

Benefits of Recycling Components of Household Trash

- **Reduce consumption of non-renewable sources of energy and raw materials** - This is an ethical and moral issue: *Does this generation in general, and this nation in particular, have the right to waste the world's non-renewable resources?* Natural processes do not regenerate "non-renewable" resources in times comparable to human lifetimes. Such materials include for example natural gas and oil used for energy, and ores from which steel, aluminum and other materials of commerce are produced. These materials will gradually but inexorably rise in cost and perceived value as the supply gradually diminishes. This is a huge issue and involves responsibilities of individuals and nations that, by today's world standards, possess great wealth. Supplying industry with recycled materials, rather than "virgin" resources extracted from forests and mines, is environmentally preferable because it saves energy, reduces emissions of greenhouse gases and other dangerous air & water pollutants, and because it conserves scarce natural resources. In 1996, Delaware recycling programs supplied industry with over 207,000 tons of scrap commodities like paper, glass, metals, plastics, wood, construction & demolition and other materials. Recycling reduces the need for landfills and other disposal facilities, thereby allowing local lands to be used in more environmentally preferable ways. And, by substituting scrap materials for the use of trees, metal ores, minerals, oil and other virgin materials, recycling reduces the pressure to expand forestry and mining production. By recycling nearly 75,000 tons of scrap metal in 1996, Delaware recycling efforts reduced the need for virgin materials by twice that amount, including 93,600 tons of iron ore, 52,400 tons of coal and 4,400 tons of limestone.
- **Reduce environmental damage from industrial waste** - Recycling of household trash actually can reduce industrial waste. Consider: potentially recyclable material – glass, metal or plastic – that ends up in a landfill is replaced by new material whose manufacture may generate undesirable – some even toxic to humans and other living species. On the other hand, re-manufacture beginning with recovered, recycled material can be inherently "cleaner". For example, it is environmentally preferred to collect, remelt and reuse aluminum from soda cans than to dig more bauxite from mines and process it through today's environmentally-polluting process for manufacture of additional aluminum metal.
- **Reduce environmental damage from residential and commercial waste** - Residential and commercial waste causes environmental damage also. The list of hazardous materials that are discarded by homeowners is lengthy. It includes mercury in fluorescent light tubes and batteries, chlorinated cleaning solvents, heavy metals on old electroplated fixtures and as additives in PVC and other plastic materials, oil from automobiles, etc. In addition to greenhouse gases, recycling can reduce a range of pollutants from entering the air and water. This benefit accrues again because of reduced fossil fuel use and because recycled materials have already been processed once. But it also accrues because recycling keeps materials out of landfills, where they can introduce leachate into groundwater systems, and out of incinerators, which can emit pollutants into the air and into ash residue. Recycling has been shown to produce less of 27 different types of air and water pollutants, compared with using virgin materials in manufacturing and disposing wastes. In 1996, Delaware recycling efforts resulted in reductions of as much as 641 tons of water pollutants and 8,800 tons of air pollutants (not including the greenhouse gas reductions mentioned above). Recycling

reduced the overall emissions of sulfur oxides, an important ingredient in acid rain formation, by about 1,000 tons, and reduced nitrous oxides by an additional 1,000 tons, an amount equal to nearly 6% of all such emissions from electrical utilities in the state.

- **Extend life of municipal landfills** - This postpones the need to fund purchase and development of new landfill sites – as well as social and political conflicts accompanying selection of a new site. It also reduces the pressure for incineration as a landfill alternative. For example, the DSWA landfills today receive about 2,700 tons per day of trash and have an average remaining lifetime of 15-20 years. If 60,000 (25% of the residential waste stream) tons of reusable materials are recycled each year for the next 15 years, thereby diverting this material from the landfill, it would result in a 10-15% increase in landfill life.
- **Provide jobs** - Nationally there are many established jobs and small businesses supported 100% by the recycling business. Studies reveal that recycling, reuse and other materials-efficient practices generally create more and more sustainable, employment. One example is Delaware's "Green Industries" program, which has helped to create 154 full-time and 40 part-time jobs since its inception in 1995. Recycling provides jobs in collecting, sorting, packaging, cleaning, processing and reselling products based in whole or part on recycled material. On average, pay is better than for jobs involved in collecting, transporting and landfilling waste. For every 100 jobs created by recycling only 13 jobs are lost in the solid waste collection and disposal sector, and in the virgin materials extraction sector.
- **Satisfy a "waste not" ethic** - Many members of the generation that personally experienced scarcity of commodities and necessities in the depression years – the decade of the 1930s – have a strong natural aversion to throwing away materials that others might find to be useful.
- **Teach environmental values to individuals** - Wasteful use of non-renewable resources, coupled with indiscriminate disposal of products made from those resources, teaches the wrong message – especially to our youth. As the world's population increases, and natural resources are used at a faster rate, strong and informed leaders will be needed to create a balance.
- **Reduces emission of greenhouse gases** - On a per capita basis, the U.S. generates the largest emissions of greenhouse gases, those gases that cause earth temperatures to rise. Many scientists believe that if not slowed, the present rate of global climate change can have near-irreversible and disastrous consequences for the earth's entire ecosystem. By reducing the amount of energy used by industry, recycling also reduces greenhouse gas emissions and helps stem the dangers of global climate change. This is because much of the energy used in industrial processes and in transportation involves burning fossil fuels like gasoline, diesel and coal -- the most important sources of carbon and other greenhouse gas emissions into the environment. Delaware recycling efforts in 1996 reduced greenhouse gas emissions by about 64,000 tons carbon equivalent per year, equal to about 2.1% of all industrial carbon dioxide emissions in the state.

- **Save Energy** - Energy savings may be the most important environmental benefit of recycling, because using energy requires the consumption of scarce fossil fuels and involves emissions of numerous air and water pollutants. The steps in supplying recycled materials to industry (including collection, processing and transportation) typically use less energy than the steps in supplying virgin materials to industry (including extraction, refinement, transportation and processing). But most energy savings associated with recycling accrue in the manufacturing process itself, since recycled materials have already been processed at least once. For example, it takes 20 times the energy to make virgin aluminum, 8 times the energy to make virgin plastic, and twice the energy to make virgin paper than to produce their recycled equivalents. The 128,000 tons of paper, glass, metals and plastic Delaware recycled in 1996 saved a total of about 2.2 trillion BTUs of energy, equal to nearly 2% of all energy used by industry in the state, or enough to power over 11,000 homes.