

***Review of Thimerosal in Over-the-counter
products by the Center for Drug Evaluation and Research (1974-
1998)***

In 1974, the FDA undertook a comprehensive review of the safety and effectiveness of over-the-counter medicines. As one facet of this review, a panel of experts was assembled to review the safety and efficacy of over-the-counter drugs containing mercury. The Advisory Review Panel on OTC Miscellaneous External Drug Products began this review in 1975. In 1980, the panel delivered its report to the FDA. It reviewed 18 products containing mercury, and found them all either unsafe or ineffective for their stated purpose of killing bacteria to prevent infections.¹

In terms of effectiveness, the panel stated that, “mercury compounds as a class are of dubious value for anti-microbial use.” They stated that, “mercury inhibits the growth of bacteria, but does not act swiftly to kill them.”² In fact, the panel cited a 1935 study of the effectiveness of thimerosal in killing staphylococcus bacteria on chick heart tissue. The study determined that thimerosal was 35 times more toxic to the heart tissue it was meant to protect than the bacteria it was meant to kill.³

In terms of safety, the panel cited a number of studies demonstrating the highly allergenic nature of thimerosal and related organic mercury products. For instance, they cited a Swedish study that showed that 10 percent of school children, 16 percent of military recruits, 18 percent of twins, and 26 percent of medical students had hypersensitivity to thimerosal.⁴ They stated that while organic mercury compounds like thimerosal were initially developed to decrease the toxicity of the mercury ion, thimerosal was actually found to be more toxic than bichloride of mercury for certain human cells.⁵ By way of summary, they stated the following: *“The Panel concludes that thimerosal is not safe for OTC topical use because of its potential for cell damage if applied to broken skin, and its allergy potential. It is not effective as a topical antimicrobial because its bacteriostatic action can be reversed.”*⁶

Shortly after the FDA advisory committee determined that thimerosal in over-the-counter products was no longer “generally recognized as safe,” Eli Lilly and other companies chose to cease production of products such as merthiolate and mercurichrome. By the mid-1980’s, Eli Lilly was completely out of the business of manufacturing or selling thimerosal-containing products. However, thimerosal continued to be used in vaccines. In the 1990s, thimerosal was manufactured by numerous companies, including Sigma-Aldrich, Inc.; EM

¹ Federal Register; Docket No. 75N-0183; “Mercury-Containing Drug Products for Topical Antimicrobial Over-the-Counter Human Use;” January 5, 1982.

² Id.

³ Id.

⁴ Id.

⁵ Id.

⁶ Id.

Industries, Inc. (now EMD Chemicals Inc., the North American extension of Merck KGaA); Dow Chemical Company; Spectrum Laboratory Products, Inc. (formerly Spectrum Quality Products, Inc.); and GDL International, Inc.

The submission of the committee's report in 1980 set in motion a tortuous bureaucratic process that would not result in the banning of mercury from over-the-counter products until 1998. What makes the glacial pace of these proceedings all the more concerning is that there appears to have been no opposition to this action throughout the process. No individuals sought to appear before the advisory committee in defense of mercury-containing products,⁷ and when the FDA sought public comment along the way on proposed rules to ban certain mercury-based products, it received none.⁸ At the time of the FDA's final action, there were 20 over-the-counter products containing mercury being marketed by eight different manufacturers.⁹

In the [final rulemaking](#) published in 1998, the FDA states that "safety and effectiveness have not been established for the ingredients (mercury based preservatives) included in this current final rule and manufacturers have not submitted the necessary data in response to earlier opportunities. The agency's experience has been that under these circumstances companies have not submitted data in response to yet another opportunity. The agency published Advanced Notice of Proposed Rules or Notice of Proposed Rules regarding these products in 1980, 1982, 1990, 1991, 1994 and 1995.¹⁰ The final rulemaking report goes on to state that "Consumers will benefit from the early removal from the marketplace of products containing ingredients for which safety and effectiveness has not been established." The agency determined that these ingredients should be deemed not generally recognized as safe and effective for OTC use before a final monograph for each respective drug category is established. Accordingly, any drug product containing any of these ingredients and labeled for the OTC use identified in Table II of this document will be considered non monograph and misbranded under section 502 of the Federal Food, Drug, and Cosmetic Act (the act) (21 U.S.C.352). At the time of the FDA's final action, there were 20 over-the-counter products containing mercury being marketed by eight different manufacturers.¹¹

⁷ Id.

⁸ Federal Register; Docket Nos. 75N-183F, 75N-183D, and 80N-0280; "Status of Certain Additional Over-the-Counter Drug Category II and III Active Ingredients – Final Rule;" October 19, 1998.

⁹ Id.

¹⁰ Federal Register; Docket Nos. 75N-183F, 75N-183D, and 80N-0280; "Status of Certain Additional Over-the-Counter Drug Category II and III Active Ingredients – Final Rule;" October 19, 1998.

¹¹ Id.