exponentially," says Anchorage Solid Waste Services recycling coordinator Jeanne Carlson. "It's taking up a lot of room."

Credit the increasingly brief life span of most high-tech products these days. Nationwide, about 250 million computers were expected to grow obsolete between 2004 and 2009, according to the National Safety Council. Now TVs are catching up.

When they're thrown in a landfill, TV tubes invariably break apart and the four to eight pounds of lead that lines their backsides tends to get dissolved by snowmelt and rainwater.

When landfills are underlaid by a liner and mostly capped, as the Anchorage landfill is, water can be kept to a minimum. But it's impossible to keep the landfill entirely covered. So lead and other heavy metals, including mercury and cadmium, bleed through the soil in a solution that pools on top the landfill's plastic floor.

Does the toxic seepage (called leachate) stay in the landfill? No.

Six to seven times each weekday, workers pump the polluted water from a landfill lagoon into 6,000-gallon tanker trucks and haul it to an Anchorage Water and Wastewater Utility sewage receiving station.

About 39,000 gallons arrive there each week day, said AWWU assistant general manager Brett Jokela. Almost 8.9 million gallons last year.

At the station, which is no more than a manhole, the lead in the solution enters the city sewage stream, blending with wastewater from household toilets and sinks as it begins its journey to the Asplund Wastewater Treatment Facility -- on a bluff overlooking Cook Inlet.

INTO THE INLET

It's no secret that Anchorage pipes its sewage, which undergoes only primary treatment, into the ocean.

The federal Environmental Protection Agency allows the city to do so under terms of a special waiver for cities its size, partly because the treated sewage that bubbles up from the outflow pipe on the floor of Cook Inlet (in water about 35 to 40 feet deep at low tide) is well within pollution standards, Jokela said. And partly because the seawater bordering Anchorage is flushed twice a day by some of the most powerful tides in the world.

But what happens to all that television lead?

Last year about two-thirds of it settled to the bottom of the sewage treatment pond as sludge, Jokela said. The rest dissolved into a lead solution and passed through the system, entering Cook Inlet at a negligible concentration of 2.8 micrograms per liter -- well within the EPA-allowed standard of 8.1 micrograms of lead per liter.

(According to Jokela, the naturally occurring lead in Cook Inlet -- fed by glaciers that grind metals off mountains -- is more than twice the concentration that spills from the sewage out-fall.)

Back at the treatment plant, however, a significant concentration of TV lead was still stuck in the sludge on the bottom of the settlement pond.

THE INCINERATOR

After the sludge is raked from the pond, it's run through several processes that wring out excess water. Residue is hauled to an incinerator.

Three things can happen to the lead that daily gets scooped into the big AWWU incinerator at the treatment plant, Jokela said. When it's burned some of it:

- Settles at the bottom of the incinerator as ash, which ultimately gets hauled back to the landfill.
- Rises in the form of gas -- but gets captured in the incinerator's exhaust scrubber, then returned to the treatment plant as sewage.
- Escapes as gas through the incinerator exhaust and enters the atmosphere over the city.

The lead that escapes into the air over the treatment plant is well within permissible limits set by the EPA, Jokela said.

Last year the city upgraded the incinerator to improve its efficiency and reduce its emissions.

In fact, if you're worried about toxic materials from the TVs that get dumped in the landfill, go back to the landfill, Jokela said.

"I venture to say that about 99 percent of that lead is still there."

For a while anyway.

In about 25 years, the landfill is due to reach its 20-million-ton capacity -- with waste stacked approximately to the height of a 15-story building. Then it will be capped forever.

But don't be so sure that what's inside the dump is going to stay in the dump, says New York journalist Elizabeth Royte, author of "Garbage Land," which documented the notorious Fresh Kills Landfill on Staten Island.

Even the best landfill liners in the nation ultimately leak, she says, citing studies by EPA engineers. Then everything inside them that's still toxic can leak into local streams.

Writes Royte: "The dumps of the Roman Empire more than two thousand years old are still leaching today."

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