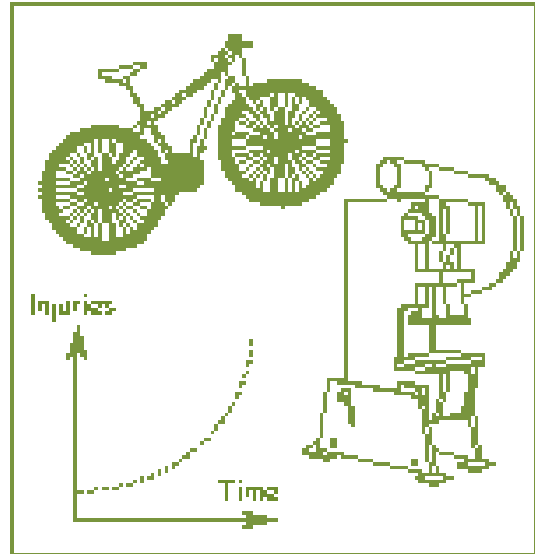


SAFETY AND FORENSIC SCIENCE

The evaluation of safe products, workplaces, and processes is a most difficult task. It must be, to some extent, prospective for new products and perhaps retrospective for older products. It may include elements of accident reconstruction where there have been physical failures, and human factors analysis where there have been cognitive and anthropometric problems. Codes, standards, regulations, state-of-the art, and custom and practice may also play a role. Forensic science techniques provide the technical basis for evaluating litigation issues, patent claims, and property losses. These techniques may simply be dimensional measurements, photographic documentation, or may include advanced analytical methods.



"Safe" is a relative term which has many basis for comparison. Codification and regulation are social value-system measures of how safe a product or process needs to be, and these measures often change with time. "State-of-the-art" and "custom and practice" help establish consistency and evolution in products and processes. Accident frequency and distribution help rank and identify trends for safety. The application of human factors also allow for the evaluation and prediction of how users may use, misuse, and appreciate equipment response and operation. Safety relies on more than physical guarding and can include elements of training, vigilance, and practice.

"Forensic science" often involves documentation and application of engineering science and physical principles to provide evidence of events or conditions. These methods try to answer the questions of how, why, and when and may be applied to situations where only technical methods can establish the logical sequence of events based on evidence. Forensic tools may include accident reconstruction, evaluation of time sequences, physical and computer simulations, and dimensional analysis.

