

# Evaluation report on *in vitro* ocular toxicity test methods for identifying ocular corrosive and severe irritants: Isolated Chicken Eye Test Method

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## Summary

The Isolated Chicken Eye (ICE) test is a technique for testing ocular irritation in an isolated chicken eye and was developed as an alternative to the Draize test, which is performed on live rabbits. The Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) has issued background review documentation (BRD) regarding the use of ICE testing in screening substances for corrosion and severe irritant potency, and a JaCVAM peer review panel on alternatives to ocular irritation testing also conducted its own review of this information.

The ICE test involves the exposure of an isolated chicken eye to a test substance, which after a period of time is followed by an examination of corneal swelling, opacity, and fluorescein staining to assess physiological changes. A determination of ocular corrosion and severe irritant potency is then based on the assessed changes.

These validation tests were performed on a sufficient number of a wide range of test substances, and according to ICCVAM background review documentation, ICE test results show an 83% agreement with corrosion and severe irritant potency of ocular irritants per GHS classification as well as a false-positive rate of 8% and a false negative rate of 50%. The substances tested, however, included those that are classified as having a high rate of both false positives and false negatives (alcohol) as well as those that are classified as having a high rate of false negatives (solids, surfactants). Excluding these particular substances from the results yields an overall agreement of 92%, a false-positive rate of 6%, and a false-negative rate of 29% (two of seven substances). In terms of the reliability of this test method, although intra-laboratory variation has yet to be fully investigated, favorable results for inter-laboratory changes have been obtained.

Based on the above and with due consideration to the characteristics of problematic test substances (alcohol, solids, surfactants), we have determined that there are no issues related to the use of ICE testing as a means of screening chemical substances for ocular irritation potency in the assessment of corrosion and severe irritant potency. It is our opinion that ICE testing is acceptable for regulatory use in Japan as a means of assessing the corrosion and severe irritant potency of chemical substances.

**Keywords:** *Isolated Chicken Eye, ICE, eye irritation, alternative*