clear during 1959 that tests under market conditions were necessary and that the defects subsequently discovered in 1960 were foreseeable.[12]

Similarly, Parke-Davis was experiencing difficulty in its attempt to meet the minimum standards of toxicity. Even as late as August 1959, one month *after* Quadrigen had been released to the commercial market, certain lots which had been submitted by Parke-Davis to DBS for toxicity testing were being repected. On August 25, 1959, a letter from Dr. Workman to Dr. Brigham, regarding Lot 054043, indicated:

"Our tests of the pertussis component for freedom from toxicity do not conform with the results reported in your protocol. Three tests were performed and 6 of 30 mice died by the end of 7 days." Plaintiffs' Exh. 3.

In a letter dated September 16,1959, Dr. Bringham replied that Parke-Davis' own re-test of Lot 054043 resulted in the deaths of 4 of the 40 mice inoculated. Defendant admitted that although this lot passed a 10-mouse test given earlier, the lot "appears upon more extensive testing to have enough toxicity to fail to pass the Minimum Requirements test in a certain percentage of cases." Plaintiffs' Exh. 3.

Clinical trials of Quadrigen prior to marketing were conducted by Dr. Clarence D. Barrett, Director of the Division of Material and Child Health of the City of Detroit, beginning in 1956 and terminating in 1959.[13] Although these trials were primarily designed to determine antibody response in children of various ages and to determine the earliest age in infancy at which immunization with Quadrigen could be started, Parke-Davis used these trials in its license application as a basis for the proposition that the clinical experience involving Quadrigen yielded no greater local or febrile reactions than was experienced with the triple antigen product.

[21] Because of the nature of the vaccine used in the Barrett study and the lack of controls placed on the diagnostic and reporting procedures, it was negligent for Parke-Davis to have used this study as its basis for making the above representation. The pertussis component which Dr. Barrett used had been in cold storage for the two-year period immediately preceding the inoculations. If had been discovered that during this period of time the potency of the pertussis component had fallen below the NIH's minimum requirements for an acceptable vaccine. Nevertheless, it was used in the study. Although in the standard commercial production lots the benzethonium chloride is combined with the pertussis component at the point of manufacture and allowed to remain in combination throughout the entire storage period, such was not the case with the vaccine used in the Detroit study. There, the preservative was not combined with the pertussis component until the time that the children were to be inoculated. Consequently, the clinical trial could not validly test the extent to which the addition of the benzethonium chloride (one of the few important changes being made in the quadruple antigen product) increased the reactivity of the product. Although the vaccine used may have been sufficient to determine the antibody response in the children tested, never having been subjected to market conditions and representing a quadruple antigen of lesser strength and of a different manufacturing process than the one eventually to be released on the market, it should not have been used as a barometer for judging local and febrile reactions.

Even had the vaccine used been an acceptable one for this purpose, the absence of controls over the diagnostic and reporting procedures made any conclusion with regard to the nature and extent of the reactions an invalid one. Mothers, most of whom came from the lowest socio-economic stratum of urban Detroit, had been asked to report, by telephone, all illnesses or reactions suffered by the children following their inoculations. No doctor or medical assistant at any time took the temperatures of the children either on the day that the vaccine was administered or subsequent thereto unless a mother, suspecting a reaction, brought her child back to the clinic. Needless to say, it was somewhat

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[12] It must be noted that in 1959 there were no regulations requiring a drug manufacturer to test its product under market conditions prior to releasing it for use to the general public. It is the opinion of this Court, however, that although it would be negligent for a manufacturer to disregard the regulations established by the National Institutes of Health in the manufacture of its drug products, a manufacturer cannot exempt itself from liability in negligence for failure to exercis due care in an area not covered by a specific regulation. See Stromsodt v. Parke-Davis & Co., supra at 997; Frumer & Friedman § 3301[3].

[13] Barrett, Timm, Molner, Wilner, Fahey & McLean, Multiple Antigen for Immunization Against Poliomyelitis, Diptheria, Pertussis and Tetanus, 49 American Journal of Public Health 644 (1959); Barrett, Timm, Molner, Wilner, Anderson, Carnes & McLean, Multiple Antigen for Immunization Against Poliomyelitis, Diphtheria, Pertussis and Tetanus, 167 Journal of the American Medical Association 1103 (1958).