



# RECYCLING THOSE IT CAST-OFFS

Just throwing away that old computer equipment is no longer acceptable, as it contains things toxic to the environment.

By Kevin Ruscoe, RecyTech, CEO.

**T**he re-use of IT equipment around the globe is big business. Any equipment that has served its useful purpose in New Zealand might find a new life in Mongolia, or even closer to home in that struggling economy Australia or inside the manufacturing juggernaut of South Korea. And there's any number of 'remarketing' companies that will happily do this for you, allowing you to refresh your hardware and boost your credibility with your boss for doing some good for others.

That's great, but what about the other stuff? All products contain useful materials that can be re-used, and recyclers are getting smarter at extracting those materials all the time. Manufacturers are getting the message as well, and many new products do not contain the same level of hazardous materials as before. The real issue is that our old equipment does contain hazardous materials, and these need to be processed properly and kept out of the ground.

When these products are buried in landfills or incinerated, they pose health risks and this is a growing problem. More and more old IT equipment is being disposed of in the municipal waste stream. Computers and display units contain significant amounts of material that are hazardous to human health if they are not disposed of properly. Monitors and televisions constitute 40% of all lead and 70% of all heavy metals found in landfills. These heavy metals and other toxins can leach

into the soil from landfills, evaporate into the air, and enter the air through incineration.

Toxins in e-waste include polyvinyl chloride (PVC plastics), copper, lead, mercury, arsenic (in older models), cadmium, manganese, cobalt, gold and iron. Mercury, chromium, lead and brominated flame retardants represent the greatest in quantity, and are likely to cause the most adverse health effects in humans. There is uncertainty about the intensity of the impact on human health of chemicals found in e-waste. Toxicology is not an exact science, and there is rarely universal agreement on how a given chemical substance affects human physiology.

Nevertheless, between older products being purchased second-hand at a rapidly increasing rate, and the many outdated computers currently in storage in people's basements and closets, there is a massive potential for severe negative environmental and health impacts if they were to enter the municipal waste system – not to mention damage to New Zealand's clean, green reputation. In addition, valuable materials from the computers would be lost due to the lack of effective recycling. E-waste constitutes 5-8% of municipal solid waste, yet it is accumulating at a rate three times that of other solid waste.

The methods humans have developed for disposing of waste are imperfect and may result in detrimental effects to the environment and humans. When e-waste

is disposed of in landfills, toxins can leach into groundwater or nearby water bodies. For instance, lead can leach from landfills into drinking water supplies, and mercury can leach into surrounding soils. Chromium may contaminate the environment through landfill leachate (the liquid formed when water percolates through the toxic substances deposited in landfills and absorbs the toxins), and air contamination can occur when materials containing chromium are incinerated. Landfills and incineration are currently major exposure pathways for humans to the hazardous chemicals found in e-waste. Landfills are of particular concern, since currently there are few other viable methods of disposal for most end-users; they face the choice of keeping the old computer indefinitely in a closet, or placing it in a landfill.

Currently, less than 10% of e-waste produced is reused or recycled. This means that the majority of the e-waste is disposed of in landfills, where it can eventually create health problems through human exposure. Some computer manufacturers intentionally design their products for short lifecycles, and employ materials and processes that hinder recycling efforts with the objective of requiring consumers to purchase new products.

However, in addition to hazardous materials, e-waste contains valuable resources, such as gold, copper, and aluminium, which are lost if the waste is not recycled. ■