

Evaluation of Skin Sensitization Classification Rules to Reflect Induction Potency in Humans

Matthias Herzler¹, Kim T. To*², Aswani Unnikrishnan², Jaleh Abedini², David Allen², Dori Germolec³, John Gordon⁴, Nicole Kleinstreuer⁵, Hon-Sum Ko⁶, Joanna Matheson⁵, Hermann-Josef Thierse¹, Jim Truax², Jens T. Vanselow¹, Judy Strickland²

¹German Federal Institute for Risk Assessment, Berlin, Germany; ²Inotiv, Research Triangle Park, NC, USA; ³NIH/NIEHS/DTT/STB/NICEATM, Research Triangle Park, NC, USA, ⁴United States Consumer Product Safety Commission, Rockville, MD, USA; ⁵NIH/NIEHS/DTT/NICEATM, Research Triangle Park, NC, USA, ⁶United States Food and Drug Administration, Silver Spring, MD, USA

**Presenting author*

To support development of the Organisation for Economic Co-operation and Development's Guideline on Defined Approaches for Skin Sensitisation, we curated a human reference database of 2277 human predictive patch tests (HPPT) for 1366 unique substances. The United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS) does not consider the number of sensitized subjects in HPPTs for human evidence in the classification as GHS subcategories 1A (strong, at least one subject sensitized at induction dose per skin area [DSA] 500 µg/cm² or less) or 1B (other than strong, at least one subject sensitized at induction DSA greater than 500 µg/cm²). Using the human reference database, we applied a modified GHS approach to the extrapolated DSAs at which one individual is sensitized (DSA1+) or 5% of individuals are sensitized (DSA05). DSA, DSA1+, and DSA05 classified 605 test substances as sensitizers and 1650 as not classifiable. DSA, DSA1+, and DSA05 subcategorized 59, 208, and 182 test substances as GHS 1A, respectively. We used the DSA+1 statistic to evaluate reproducibility and concordance between human and animal reference data for binary classification and GHS subcategorization. The modified GHS approach allows consideration of induction potency in humans while providing good reproducibility and concordance with animal reference data. This project was funded with federal funds from the NIEHS, NIH under Contract No. HHSN273201500010C. The views expressed above do not necessarily represent the official positions of any federal agency.