

Recycling

Combating a Throwaway Society

A Practical Guide

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i Introduction - Why Recycle?

Australia produces 10 million tonnes of domestic waste per year which is the equivalent of about 680 kilograms per person - up to ten times our own bodyweight. When you consider that much of this waste is an unnecessary result of overpackaging and that 80-90% could be re-used or recycled, the figures are alarming!

In Australia most of our household waste finds its way to the rubbish tip or landfill site. In the past these landfill sites have been extremely successful at 'filling' swamps and small watercourses, thus destroying the natural ecology of the area. Today councils and town planners are increasingly environmentally aware. But no matter where a landfill site is

ii established, it becomes a highly poisonous, volatile conglomeration of putrid wastes. Once bulldozed and covered with soil, organic wastes rot, giving off natural gas, while heavy metals from batteries leach through the soil to poison the water table. Other items such as plastics and car tyres will be intact a hundred years from now. Far from becoming useful, the landfill site becomes unsafe to build on and certainly unsafe for growing any form of crop. As our yearly pile of rubbish increases, the land available in which to bury it decreases.

One increasingly popular waste disposal method is incineration. In Switzerland, for example, an incinerator boiler capable of turning 270 000 kg of municipal waste per day into 11 000 kg of steam per hour has been developed. A mountain of waste is reduced to a small pile of ash and energy is produced. Unfortunately however, this system is not without its problems and once again they lie in the nature of waste. When burned, plastics, pesticides, wood preservatives and the like release harmful dioxins into the atmosphere. Other gaseous releases include acids and heavy metals. The ash too is highly toxic and must be disposed of on a hazardous waste site.

Looking at a few alternatives, it becomes apparent that there is no completely safe rubbish disposal method.

The Three 'R's'

The answer is clear; Reduce the amount of waste we generate and Re-use and Recycle what we can. Of course it sounds easier than it is. As victims of the disposable society we have superfluous products and packaging urged on us every day. We're almost encouraged to make rubbish by the size of the large 'wheelie' bins provided for domestic use, and by the frequent collection services which take it away as quickly as we make it.

iii One wonders whether it would be a different story if we had to dispose of our household waste by our own means as was the case not so long ago. **Nobody even considered rubbish collection because household waste simply wasn't a problem. Kitchen scraps went to the pig, the fowls or the compost heap. Newspapers fuelled the stove or were cut into neat squares for use in the outhouse. Linen or cloth was never thrown away - sheets becoming pillow slips, worn towels face washers and even smaller pieces of cloth were sewn into mats or used to patch existing clothes.**

Packaging materials as we know them today, did not exist. Commodities such as flour, sugar and tea were bought in bulk in large calico bags which, when empty were made into shirts, petticoats, pyjamas or pillow slips. Jam and treacle came in seven pound tins which, it turn were used as canisters for the sugar, flour or tea. Virtually nothing was wasted. Even a worn out saucepan would more likely be used to hold a potted plant than be thrown away.

Economics and Recycling

Recycling and economics are intrinsically linked. Does it save money to recycle? Most Australians today would answer 'no'. It is far easier and more comfortable to dispose of an old item and replace it with a new one. Our affluence can be seen by the amount we throw away¹.

vi Separation and Collection

After consumption, materials are either disposed of or separated and collected. Separation is the most important step in the recycling flow as it adds value to the materials and in effect gives them a market. If not segregated, the waste is useless and must be disposed of at the expense of the waste producer. As a general rule, if it is cheaper to separate and recover the waste than to dispose of it, then separation and collection will be the chosen path. **As it stands today, disposal costs are relatively low and hence do not encourage recycling schemes. Separation, on the other hand is quite expensive as it is generally labour intensive.** Mechanical separation has met with mixed success and is only efficient when there are extremely high volumes of waste to be processed. These methods are more fully discussed in Part B. Chapter 8. 'Separation & Collection'.

