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A review of: “Lead in Soil: Recommended Guidelines”

G. Howells

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BOOK REVIEW

Lead in Soil: Recommended Guidelines, 1993 (ed). B. G. Wixson and B. E. Davies, publ. Society for Environmental Geochemistry and Health, Science and Technology Letters Ltd., Northwood, UK, 132pp., ISBN 0-905927-39-7, £ 30 Hardback.

This handbook is intended for those concerned with evaluation of the potential human health risk arising from local concentrations of lead in soil, including those working in public health and regulatory agencies and industrial management. It is the result of work of a task force set up by the Society for Environmental Geochemistry and Health. The membership of this task force is largely north American, but three participants come from United Kingdom, providing some European context; university academics, regulatory agencies, environmental consultants and medical specialists were represented.

The text begins by setting out a logic pathway through from the identified **problem**, to testing of the **available data**, to an initial **assessment** with a yes/no option to proceed to **risk assessment evaluation** leading to a **second assessment**, also with a yes/no option, and finally to an **implementation** phase including further data evaluation, actions to be taken, remedial strategies and monitoring. The following text provides some important definitions, step-wise expansion of the phased action plan, a review of lead in soil (with a useful section on statistical interpretation), discussion on the question of bioavailability, review of human health aspects with derivation of “acceptable” blood concentrations and a modelled relationship with a soil or dust guideline. A final section deals with risk assessment and problem management. References are provided chapter by chapter and several appendices (supplements) cover the calculation of soil/blood relationships, advice on soil sampling and analysis, with an advised protocol and other guidance notes.

The identified audience is concerned with environmental protection, however, a broader educational need is identified, coupled with the recognition that children < 5 years’, of poor families living in old urban housing, are most at risk; this suggests that positive steps might be made to meet this challenge. Further, Chapters V, VI and VII might be helpful to those with an educational role, either at university/training level or in social welfare agencies, even though some of their content seems not always closely related to the prime purpose of relating soil conditions to risk.

It is notable that the “acceptable” blood limit for lead has fallen over the past 50 years from $80 \mu\text{g ml}^{-1}$ (60 μg for children) to $20 \mu\text{g ml}^{-1}$ (USA) or even to advisory levels of $10 \mu\text{g ml}^{-1}$ (WHO) with falling measured blood concentrations in exposed populations, as well as improved analytical practice. There has also been a change from concern for “acute” effects to less quantifiable behavioural and learning problems in young children; haematological and other biochemical effects are less well authenti-

cated. Another paradox is that highest lead absorption from soil sources is matched by lowest soil ingestion. Urine or hair samples are not now considered helpful.

Overall, this exposition on soil/blood lead relationships provides a temptingly straightforward charting from occurrence, to exposure and effects, to risk from which a rational action plan, including remedial strategies, can be developed. Nonetheless, uncertainties loom large—although soil to blood relationships are highlighted, it seems that socio-economic factors are more important issues, although other sources (drinking water, food, air) are evaluated. Possibly, some of the more complex models indicated in Chapter VIII, although less well documented, might be more appropriate to this multiple exposure scenario.

The problems of a committee approach, with diverse views diverging rather than converging to a rational, scientifically objective and practical outcome seems to have been avoided, possible due to heroic efforts on the part of the chairmen of the task group (and also the book editors). However, the three “review” chapters—lead in soil, bioavailability and human effects—are uneven in depth and analytical interpretation, suggesting independent authorship. Further, the rather independent tone of Chapter VIII diverges significantly from the soil focus.

The presentation is quite pleasing, although in the light of different chapter styles, it might be helpful to know their authors. Headings in one Table (6) seem to have gone awry. Some typographic errors are present, especially annoying when the critical delta (slope relating blood lead to soil lead content) appears as an unexplained “d”. The formula for this relationship is typeset clumsily and is it necessary to explain all its components in detail in three places (pp. 117, 65 and 107)? A number of curious word uses might also confuse the English reader.

A book, not perhaps, for the general reader, although some chapters could be read with profit, and their references explored for further detail. In spite of some deficiencies, this could just be a model for developing similar guidelines for other toxic agents.

G. Howells
15 September 1994