

## Abstract

People have their fair share of benefits and problems when they use styrofoam. Disposal of styrofoam is a disturbing problem for densely populated cities such as Hong Kong because it is non-biodegradable and it occupies many spaces in landfills. Local landfills will be full soon and it is very difficult to find a new landfill site due to the inadequate land supply. As there is not much alternative material available to us, recycling seems to be an effective solution to the problem.

In our project, we tested the solubility of styrofoam in toluene, acetone, d-limonene, cyclohexene, n-hexane, diethyl ether and phenol. It is found that styrofoam only dissolves in toluene, cyclohexene and d-limonene. We tried to find out the efficiencies in recovering the solvents and dissolved polystyrene from the liquid mixtures during distillations.

After our investigation, we noticed that non-toxic d-limonene is the best solvent to be used in recycling styrofoam among the three chemicals chosen. It can dissolve the greatest amount of styrofoam and has the highest recovery efficiency for both solvents and polystyrene. This shows that recycling of polystyrene using d-limonene is practicable and is one of the best methods to handle styrofoam in Hong Kong.