conclusions

SUMMARY

The detrimental effects of air pollutants within our environment are well established although every year which passes sees the continued implication of airborne contaminants and pollution episodes in deleterious environmental and health incidents both locally and globally. From the smogs of the 1950's to acid rain in the 1980's the importance of air quality in terms of human health and environmental damage have been repeatedly demonstrated.

Newly identified effects tend to be more insidious in nature and require a great deal of attention in terms of monitoring before government responds to the evidence available. Standards set by international organisations, in particular from Europe, have led to significant changes in UK legislation and will continue to influence adopted standards. Considerations of transboundary pollution and its effects have superseded the UK's industrial discharge and disperse methods of pollution control.

Beyond the established increased mortality due to pollution a series of adverse effects can be demonstrated in particular those affecting vulnerable and susceptible groups and individuals. Morbidity is an increasingly important indicator. In the wider environmental sense certain pollutants retard plant growth, impoverish soil and threaten to irrevocably alter our planets climate.

It is apparent that considerable improvement in air quality in Southwark has taken place over the last four decades. This has largely been driven by legislation enforced by the Council and similar results can be seen throughout the country. In general it is not possible to improve air quality in an urban area such as Southwark without matching improvements elsewhere - pollution knows no boundaries. This aspect is particularly significant when considering the impact of both European and worldwide efforts to control pollution.

For a local authority such as Southwark, with a relatively small geographical area, air pollution monitoring has to be aimed at problems of local significance whilst still addressing the need to contribute to more strategic aims and longer term objectives.

This report only considers pollution up to 1992. There are two reasons for this otherwise arbitrary date;

- the change in the nature of pollution and
- the changes in monitoring techniques

Since the beginning of this century emphasis has shifted from considering air pollution *per se* to considering air quality as a whole. This subtle but significant shift recognises both the changing nature of pollutants and their effect on health and the greater awareness and demands of the public. Coupled with the obvious decline in the prevalence of certain pollutants this has focused attention on other potentially harmful pollutants and a closer examination of levels of the common pollutants.

It was at this time of changes in perception that Southwark instigated a new system of pollution monitoring which although still measuring individual pollutants was directed to provide information on air quality. This entailed the use of new equipment and monitoring techniques. Whilst some of the traditional methods are still in use, the advance in technology has resulted in remote and continuous sensing at fixed sites and the use of state-of-the-art mobile equipment.

VEHICLE POLLUTION

According to DoE and DoT figures there are nearly 25 million vehicles on Britain's roads. The vast majority, over 21 million, are cars and there are nearly $^3/_4$ million Heavy Goods Vehicles.

Some 32 million tonnes of petrol and diesel is used per year producing over 20% of the total CO_2 emissions. Road transport accounts for a significant proportion of other emissions as indicated in figure 9.1 below.

Since 1993 all new cars are fitted with catalytic converters. These reduce emissions of oxides of nitrogen, carbon monoxide and volatile organic compounds.

The number of vehicles is however forecast to rise to over 50 million by the year 2025. This increase is expected to negate any benefits from current and proposed measures to reduce the impact of pollution from road traffic.

