

# **Biodegradable Electronics Packaging**

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Ninety-five percent of Americans own a cellphone. Every 1.8 years they throw it away. The world generates about 50 million tons annually of electronic waste, and the volume is increasing. Only about 15 percent of e-waste is recycled, leading to biodegradability (along with recyclability) as a way to deal with the growing volumes. The diversity of substances in electronic components: metals, organic, and inorganic materials, complicates both recyclability and biodegradability. Some alarming, and when it comes to product reliability, potentially troubling, materials are being considered to render e-waste biodegradable. To date such materials have not knowingly been used in established electronic component manufacturing processes. But given increasing e-waste volumes and disposability concerns, such materials could stealthily enter existing electronic package manufacturing processes relatively unannounced. This paper warns of inadequately-qualified, and reliability-threatening, biodegradable materials which, like counterfeit devices, copper wire, and other “surprises”, could eventually show up in electronic component products and supply chains.

(Note to committee: since this topic is somewhat outside the mainstream of CMSE, it's offered as a fill-in to round out the program to be considered only if not enough more compelling advanced packaging papers are received.)