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THE HEALTH AND ENVIRONMENTAL IMPACTS
OF LEAD AND AN ASSESSMENT OF **TECHNICAL**
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Contract No. 68-01-4318

Project Officer

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U.S. Environmental Protection Agency
Washington, D.C. 20460

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ABSTRACT

This study was performed to assess the health and environmental impacts of lead and its compounds and the need for additional limitations upon its production, use, or disposal. [The investigation included an analysis of the lead industry and the uses of lead, estimates of the nature and quantities of lead dispersed to the environment and their effects on the ecosystem and on man, and an analysis of the scope and status of present limitations.]

[An evaluation of candidates for the application of limitations disclosed that leaded gasoline and canned or processed foods ranked highest.] Since the former has already been addressed and new limitations promulgated, attention was focused on lead intake from foods and beverages.

Food may account for from 60 to as much as 90 percent of lead intake for the general population. Lead is naturally present in foods and this fraction of the body burden is probably unavoidable. However, significant lead contamination is inadvertently introduced into processed foods, primarily from the lead solder used in food cans. It has been estimated that as much as two-thirds of the lead in canned foods results from the solder. No other lead limitation considered appeared to offer as great a potential benefit to the entire population as a reduction of lead in canned foods. Limitations directed at the dietary mode of exposure will benefit sensitive segments, e.g. children, and the general population alike.

Analysis of dietary intakes and blood lead concentrations indicated that reductions in mean blood leads of 1 µg/dl or more, provide a significant and beneficial reduction in normal blood lead levels in the general population. This level of reduction can be achieved by improvements in food can manufacturing technologies and procedures, while still retaining the economic and technological benefits of soldered can construction.

Considerable progress toward these goals is presently being made by the can industry, in cooperation with the Food and Drug Administration; it is recommended that the results of these efforts be evaluated before further action is taken.

[Other potential sources of lead ingestion considered included lead-glazed foodware, leaded glass, decal-decorated glass tumblers, solder-joined food vessels, and pewter ware.] On the basis of the evidence available, all of these appeared to be minor sources, not requiring further investigation at this time.

This report was submitted in fulfillment of Contract No. 68-01-4318 by Battelle Memorial Institute under the sponsorship of the U.S. Environmental Protection Agency. This report covers the period September 30, 1976, to April 30, 1979, and work was completed as of May 30, 1979.

THE HEALTH AND ENVIRONMENTAL IMPACTS OF LEAD AND
ASSESSMENT OF A NEED FOR LIMITATIONS

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