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LETTER TO THE EDITOR

How Threshold Limits for Lead Were Established in the 1950s

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In 1955, Manfred Bowditch, Health and Safety Director of the Lead Industries Association (LIA), arranged to be named Chairman of the group within the American Standards Association (ASA) concerned with occupational exposure limits for lead. This was called the Subcommittee on Lead of the Committee on Toxic Dusts and Gases of the ASA. The subcommittee recommended raising the "long-accepted standard" of 0.15 mg/cu m for lead and lead compounds in air to 0.2, more for lead sulfide, and it was expected that the parent committee would accept the recommendation [LIA, 1956].

The ASA was also useful to the lead industry in setting a sort of "baby" threshold limit [LIA, 1956]: "The initial proposal of the New York City Health Department to require a poison label on all paints containing any lead whatsoever was ultimately modified through the establishment, at our instance [sic], of a committee of the American Standards Association which evolved a standard permitting up to one percent of lead in paints used on surfaces which 'might be chewed by children.'" The LIA report went on to add that "The 'poison' wording was also modified."

Dr. John Foulger of DuPont, one of the members of the ASA subcommittee on lead, later explained the rationale for the recommendation that up to 1 percent of lead would be "safe" in paints chewed by infant children. It was based on information from the paint industry that one gallon of paint would cover 500 sq ft and on the assumption that only one coating of paint would be applied to the surface chewed. The committee's assumptions were not limited to strictly scientific matters. "(W)e concluded that a child would take in one

milligram of lead if it ate about one and a half to two square inches of paint. It was considered also that surely the parent would notice that amount of chewing" [Foulger, 1958].

In 1957, Bowditch reported to the industry that the American Conference of Governmental Industrial Hygienists (ACGIH) had "accepted the increase proposed by the A S A group, and the 0.2 mg/cu m figure now becomes the official government standard." Lacking as it was in scientific justification, however, the change drew some objections [Bowditch, 1957]: "The advance in the threshold limit for lead in air from 0.15 to 0.2 milligrams per cubic meter, first proposed by an American Standards Association subcommittee headed by our health and safety director and subsequently adopted by the American Conference of Governmental Industrial Hygienists, has been called into question and has recently been the subject of renewed discussion and correspondence."

This difficulty was "satisfactorily resolved by the incorporation of the higher figure into a Hygienic Guide for Lead issued by the American Industrial Hygiene Association." General acceptance of the one-third increase in the allowable limit, "highly advantageous to our membership, seems thus assured," predicted the LIA Secretary a few months later [LIA, 1957].

When ACGIH's "Documentation of Threshold Limit Values" was first published in 1962, the (unpublished) ASA standard for lead was cited as an important reference. Also noted in the paragraph justifying the lead threshold limit value (TLV) was the unreferenced assurance that "long industrial experience" with 0.15 mg/cu m of lead in air did not give rise to urinary lead burdens indicative of "harmful exposure" [ACGIH, 1962]. State laws incorporating the TLVs included the upwardly revised value after 1957. The raised limit for lead was adopted in the list of TLVs applicable to U.S. government contractors under regulations issued pursuant to the Walsh-Healey Public Contracts Act in 1960. Later, with OSHA's initial adoption of the 1968 TLVs,

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0.2 mg/cu m became the U.S. government limit for lead exposure in general industry in 1971.

Tragically, Manfred Bowditch had been a respected public health official not long before he went to work for the lead industry (H.L. Hardy, personal communication, 1987). In 1944, as Director of the Massachusetts Division of Occupational Hygiene, he was critical of the American Standards Association for aiding manufacturers in obstructing efforts by state authorities to lower the "maximum concentration suggested" for carbon tetrachloride, from 100 ppm to 40 ppm [Bowditch, 1944, Bowditch et al., 1940].

The practice of business interests using forums that are relatively insensitive to concerns about conflicts of interest and transparency in order to influence governmental and quasigovernmental bodies is, of course, still with us [Abrams et al., 1996].

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Note. Lead Industry Association documents were revealed in litigation over severe mental retardation and death of individuals attributed to lead paint ingestion during infancy.