

# Preface

Waste management has become a major problem for industrialised societies. It is not that the technologies do not exist; they do, and have done for many years. The main issue is that of public acceptability. The public expect to be able to produce household waste in a largely uncontrolled manner and are accustomed to an efficient local service of removal. Beyond this is where the problems begin. Once the waste is removed from the premises of the producer, most members of the public then regard waste as something that others have produced which should not be treated or disposed of in their locality. Consequently, almost every proposal for a waste disposal facility creates massive public resistance which is heavily exploited by environmental pressure groups with their own agendas.

In an ideal world there would be no such thing as waste, merely useful raw materials for recycling. The reality is of course rather different. Whilst some materials are well suited to recycling, many are not. For those that are suitable for recycling, some kind of segregation at the level of the householder is needed, but this in many countries is not provided. The result is a heavily mixed waste which is most cheaply disposed by tipping in the nearest landfill, which is probably the least environmentally sound option. Recycling such mixed waste involves segregation processes which carry health risks to workers and most probably also to the general public outside of the plant. Even after segregation, there are major waste streams requiring composting, combustion or landfill, all of which carry their own environmental risks.

The topic of solid waste management has therefore become shrouded in emotion, with local government seeking to minimise disposal costs whilst, in the UK at least, doing rather little to meet recycling targets, and environmental pressure groups behaving as if 100% of waste is recyclable and therefore ultimate disposal options such as incineration and landfill are wholly unnecessary and undesirable. This volume of *Issues* is concerned not with the optimisation of solid waste management in terms of recycling and disposal, but rather with the environmental and human health impacts of the various management options.

The first chapter by Kit Strange sets the scene by outlining the various options and broadly addressing their advantages and disadvantages. This is followed by chapters looking at individual waste management options. The first by Dr Toni Gladding of the Open University deals with health risks of materials recycling

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facilities, highlighting the fact that when such facilities are supplied with mixed waste, they can represent a significant health risk. A substantial quantity of putrescible materials such as food waste have to be disposed of, and can potentially be composted. Composting has been used as a disposal option over many years, but is now increasing in use and is subject to closer scrutiny in relation to environmental emissions. In the following chapter Dr Jillian Swan and Dr Brian Crook of the Health and Safety Laboratory and Dr Jane Gilbert of the Composting Association review the microbial emissions from composting plants.

Historically, landfill sites have led to substantial contamination of the environment. This arises by leaching of contaminants into groundwater, which is mobile, and releases to atmosphere. Modern landfills are altogether better designed and controlled, but concern remains over potential health effects of landfill sites. Unfortunately, most of the research into possible health effects of landfills has not sought to discriminate according to the age and technology of the site. Also, some landfills accept hazardous waste for co-disposal with domestic refuse and these have not been clearly identified in many studies. Drs Andy Redfearn and Dave Roberts of the Applied Environmental Research Centre review studies on the health effects of landfill sites and point to some of the weaknesses. In the following chapter, Professor Paul Williams of University of Leeds reviews environmental emissions from solid waste management activities. These are the starting point for reviewing the impact of chemical emissions on the environment, and in the following chapter, Dr Ari Rabl and Dr Jo Spadaro of the School of Mines, Paris, France, describe how the health impacts of atmospheric emissions from waste incineration may be quantified, and show some of the results of quantification activities. Much of the current understanding of the health impacts of waste disposal is based on the application of epidemiological methodology, which in an ideal world would be supplied with high quality population exposure estimates. Unfortunately, there are many weaknesses to these studies and Professor Helen Dolk of the University of Ulster addresses the methodological issues relating to health effects studies.

As noted above, issues of solid waste management can be highly emotive and all too often are driven by public pressures rather than dispassionate scientific debate. It is hoped that the chapters in this volume will make a strong contribution to scientific knowledge in the area and will be of value to scientists and policy-makers alike.

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