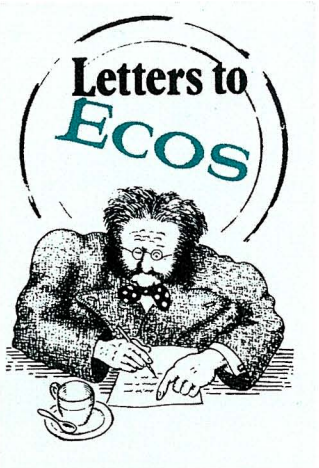

Lead from petrol

I refer to the article 'Lead in petrol — where does it go?' by Andrew Bell (*Ecos* No. 29). I should like to congratulate the author on his balanced approach to the subject within the constraints of the references he has used. The Smythe *et al* study has been widely criticised on the basis of both its test results and its psychometric testing and, although Needleman is one of the better studies, its claimed correlations do not stand up to close statistical scrutiny.

One can argue ceaselessly on the health effects of lead in our environment and I fully acknowledge the problems of establishing scientific certainties on this area. However, on the basis of 'best information' the indications are that low-level blood leads do not have an effect on child mental or behavioural development.

Most studies in this area have examined children with blood leads between 30 and 50 μg per 100 mL. The most recent Australian figures show only 0·8% of 2000 children tested exceeded 30 μg per 100 mL — the National Health and Medical Research Council 'level of concern' — and this in populations biased towards those most at risk. Further investigation of this 0·8% so far tends to implicate lead sources other than automotive.

The two points I would stress are that environmental measurements of lead, although given much prominence in the media, do not tell us a lot about the actual biological effects on the people exposed, and that on a biological basis current levels of lead in petrol do not pose a health threat to the Australian community.

Tom Tabart,
Manager, Occupational and Environmental Health,
Australian Lead Development Association.

Having just read 'Health and Environmental Lead in Australia', published by the Australian Academy of Science very recently, I recall your article 'Lead in petrol: where does it go?', which appeared in the August issue of *Ecos*. The Academy report draws different conclusions from some of the authors quoted in your article and I recommend to you a reading of the Academy report and perhaps a further article if you agree one is warranted.

R. W. Manuell,
Industrial Hygienist,
Esso Australia Ltd.

The *Ecos* article reported CSIRO research showing that topsoil in rural areas up to 50 km from Adelaide contains lead from vehicle exhausts. In the study area east of Adelaide, the scientists found that petrol-derived lead often accounted for half or more of the lead in the topsoil. Their findings are relevant to consideration of the origins of the lead found in food.

The findings described in *Ecos* had not been published when the Academy report, prepared by an expert committee chaired by Professor F. C. Courtice, was compiled. The Academy committee estimated that, in adult Australians living in cities, 75–85% of the lead entering the body was derived from food and drink, and 15–25% from the air. For young children, its estimates were 90% or more from food and drink and less than 10% from the air.

The report said 90% or more of the lead intake from the air was derived from lead additives in petrol. Present data did not make it possible to identify the origin of all the lead ingested in food and drink. However, the evidence suggested that lead additives in petrol played only a minor role. The report said some lead in food came from the soil, but probably in some cases more came from the machinery of manufacturing, processing, and marketing. An important source of lead in canned foods was the lead solder used.

Some food grown close to busy highways and in cities had a higher lead content than that grown in more remote areas because of contamination from lead in motor exhausts. But most of the food consumed by Australians was grown in rural areas where levels of lead in the soil and in the atmosphere were low.

In a foreword to the report, the President of the Academy, Dr L. T. Evans, wrote that, apart from a few groups specifically at risk, the Australian population was safely within the standards set for lead levels in Europe and the United States. Nevertheless, in view of the known effects of lead on the development of children, its progressive accumulation in the body, and the possibility of as-yet-unrecognized adverse effects at low exposure levels, it was probably wise for communities to reduce all major sources of lead contamination as far as practicable.

'This is what the committee recommends be done in Australia', he wrote, 'within the context that the biological advantages of doing so must be weighed against the additional costs to the community. That is a political decision. In the case of lead in petrol, permissible levels have already been reduced in several States, and the advantages of complete elimination must be weighed against any associated costs.'

'Health and Environmental Lead in Australia.' (Australian Academy of Science: Canberra 1981.)