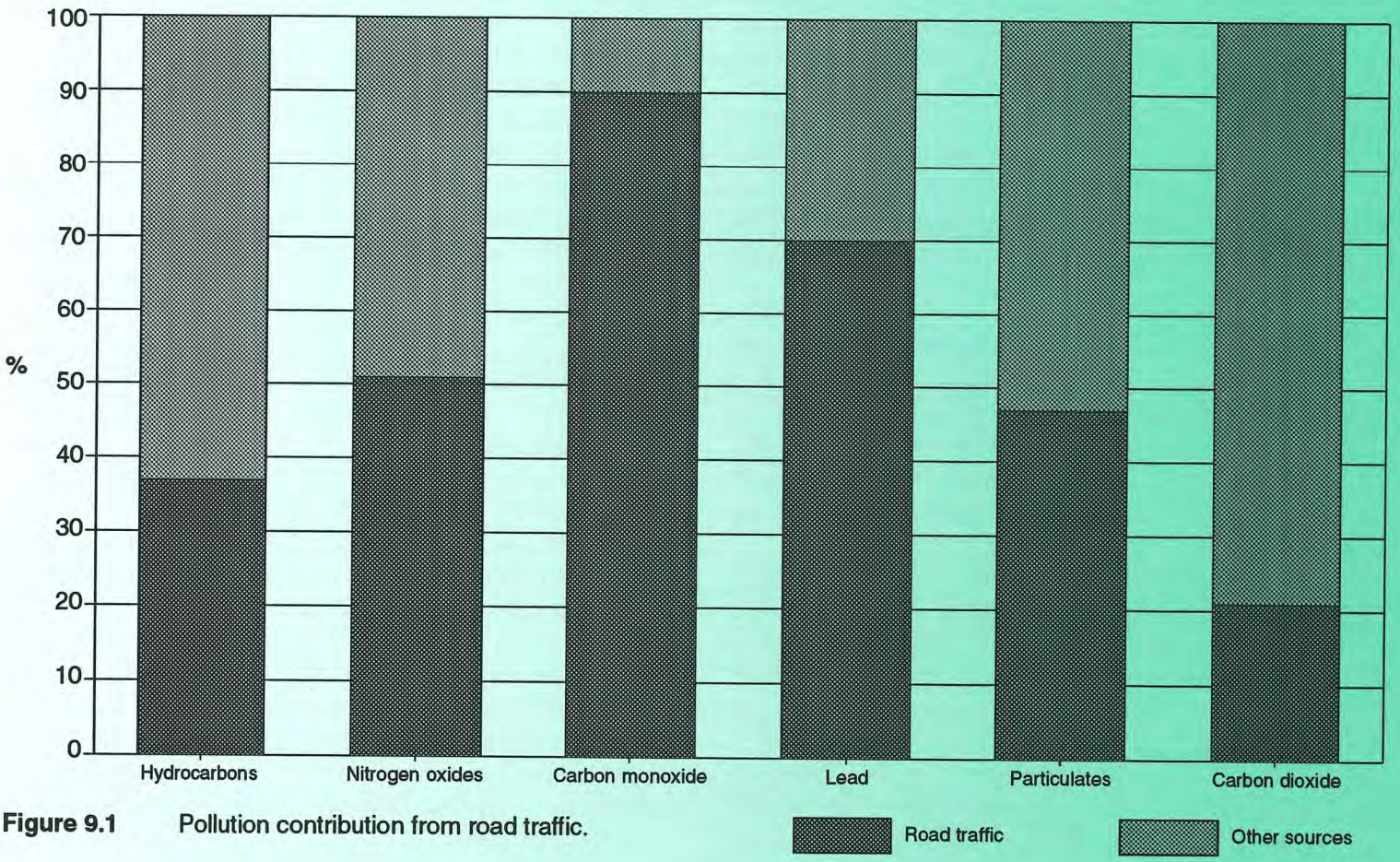

Figure 9.1 Pollution contribution from road traffic.

conclusions

AIR AWARE

As part of the European LIFE initiative Southwark Council in 1993 was successful in bidding for funding to promote local air quality issues. The funding, amounting to approximately 50% of costs, was to be directed to four main objectives;

- to promote awareness about air quality;
- to test new technology in pollution monitoring;
- to encourage the "Polluter Pays Principle" and;
- to improve air quality.

With matching funding from Southwark Council an interdepartmental project, the Air-Aware campaign was launched. The project centres on the problems of the Old Kent Road (A2), London's principal commuter route to the suburbs and commuter towns of SE London and North Kent. From previous monitoring, some noted in this report, this road corridor has poor air quality and is subject to breaches of air quality standards for nitrogen dioxide.

Of interest here are those aspects of the campaign relating directly to pollution monitoring since they signify in part and mirror generally the changes in our methods of pollution monitoring. Two mechanisms for pollution monitoring form an integral part of the overall project namely remote real-time pollution monitoring and mobile infra-red vehicle emission monitoring.

The remote real-time pollution monitor comprises a fixed station located at the Livesey Museum in the Old Kent Road using similar equipment to our other established fixed station at Larcom Street off Walworth Road. The museum station currently monitors nitric oxide, nitrogen oxides, sulphur dioxide, hydrogen sulphide and carbon monoxide and relays data to our central computer for interpretation. This station essentially provides background levels for the Old Kent Road and is also equipped with traffic counting facilities. The Larcom Street station currently monitors ozone, carbon monoxide, sulphur dioxide, nitrogen oxides and smoke. The two stations together represent the major element of Southwark's continuous ambient air monitoring and results from both also contribute to our local air quality information network.

In contrast, our use of the prototype infra-red monitor directly measures exhaust emissions from individual vehicles travelling along the Old Kent Road. The equipment is being used to demonstrate the viability of the equipment as an enforcement tool and also to test the hypothesis that approximately 50% of carbon monoxide is emitted by some 10% of all vehicles, the so-called Gross Polluters. The equipment, known as the Fuel Efficiency Automobile Test (FEAT), monitors exhaust emissions whilst vehicles are on the road without the need to stop individual vehicles. Thus this equipment complements the annual stationary MoT emission test to which the majority of vehicles are subject.

AIR QUALITY NETWORKS

Southwark participates in the London Air Quality Network coordinated by the South East Institute of Public Health (SEIPH). Data from our two ambient air monitoring stations together with other local authority sites in London are collected and processed by SEIPH for inclusion in quarterly and annual reports.

In addition Southwark provides pollution data for the national nitrogen dioxide survey from four of our ten diffusion tube sites. This ten year survey is coordinated by the National Environmental Technology Centre (formerly Warren Springs Laboratory) and will conclude in 2002.