Transport

Compounding the expenses associated with separation and collection are the costs of transporting the collected material. Since sites where secondary materials may be used or processed are scarce and usually located in capital cities, the cost of transporting materials from country areas are often prohibitive. Freight charges too are discriminatory. Unprocessed materials are eligible for concessions, whereas secondary materials are classed as general freight.

vii Necessity for Developing Recycling Methods

Other societies have incorporated recycling into their daily lives to a far greater extent than we have. In India, the Gujle Wallah (scavenger of scrap materials) and the Kabadi Wallah (collector of usable goods) are quite common occupations. Almost everything is reclaimed or re-used in what is virtually a wasteless society. Car tyres are cut up to make shoe soles; cups and jugs are made from tin cans and every piece of vegetable peeling or food waste is prized as valuable feed for livestock. Because of the high population and low average income, people simply can't afford to be wasteful.

Now the chances are that you're not about to go out and re-sole your shoes using an old car tyre or make a shirt out of a calico bag (even if you could find one). It wouldn't be worth your while. But consider this - the garbage we throw out each week consists of: 33.9% organic matter, 32.4% paper (mainly from trees), 15.6% glass (from sand, limestone and soda ash), 7.9% metal (from natural mineral ore deposits), 4.3% plastics (petroleum byproducts), 4.9% miscellaneous.

All of these use energy, often vast amounts, in their production and between 80-90% of such domestic rubbish is recyclable. The amount of waste we send to the tip each week could be reduced by 95% and even more if you shop wisely as discussed in Part B. Chapter 9.' Your Power as a Consumer'.

We are therefore throwing away our natural resources every time we wheel out the bin. How long can they hold out at this rate?...

... The often quoted forest disappearance rate of a football field per second is especially frightening as it threatens the very air that we breath. Trees convert the carbon dioxide we exhale into oxygen so that we can inhale again. Because of this we need all the trees we can get. Even bulldozer drivers breathe!

The other resource - minerals and fossil fuels, are almost certainly finite and despite the economists' 'supply and demand' theory, there has been much debate over how long they will last or at least how long they will remain viable. Whatever the case, we should still use our fossil fuels sparingly. Their burning is a major contributor to increased global warming and the greenhouse effect - the warming of the planet's surface due to a build up of gases which, while allowing infra-red radiation in, don't allow heat and radiation to escape. The average global surface air temperature has risen 1% over the last 150 years. Even a small variation in temperature such as this can cause devastating changes in climatic patterns. If warming continues, sea levels will rise; not from the melting of the ice caps as is commonly thought, but simply because water expands as it warms. Low lying cities and lands could be swamped and other areas may become deserts due to changes in rainfall patterns.

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¹ The point that needs to be considered is not just is it financially viable to save but is it going to help us to survive in the future. There is no point making more money now if it is going to cause us to forfeit having a future. This sort of mentality is shortsighted and plainly selfish; you never know, we might even suffer the consequences of our own waste sooner than what we would have expected.

The major greenhouse gas is carbon dioxide produced from the burning of fossil fuels and forests. Other less prevalent, yet more potent greenhouse gases include methane and chlorofluorocarbons (CFCs). CFCs are a double hazard as they also act to destroy the ozone layer, thus allowing powerful ultra-violet rays in unfiltered.

The answer to the greenhouse problem is to stop producing these gases, which means reducing the use of fossil fuels.

Recycling For Efficiency

Recycling is both energy and resource efficient and there are many flow-on benefits. For example it takes 95% less energy to make an aluminium drink can from recycled aluminium than from raw materials. By recycling, the raw materials is saved, less pollution is created and there is no problem with disposing of the discarded can.

If more people became recycling aware, consumer tastes would change, which in turn would change the range of products available. Overpackaging, the biggest contributor to our waste problem, would be phased out. Non-recyclable and dangerous packaging would also disappear (at great benefit to the environment). As we worked towards a recyclable, wasteless society even more benefits would no doubt come to light.

