

Guest Editorial

Two (or More) Heads Are Better Than One

Lesley Day

NHMRC Senior Research Fellow
Monash University Accident Research Centre
Melbourne, Australia
e-mail: lesley.day@general.monash.edu.au

In the field of injury prevention, collaborative research and action involving professionals from different disciplinary backgrounds is not new. Typically, the cycle commences with epidemiologists, statisticians, and medical practitioners identifying and quantifying injury patterns and trends and characterizing high-risk groups. Engineers, industrial designers, and ergonomists then develop or identify technical solutions to the most common and serious injury problems. Educators, trainers, and health promotion professionals may work to inform the relevant groups about the potential solutions, and lawyers, policy makers, and insurers may act to encourage or require the adoption of the solutions. A good example of this *multi-disciplinary* cycle in agricultural health and safety is that of tractor roll-over deaths. In many countries, this issue is, or has been, nominated as a high priority in prevention programs. Roll-over protection structures and systems (ROPS) are a known design solution to this problem. In Scandinavia, Australia, New Zealand, and other countries, many years of ROPS promotion have been followed first with voluntary standards and later with legislative requirements for virtually all operational tractors to be fitted with ROPS.

While this model has served us well in the past, a new and promising paradigm for collaborative research is emerging (Winston et al., 1996). *Interdisciplinary* research is characterized by the involvement of all the relevant disciplines from the point of identifying or refining the research questions through to dissemination of the research results. Rather than the serial additive approach of multidisciplinary research, this paradigm facilitates the forging of new approaches to increasingly complex research questions. In doing so, interdisciplinary research transcends the somewhat artificial boundaries of the various disciplines and promotes a holistic approach, integrating knowledge that might otherwise be fragmented. Does the interdisciplinary paradigm offer promise for agricultural health and safety research? I believe that it does.

In an interdisciplinary effort, James Dosman and his colleagues in Canada are examining whether agricultural machinery that is compliant with standards is less likely to cause serious injury by comparing compliance on machines that have been involved in serious injury with those that have not (Ingram et al., 2001). This study has also embraced psychology and is examining the role of fatigue and risk taking in serious farm machinery injury using data collected from the machine operators in the same case-control study. Consequently, the potential exists to examine the interaction between machinery factors, such as machine age or standards compliance, and operator factors such as fatigue or experience. This research was initiated by epidemiologists who had identified the issue of machinery injury in the western provinces of Canada, but engi-

neers and psychologists have participated in determining the research questions, and the methods of all three disciplines are being combined to collect and analyze the data, and interpret the findings.

Another example of interdisciplinary research in agriculture is provided in our recently commenced project to develop and test the feasibility of a technological aid to child farm safety. A team that includes intelligent systems experts, human factor psychologists, epidemiologists, and farmers is examining the feasibility of a "virtual fence" — an electronic device that would alert parents and caregivers when young children go beyond a predetermined boundary around the farmhouse. Epidemiologists have identified a common scenario of child drowning on farms — that of a child under five years old wandering away from a parent, often negotiating his way through a fence, and gaining access to a body of water on the farm. Farmers and human factor psychologists are advising on the performance requirements of such a device, and intelligent systems experts are determining the technical feasibility. Issues of reliance on technology will be addressed by human factor psychologists experienced in the field of human interaction with intelligent systems.

In a recent editorial in this journal, Mark Purschwitz wisely suggested a shift in emphasis from some of the traditional agricultural health and safety research questions to ones that focus more on translation of known solutions into practice (Purschwitz, 2003). Many of these questions provide fertile ground for interdisciplinary research to address the gap that sometimes lies between solutions and their implementation. However, if we are really to capitalize on the promise of interdisciplinary research, we will need to be inclusive and creative in the disciplinary groups that we bring together. Purschwitz's questions challenge us to broaden interdisciplinary research even further to include political science, sociology, economics, business systems, and law. This heralds an exciting development in our collective work to reduce injury and improve health in the agricultural community.

References

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