

## **Effects of Non-Lethal Weapons on Humans**

Griffioen-Young, Heather J.  
TNO Human Factors (TNO-TM)  
Soesterberg, The Netherlands

### **Keywords**

Non-Lethal Weapons  
Behavioral Effects  
Psychological Effects  
Physical Injury

### **Abstract**

More and more the Armed Forces are examining non-lethal weapons (NLW) as viable options to more conventional means of conducting war- and peace-related operations. Under the auspices of the Dutch Defense Research program on non-lethal weapons, the present project was carried out in order to gain an overview of past research conducted on the effects of various NLW technologies on humans.

The starting-point was a conceptual model to describe the processes by which NLW affect humans from the moment of deployment of the weapon, that is from the moment the flash-bang hand grenade explodes or the laser dazzler is fired. We considered only the effects of anti-personnel NLW; (unintended) effects of anti-materiel technologies on humans were not incorporated into either the model or our analysis of the technologies.

Open-source literature was surveyed and the results of the studies were summarized in a database. The findings were then used to rank each technology along dimensions describing the severity of the physical and psychological effects. The study results in 1) a conceptual model describing the processes by which the stimuli emitted by an NLW affect humans, 2) a searchable data base that includes descriptions of each source used in the study, and 3) a graphic representation of the effects of each NLW technology relative to each other.

The present study provides a structured way of thinking about and evaluating the effects of various NLW technologies and deciding which technologies require additional research. It also provides a practical overview of recent research on the NLW examined.