A Risk Assessment Methodology for the Use of Lasers in the Entertainment Industry

by

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Doctoral Thesis

Submitted in partial fulfilment of the requirements
for the award of

Doctor of Philosophy of Loughborough University

22 December 1998

ABSTRACT

Lasers have been used in the entertainment industry since 1964, when they were used in the film Goldfinger. Laser display shows commenced in about 1973. It would be reasonable to expect laser safety to have been adequately addressed over the last twenty-five years. This research showed that the industry was not able to assess the risks from its work. A national survey of the competence of enforcing officers showed that they rarely had the necessary expertise to judge the safety of shows. Therefore, there was often a wide gulf between the laser companies and those responsible for enforcing entertainment and health and safety legislation.

A hazard assessment methodology has been developed which considers any laser show as a series of modules which may have different hazards associated with them at different stages of the life cycle, and different people would potentially be exposed to these hazards.

A number of laser radiation exposure situations have been assessed, including audience scanning. A theoretical understanding of the laser scanning issues and the application of measurement techniques to enable assessments to be carried out against internationally recognised maximum permissible exposure levels were developed. The conclusion was that the practice of audience scanning was not acceptable in its current form. A number of laser companies worldwide have accepted this view as a direct result of this research.

A means of presenting the risk assessment for a laser display has been developed which provides benefits for the laser company, the venue manager, event promoter and the enforcing officer. It is recognised that a complete assessment may not be possible in the time available and a focused approach to the assessment is presented. In summary, if audience scanning is intended, the assessment is complex, but if this practice is not intended then the assessment can be straightforward.

Suggestions are made for applying the risk assessment methodology to other laser applications.

ACKNOWLEDGEMENTS

I am extremely grateful to my employer, the National Radiological Protection Board, for giving me the opportunity to carry out this research and for their financial support.

This research work would not have been possible without the assistance of a great many laser display companies and enforcing officers. Particular thanks are due to Mark Brown of Laser Grafix and his staff who were always prepared to answer any questions and to loan equipment. L Michael Roberts of Laser FX International introduced me to the world of laser entertainment outside the UK and to a number of people who helped me to understand the problems from the operator's viewpoint. These include Greg Makhov, Patrick Murphy and Bill Benner. I consider it an honour that the Board of Directors of the International Laser Display Association have accepted the findings from this research. This is, in part, due to the support of the above individuals.

Dr John Tyrer, who subsequently became my academic supervisor, provided the initial stimulus for embarking on this work and I thank him and his Laser Safety Group at Loughborough for their continued encouragement. I also acknowledge the valuable assistance of my industrial supervisor, Dr Alastair McKinlay, Head of the Non-ionising Radiation Department at NRPB.

My colleagues and line management within Southern Centre at NRPB have been very understanding during the period of this research. I offer my thanks to them all.

Finally, and most importantly, I thank my family. Without the unfaltering support of my wife, Jacqueline, I could not have hoped to embark on such a venture. Our young children, Robert and Isobelle, have grown to accept that their father has many places of work - NRPB, Loughborough, the study at home, nightclubs and fields waiting for laser displays to commence. I hope this research goes some way to ensuring that, when they get to the age of wanting to attend such events, their safety will be assured.

TABLE OF CONTENTS