

# The 3 Rs or is it now 4?

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The EPA promotes the 3Rs of REDUCE, REUSE and RECYCLE as ways to minimise waste. It is clear that REDUCE is the best way to limit the problems of plastic trash. This is especially true in the use of convenience items like water bottles, plastic cups and straws etc. However due to the way our environmental industry works, it is not practical for the amount of some plastic items like disposable medical syringes or groundwater sampling disposable bailers for example to be REDUCED any time soon. They cannot be REUSED as there may be a risk of cross contamination as is the case with a syringe, or the item's useful life may be over. In theory they could be RECYCLED, but there may be contamination issues again. Or the collection and transport costs to return them back to a recycler may be prohibitive. Plus people may have to make an effort to get them to a recycle facility, which for items like many plastic items bottles, plastic cups and plastic straws, this does not work too successfully.

From above, there are practical limitations of the 3R's in many cases and more often than not the plastic waste goes directly to a landfill. Information from some other sources suggests that after recycling, composting would be the next best option. Composting is a limited option because composting facilities are few and far between and the compostable plastics are not separated out from 'other plastic's that are designated with the recycle number 7.

The ultimate solution for plastics: If REDUCE is not practical, and even if REUSE and RECYCLE are practiced, it is only a matter of time before those products cannot be reused or recycled anymore and they get discarded to the landfill. Using this new landfill biodegradable technology, plastics will biodegrade in a landfill or a compost pile. Taking a broader outlook, perhaps we can now use a 4<sup>th</sup> R for REJUVENATE. We selected the word Rejuvenate because the products of biodegradation are biogas and biomass (plant food). The latter of which will rejuvenate the soil.

Our concept of 4 Rs could provide a simpler understanding of the ultimate solution for plastic waste that is discarded to a landfill.

Now, the management of plastic waste could look this way. REDUCE use as much as possible first as that is the best saving of all. Then REUSE and RECYCLE plastic items as much as possible to save them from going to a landfill. This also saves on the cost of using new raw materials to produce new items. Then finally when all of the above have been achieved as much as possible, send those treated plastics to a landfill where they will biodegrade away to REJUVENATE our land again. We are now no longer carrying our plastic trash problem forward into the future for our grandchildren or their grandchildren to cope with in their time.

Note: A 4Rs concept was developed by the author for biodegradable plastic products and is not part of any regulatory endorsement.