Occupational related diseases (ORD) which result in permanent disability are compensable in South Africa. During the 2005/6 – 2007/8 financial years compensation for ORD’s totalled approximately R200 million per annum of which this study indicated, R92 million on average possibly related to hearing loss. This expense must surely result in negative financial consequences for both the South African government and employers. The manner in which compensation for hearing loss relating to the work place, is to be determined, was changed by Instruction 171 published in the Government Gazette dated 16 November 2001. A baseline audiogram is required for every employee who enters a noise zone during the course of employ and Instruction 171 specified that the percentage hearing loss has to be used to determine this baseline audiogram. A baseline audiogram, which is valid for the total working career of an employee, is used to monitor the hearing status of employees for purposes of possible future compensation. It consequently serves as a reference point from which hearing threshold shifts (HTS) are determined. The significance of the accuracy of this test is thus evident.Prior to the implementation of Instruction 171, various audiometric measuring tools were, in accordance with South African Standards, used in industry for purposes of hearing conservation. These measuring tools referred to above were used for various purposes which included, the determination of; compensable HL, the need for diagnostic procedures, when HL had to be reported to the Department of Labour as “an incident” and the efficiency of a hearing conservation program. With implementation of Instruction 171, these various measuring tools were reduced to a single tool namely the PLH. Naturally the accuracy of PLH determination is also important to employees as it may affect possible compensation of an individual’s hearing loss. Considering the significance of baseline audiograms for purposes of compensation, the following questions arose in this study; (i) does PLH, in its current format, measure the hearing threshold (HT) sufficiently accurately to (a) establish the baseline audiogram, (b) monitor HL for purposes of compensation, and (ii) is the PLH, as currently determined, suitable to identify further diagnostic procedures for purposes of hearing conservation? A more accurate PHL calculation procedure would be to the advantage of all parties concerned. A database which included baseline audiograms of 1101 respondents was studied to determine if the PLH, in its current format, was suitable to comply with the needs pertaining to industrial audiometry. The respondents were employees working in noise zones at various industries, located in the Western Cape and were all tested in accordance with South African audiometry standards. The current PLH determination procedure was studied and current audiometry baseline test results were reconstructed in a manner to calculate an alternative PLH. This reconstructed PLH was consequently used to determine a new B-baseline audiogram. StatSoft Statistica, software was used to statistically compare the current baseline audiogram with the B-baseline audiogram. The study revealed that the B-baseline audiogram succeeded to on average produce a 17% improvement (more accurate) in the determination of the PLH. The PLH of the B-baseline audiogram can thus be regarded as more representative of the true HT of employees. Based on the results of this study it is recommended that the current determination of the PLH used to establish the baseline, be amended. The proposed amendment (B-baseline audiogram) still uses the HT of the two tests done in accordance with Instruction 171 and no amendment of the test procedure is thus required. As the PLH of the baseline and the diagnostic baseline audiogram is currently used for compensation purposes, it is recommended that the B-baseline method be used for both the baseline and diagnostic baseline audiograms.