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Reply

We appreciate the careful reading of our paper and the commitment to public health by Dr Mets. However, we disagree that ZPP measurements add any additional useful information in the context of a lead screening program. The paper by Wildt *et al.* compares a ZPP cutoff of 90 µg/dl to a blood lead level of 60 µg/dl [1]. These are undesirably high thresholds. False elevations of ZPP were found in 40 out of 306 men (14%) but more alarmingly, among the 19 men who exceeded this blood lead level, 2 (>10%) did not show corresponding elevations in ZPP. Contrary to Dr Met's assertion, these authors did not recommend ZPP as an adjuvant to screening by whole blood lead. In fact, they state, 'ZPP monitoring can therefore replace PbB [blood lead] monitoring to a large extent' [1].

In 1991, Grandjean *et al.* did advise against abandoning ZPP in spite of the variable findings [2]. At that time, ZPP was thought to add temporal information and early, unconfirmed data suggested it was a more sensitive indicator of kidney and nervous system toxicity. In our paper, we cite more recent literature which refutes this notion [3]. In the 1998 paper by Froom *et al.* they concluded that ZPP was not of any value in determining current lead toxicity but believed it was of use in determining 'incipient' lead toxicity since they documented an elevated risk of lead toxicity 6 months after a worker had a 'non-toxic' lead with an elevated ZPP [4]. We are unaware of any confirmation of this finding, which cannot be explained by the current understanding of the mechanism of ZPP elevation.

As discussed in our paper, the temporal limitation of ZPP is significant while a large body of literature has now shown that ZPP does not correlate with the early biological effects of lead exposure [3]. Moreover, all of these studies, including our correspondent's own work,

choose a blood lead threshold which is not reflective of the evolution in our understanding of what constitutes a safe level [5]. In the United States, the Department of Health and Human Services currently recommends that blood lead levels not exceed 25 µg/dl for adults [6]. If this lower threshold were applied, the sensitivity and specificity of ZPP would be even poorer. There is no doubt that blood lead is a more sensitive and a more specific test for lead poisoning. Its predictive value is superior for both positive and negative results. Lower sensitivity, specificity, and predictive value is a weak argument for inclusion of ZPP as part of a surveillance effort designed to detect lead poisoning.

In the lead poisoned patient, additional testing should always be done, and that is the cost effective time to obtain the small additional temporal information which may reside in the ZPP.

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Safe inoculation of blood for liquid culture

Dear Sir,

Moller *et al.* [1] reported a case of occupational needle-stick injury in a laboratory technician while inoculating