

Trends in lead content of petrol in Pakistan

Editor – We appreciate the comments of P.J. Landrigan concerning our article on the factors associated with elevated blood concentrations in children in Karachi, Pakistan (1, 2). In his editorial, however, he commented that the decline in the use of leaded petrol in Pakistan had resulted in declines in children's blood lead levels. Mean blood lead concentrations in schoolchildren had been reported to be 38 µg/dl in 1989 (3) as compared to the 15.6 µg/dl we reported in children aged 36–60 months in 2000 (2). We believe the difference between these findings was largely due to differences in sample collection and analysis, especially as our study demonstrated that children who lived in areas with high levels of traffic congestion in urban Karachi had higher blood lead concentrations than those who lived in an adjacent rural community. To investigate further the role of decreased production of leaded petrol we surveyed all refineries in Pakistan to find out exactly when the lead content of petrol was decreased between 1989 and 2000.

There are four refineries in Pakistan currently producing petrol: Pakistan Refinery Limited (PRL), National Refinery Limited (NRL), Attock Refinery Limited (ARL) and Pak-Arab Refinery Limited (PARCO). Previously two grades of petrol were marketed — regular containing 0.42g/l lead and high octane containing 0.84g/l lead. PRL reported that it decreased the lead content of Regular to 0.34g/l and high octane to 0.42g/l lead in 1997–98 and since July 2001 only produces lead-free petrol (personal communication, Irfan Mirza, Head of Economy and Scheduling, 22 November 2002).

NRL reduced the lead content of Regular to 0.35g/l in November 2000, and has also been producing lead-

free petrol since July 2001 (personal communication, Shaikh Zaheeruddin, Operations & Training, 20 November 2002).

ARL produced regular containing 0.42g/l lead until 1999, following which it produced regular and a mixture containing 0.35g/l lead and methyl tertiary butyl ether (MTBE).

In July 2002, they phased out lead as well as MTBE from petrol (personal communication, Ibrahim Saeed, Consultant, National Cleaner Production Center Foundation, 29 November 2002).

PARCO started production in Pakistan in September 2000 with petrol containing a bare minimum of lead and from July 2001 moved to production of lead-free petrol (personal communication, Shahid Hak, Managing Director, 26 November 2002).

These changes were in response to a Government of Pakistan directive in 2001. Currently, the permissible limit of lead in petrol is 0.02 g/l and all refineries are meeting that standard (personal communication, Ahmad Saeed, Environment Assessment Services, IUCN, World Conservation Union, 26 November 2002).

We conclude therefore, that since lead in petrol was lowered by only one refinery in 1997–98 and production of lead-free petrol commenced in July 2001, and our study was conducted from August to December 2000, these changes would not have produced a greater than 50% reduction in children's blood lead levels. However, eliminating lead in petrol in Pakistan will most likely play a significant future role in decreasing blood lead levels of children, given the currently high mean level of 15.6 µg/dl. ■

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Conflicts of interest: none declared.

1. Landrigan PJ. The worldwide problem of lead in petrol. *Bulletin of the World Health Organization* 2002;80:768.
2. Rahbar MH, White F, Agboatwalla M, Hozhabri S, Luby S. Factors associated with elevated blood lead concentrations in children in Karachi, Pakistan. *Bulletin of the World Health Organization* 2002;80:769-75.
3. Manser WW, Lalani R, Haider S, Khan MA. Trace element studies on Karachi Population, Part V: Blood lead levels in normal healthy adults and grammar school children. *Journal of the Pakistan Medical Association* 1990;40:150-4

Errata

In "News", in the article "Nepal's childhood mortality falls by half as vaccinations rise tenfold" on page 998, of Vol. 80, issue number 12, 2002, Dr Raj Pandey's remark on the progress of the health system should read, he informs us: "The system could have improved further with better public-private partnership", and not as quoted. Also Dr Pandey's position was Director of the Bir Hospital, and Vice-President of the Family Planning Association, and not as stated.

In "In this month's *Bulletin*", on page ii, of Vol. 81, issue number 3, 2003, the first title should read "... lowers risk of diarrhoea by 25%, and not "... 33%".

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