2 1 Paper & Wood

Paper

Paper is both a major component of household rubbish and one of the easiest to recycle. Although it comes in various forms - newspaper, packaging cardboard, notepaper, magazines and junk mail (where would we be without it?), all types of paper have one thing in common; they are all made up of fibres.

Previously these fibres came from waste rags but today most paper is made from wood fibres. Up to 17 trees can be used to make one tonne of paper. In Australia we consume 2.4 million tonnes of paper every year, which equates to about 150kg per person. Of this only a little over 30% is recovered for recycling. The rest is either used permanently in books and records or sent to the tip. Admittedly, as landfill, paper does little harm. Since it is organic, it degrades harmlessly over a relatively short period of time. The point is - why waste it?

If we recycled only half the paper we produce in Australia each year, we would save over 20 million trees. There are other advantages too. Recycling is more energy efficient (up to 60%), less polluting (see dioxins and chlorine bleaching sections following) and of course reduces the amount of waste we send to the tip. There are, however, several factors which limit the amount of paper we recycle.

3 Dioxins and Chlorine Bleaching

Hand-in-hand with producing pulp wood from wood chips comes the problem of water pollution. The effluent from pulp mills is of worldwide concern. The main problem lies in the discharge into waterways or organochlorines which are formed during the

4 chlorine bleaching process. Probably the most infamous of the organochlorines are the dioxins of which there are over 75 different types. At least 12 are poisonous with one said to be one of the most toxic chemicals ever made. Dioxins are formed when chlorine reacts with the lignin in wood. Since dioxins are fat soluble, they may build up in the fatty tissue of fish living in the waterways where the pulp mill effluent is released, thus entering our food chain. Some scientists believe that even the small amount of dioxins present in chlorine-bleached paper products such as coffee filter paper could present a health threat.

In 1984, a Swedish Government inquiry was prompted by the discovery of high levels of dioxins in breast milk. The inquiry, together with strong consumer support, has resulted in 95% of Sweden's paper products no longer being chlorine-bleached.

Recycled Paper

The production of recycled paper does not cause nearly as much pollution as the production of paper from wood fibres. Water only is needed to reduce the waste paper to a workable pulp. With 90% of paper recycled in Australia being used for packaging material it does not require chlorine bleaching to appear 'whiter than white'. In fact most packaging paper and card tends to be grey or brownish. Just take a look at the inside of your corn flakes packet!

If more high grade paper were available for recycling, the percentage of waste paper used in cartonboard manufacture could be increased. Indeed paper manufacturers would prefer to use as much waste paper as possible simply for economic

5 reasons. It requires between 40 and 60% less energy to make pulp from waste paper than from virgin resources.

Recycling office paper

The most valuable resource found in offices is high-quality paper. Everyone working in an office may well be throwing away up to a kilogram of valuable waste paper each week. Not only is this high-quality office paper extremely valuable recycling material but every kilogram sent to the recycler means that more lower-grade waste paper can be recycled...

It is not difficult to set up an office recycling scheme, and everyone can benefit by any funds raised being put towards the office social club's next function. The first step is to choose a waste paper dealer to collect the paper. Waste paper prices will vary with demand so don't worry too much about that. It's better to look at what sort of service the dealer can provide. A reputable dealer, for example, may even provide bins. Most will have a minimum quantity for pick-up, but the frequency of pick-up can probably be adjusted to suit the amount of waste your office generates.

Inform everyone in the office about the scheme: what the benefits are, why recycling paper is so important, how the funds raised will be used, and how to participate. Send this information via a circular countersigned by the boss and attach a list of wanted and unwanted waste. Follow-up circulars a few weeks later will keep enthusiasm up by mentioning how much revenue has been earned and how much the disposal bill has reduced. You might also mention any teething problems, such as unacceptable items in the recycling stream.

