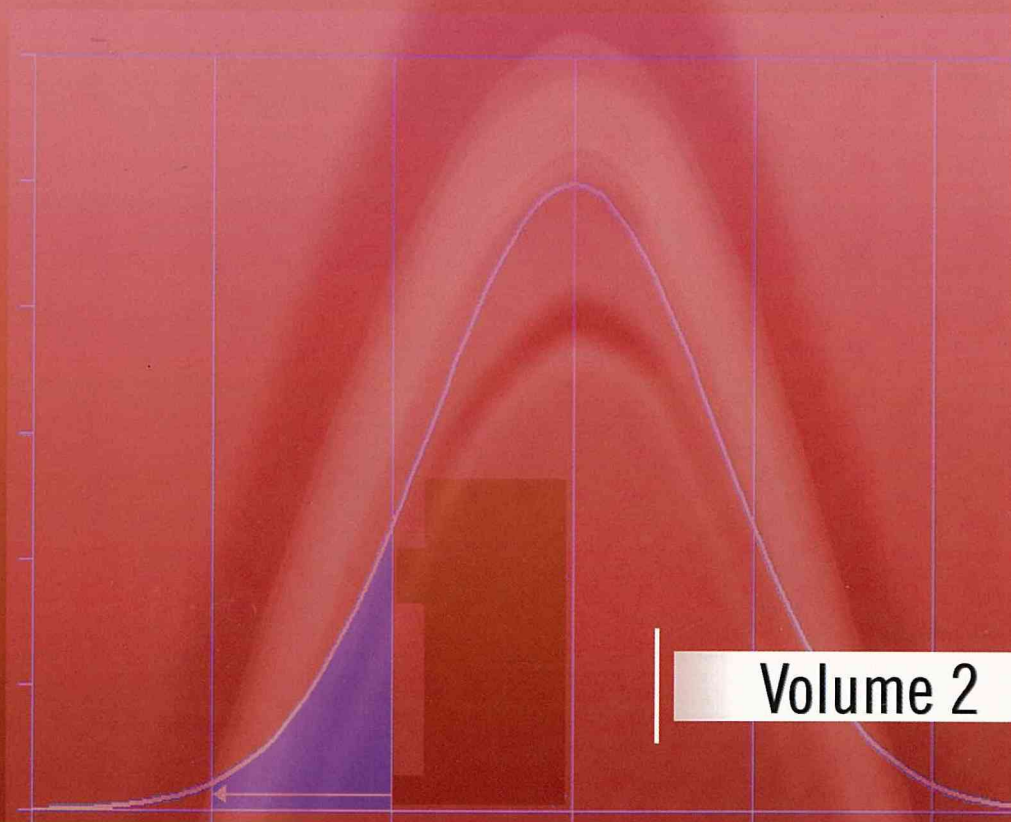


Handbook on Import Risk Analysis for Animals and Animal Products



Quantitative risk assessment

Bibliography

- Covello V.T. & Merkhofer M.W. (1993). – Risk assessment methods. Approaches for assessing health and environmental risks. Plenum Press, New York.
- Cullen A.C. & Frey H.C. (1999). – Probabilistic techniques in exposure assessment. A handbook for dealing with uncertainty in models and inputs. Plenum Press, New York.
- Daly S. (1992). – Simple SAS macros for the calculation of exact binomial and Poisson confidence limits. *Comput. Biol. Med.*, **22**, 351-361.
- Martin S.W., Meek A.H. & Willeberg P. (1987). – Veterinary epidemiology. Principles and methods. Iowa State university Press, Ames.
- Merkhofer M.W. (1987). – Quantifying judgmental uncertainty: methodology, experiences and insights. *IEEE Transactions on Systems, Man and Cybernetics*, **17**, 741-752.
- Snedecor G.W. & Cochran W.G. (1967). – Statistical methods. Oxford & IBH Publishing Co., New Delhi.
- Thrushfield M. (1997). – Veterinary epidemiology. Blackwell Science Ltd., United Kingdom.
- Vose D. (1997). – Risk analysis in relation to the importation and exportation of animal products. *Rev. sci. tech. Off. int. Epiz.*, **16** (1), 17-29.
- Vose D. (2000). – Risk analysis, a quantitative guide. John Wiley and Sons, Chichester.
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