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iPhone, a Waste?

Well, it's no longer usable right?



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The advancement in technology has been accompanied by the development of Apple's iPhone. The reinvention of the iPhone, alongside other technological based products has come with the ecological issue that is electronic waste (e-waste). As Apple comes out with the new and improved iPhone each year, consumers will purchase the new iPhone and discard their previous one.

E-waste has become a large issue being one of the quickest forms of waste in both developed and developing countries, coming from all electronic devices – computers, mobile phones, refrigerators, washing machines, televisions and other electronic consumer items. In this particular case, Apple and its continuous reinvention of the iPhone has been a contributor as previous models will become outdated and as such, consumers will purchase new models. Creating these devices requires valuable resources, even containing harmful chemicals like mercury, lead and arsenic which are then disposed of once deemed no longer functional or wanted. This piles up, taking into account the amount of people who own devices, even multiples. Apple has become a huge company whose popularity amongst consumers especially



with the iPhone and has brought on millions of sales worldwide.

Now, Apple has been developing the iPhone throughout the years, iPhone 2G to the current iPhone 12 Pro. In turn as consumers purchase the new iPhone, the previous is discarded thus becoming e-waste as the materials used are then thrown away. Though iPhones are largely discarded due to their short lifespans as Apple will modify older models to include new features, which are then marketed to the public. As such, the iPhone, like most smartphones, are designed and manufactured with obsolescence in mind. There are small amounts of raw materials used to manufacture an iPhone can be limited to minerals and rare earth metals which are done through mining. Not only can hazardous chemicals come from this, they are difficult to recycle so late into the life cycle of the device.

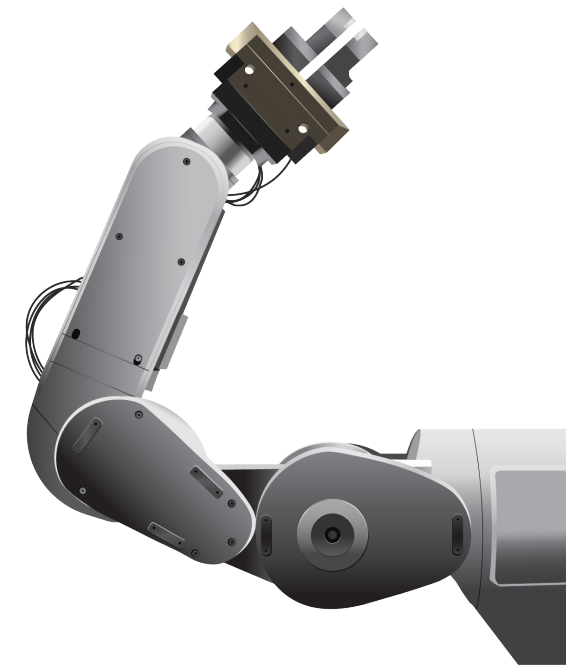
In acknowledgement to this, as the new models of the iPhone come out, Apple has been developing methods in which they can reduce e-waste. Apple has been minimizing the hazardous chemical components used when manufacturing. The iPhone 4, 4s and 5

are Brominated flame retardants (BFR)-free, Polyvinyl chloride (PVC)- free, include an arsenic-free display glass and a mercury-free LED backlit display. Mercury and lead were eliminated in 2009 and 2006, PVC and phthalates are no longer used and BFRs were eliminated in 2008 from the final assembly line. While this reduced the environmentally costing materials, it was countered by a short life cycle of the models. As newer models are created with newer design features, like batteries that are no user-replaceable, it encourages consumers to replace instead of repair.

Apple have brought on methods in which consumers can take part to e-waste minimalization. There is an encouragement in recycling old devices. The Apple Trade In, in which consumers can trade in an eligible device for Apple store credit or just recycle it for free. Each iPhone model from iPhone SE to the current iPhone 11 Pro Max (and other Apple products) is listed with estimated trade-in value. Apple have also expanded recycling programs to Daisy, a recycling robot. Daisy will disassemble and recycle used iPhones, able to disassemble 15 different iPhones at the rate of 200 per

hour. These iPhones are stripped to re-use important and valuable materials.

Overall, e-waste has been a major consequence that Apple has contributed to through the reinvention of the iPhone. Not only that, they have recognised this and are working towards minimising the e-waste emitted by developing new technology for such and encouraging their consumers to recycle by bringing forth recycling programs. Despite this, they do continue to release new models as consumer demands still remain and the newer features allow for a shortened product life cycle.



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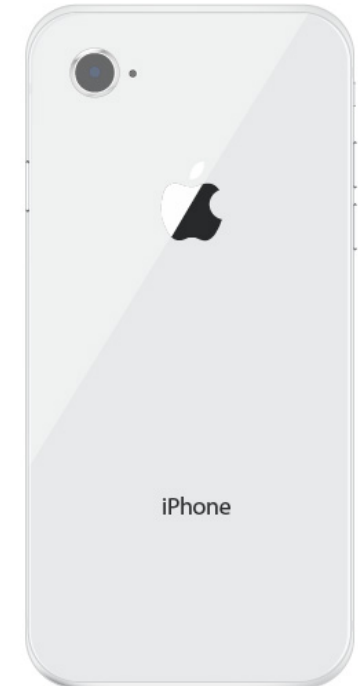
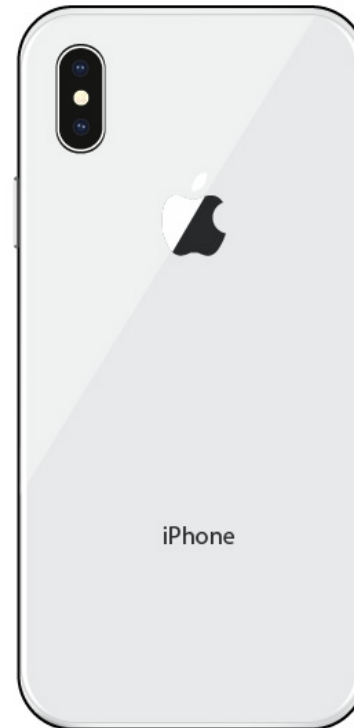
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Material Use

- Arsenic-free display glass
- Mercury-free
- PVC-free
- Beryllium-free
- Brominated flame-retardant-free



- 100 percent recycled rare earth elements for the Taptic Engine
- 35 percent recycled plastic throughout multiple components
- 100 percent recycled tin in the solder of the main logic board

- 58g ● Stainless steel
- 40g ● Battery
- 39g ● Glass
- 17g ● Circuit boards
- 10g ● Plastics
- 6g ● Other
- 4g ● Display

- 26g ● Stainless steel
- 26g ● Battery
- 35g ● Glass
- 14g ● Circuit boards
- 5g ● Plastics
- 6g ● Other
- 25g ● Display