Recycling bins should be highly visible, well-labelled and placed near paper-using machines such as the fax, the photocopier or the line printer. Don't forget to notify cleaning contractors of the changes, or you may very well lose your first week's paper to the bin as usual.

A successful scheme will be a tremendous benefit to both your office and on a much grander scale. Not only will you be reducing your own office waste but you will also be increasing the amount of lower-grade paper which can be recycled.

93 11 The Future

Over the last 5 to 10 years, especially in Western society, there has been a great change in our awareness of the need to preserve our environment. For generations we've maimed the Earth, exploited resources, cut down trees, caused land degradation, poisoned the atmosphere and waterways. Now as we see the writing begin to appear on the wall there are enough of us yelling, Stop! to be heard. Music and television have been quick to recognise people's new interest in the environment, and they have responded with concerts and specials geared towards informing people about the environment.

98 A Brave New World? It's up to Us!

Many of those predictions may seem to pretty optimistic, but this needn't necessarily be so. In every way, we're engineers of our own destiny. There wouldn't be a hole in the ozone layer if we hadn't put it there by using CFCs. There wouldn't be land degradation in such vast proportions if we hadn't chopped down so many trees.

99 Just as our actions can cause harm to the environment, they can also be used for repair. One of the biggest problems until very recently apart from ignorance was apathy. People knew what was going on was wrong, but they ignored it because it didn't touch them immediately, or any solution to the problem was seen as being too hard to tackle. If you said to the population of the world in 1950, 'I want you all to work really hard over the next twenty-five years and make a really big hole in the ozone layer', the resounding reply would have been: 'What! That's impossible. How could we do that! You're mad!' But we did it! It's not something to be proud of, but we did it! The point is that something you think is too hard or not possible can be achieved: for better, just as easily as for worse!

The old Chinese proverb says that, 'a journey of a thousand miles begins with just one step.' It's time for people like you and me to make that step. There has been a lot of talk and concern in recent time for the environment. Now we have to turn that talk into action, before over-exposure in the media turns it into just another fad which people will become bored with and give up on. That you're reading this means that you're the type of person who is concerned enough to take some action, and there is plenty of action to be taken.

Firstly we should lead by example and establish a home recycling scheme as outlined in Chapter 8. Convince others to do the same. Spend your dollar wisely and use it to vote against overpackaging and irresponsible packaging.

Ultimately, any changes which come from government, be it local, state or federal, are a result of people lobbying to express their wishes. This is where an individual can be prone to thinking, 'What can one

person do? The answer of course is that one person certainly does make a difference especially when there are lot's of like-minded 'one-persons'. Of course, this doesn't help the feeling of isolation and helplessness. The solution here is to seek out and join an environmental action group. Several are listed in Appendix 1 and while they are all concerned with protecting and repairing the environment, they each concentrate their efforts on slightly different issues under the environmental umbrella. You should choose the group or groups which most reflect your own personal concerns and interests. By joining an environmental group, you will not only increase your lobbying power and the political clout of the group, but you will also become better informed and able to educate others. The days are gone when conservationists could

100 be labelled 'long-haired, layabout, ill-informed hippie trouble makers.' Sure some of us may still have long hair, some may even be 'layabouts', but in our ranks there are also scientists, doctors, lawyers - even lawyers with bald heads and recording contracts! One thing no-one can accuse us of is being ill-informed. Today's conservationist is almost always better informed than the opponents of conservation. We still talk from the heart but we have facts and figures to back us up.

Realistically, there is much work to be done to repair the damage we have inflicted on the earth and there are battles on many fronts. Recycling is only one area of earth repair action, but it's one in which we can all actively participate. Once the 'ball' is well and truly rolling, the flow-on benefits into other areas of conservation will be more than apparent. Recycling is a great start towards a cleaner, healthier future and a world which we'll feel good about leaving to our children. It'll take some work, but then we're all in it together, aren't we? Good luck!