

Review Boards

Following the recommendations of a 2001 National Academy of Sciences review of NLW research and development, the JNLWP has established two review boards to facilitate non-lethal human effects review, interpretation, and recommendation. These bodies provide guidance to program managers and material developers to help ensure that emerging NLW technologies meet mission needs while minimizing the risk of injury.

The JNLWP Human Effects Review Board (HERB) was established to independently review non-lethal human effects research and analyses associated with specific NLW systems or technologies. The HERB consists of representatives from the Offices of the Services' Surgeons General, the Medical Officer of the Marine Corps, and the Services' Safety Officers and includes legal, treaty and DoD policy participation. The HERB provides NLW program managers and milestone decision authorities with an independent measure of health risks and recommendations for mitigating potential risks.

The Human Effects Advisory Panel (HEAP) is another independent advisory panel supporting the joint NLW community. Panel members consist primarily of non-governmental senior subject matter experts from academia, the medical community, and law enforcement. The HEAP provides an assessment of non-lethal human effects and makes risk mitigation recommendations to program managers prior to major acquisition program milestone decisions. The HEAP also reviews non-lethal human effects research plans, provides recommendations to program managers on how to address technical challenges, and addresses any open bioeffects issues identified by the HERB.

Human Effects Center of Excellence (HECOE)

The HECOE was created in 2001 via memorandum of agreement between the Air Force Research Lab and the JNLWP. The HECOE provides consultation and guidance to program managers, as well as recommendations on laboratories and field activities best suited to execute human effects research. The Center also conducts human effects assessments, NLW safety and risk assessments, and risk characterizations. The HECOE serves as a central location for non-lethal human effects data. The HECOE has grown to be the DoD leader in the coordination and oversight of non-lethal bioeffects research.

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Non-Lethal Human Effects



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What are they?

Non-lethal human effects are the physiological and behavioral responses produced by non-lethal weapons (NLW) employment. Non-lethal human effects research identifies risk of permanent injury and characterizes the technology dependent limits of the NLW "operating envelope." This process ensures the development and fielding of NLW capabilities that are both safe and effective.

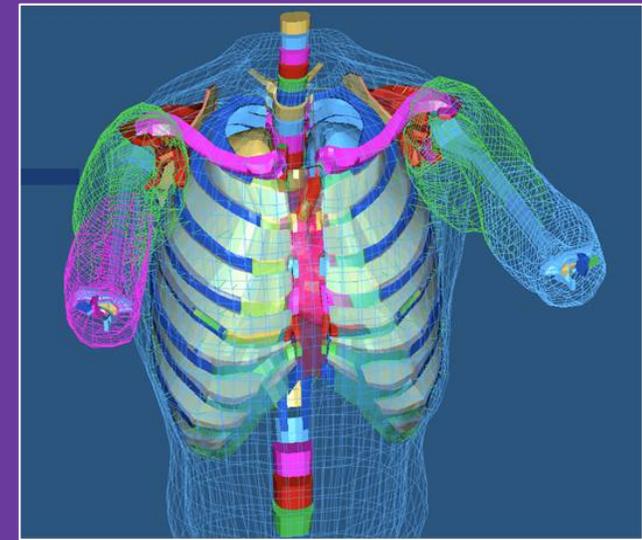
Human effects are key to the development of NLW tactics, techniques, and procedures; they provide operational commanders with the understanding of risk to support informed employment decisions. Knowledge gained and products developed through human effects research also transition to the warfighter through extensive non-lethal training.

How are they characterized?

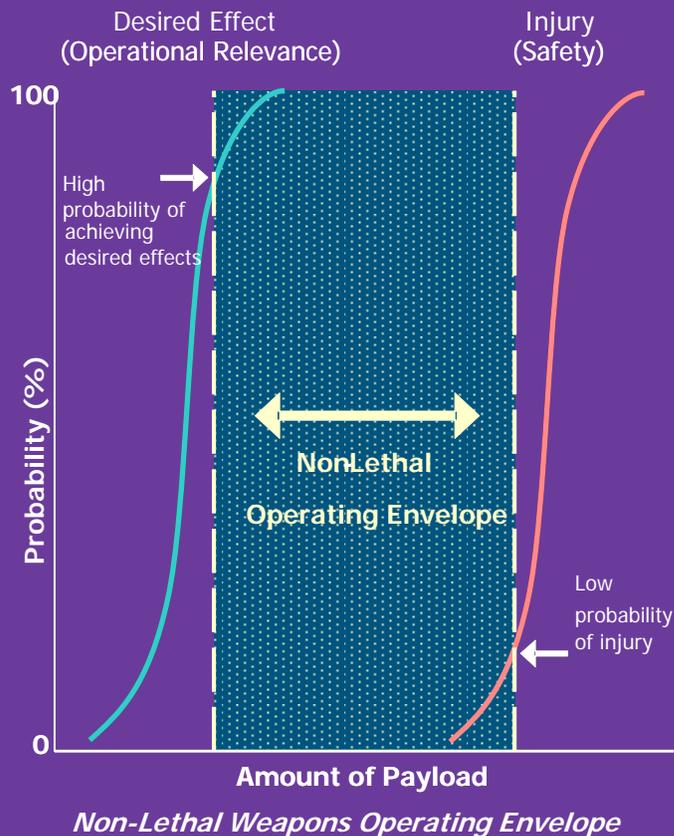
The Joint Non-Lethal Weapons Program (JNLWP) strives to develop NLW through effects-based design, where promising new technologies are designed and developed based on non-lethal human effects. The JNLWP adopted the Human Effects Risk Characterization (HERC) framework, an approach based on the National Academy of Sciences framework for risk assessment, to characterize the intended and unintended effects of NLW technologies and payloads. The HERC process establishes the baseline human effects understanding for a particular technology/payload, identifies knowledge gaps, and facilitates communication among human effects researchers, material developers, and NLW operators.

When commercial off-the-shelf NLW technologies are considered for non-lethal mission application, human effects assessments are conducted to identify the technology's anticipated physiological responses and risk of permanent injury to the target, bystander, and operator. This includes understanding any possible collateral effects with the use of this NLW.

Non-lethal human effects are further characterized through assessments of operational relevance of NLW technologies and payloads. Assessments are achieved with a combination of literature research, analytical and statistical analyses, and focused bioeffects and effectiveness experiments. The purpose of this type of developmental testing is to understand human behavioral response to NLW stimuli. This understanding is important because NLW are viable operational solutions only if their application elicits a desired response and has a minimal risk of permanent injury. This area between effect and risk of permanent injury is the operating envelope developed using dose response curves. All JNLWP-sponsored research is conducted in accordance with federal regulations and Department of Defense (DoD) policy.



Advanced Total Body Model



Non-lethal weapons are intended to minimize fatalities, protect the innocent, and limit collateral damage.

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Human Effects Models

Human effects models are also used to characterize and assess NLW systems. Non-lethal human effects models are developed from dose-response relationships generated by experimentation and from the refinement of existing models for non-lethal weapons application. Primary non-lethal human effects models include the Advanced Total Body Model (ATBM) for blunt impact injury assessment and the Optical Effects Model for broadband optical effects analysis. The non-lethal human effects models support risk assessments, effects-based design of emerging non-lethal technologies, design optimization of existing non-lethal weapons and payloads, and NLW training.

Non-lethal human effects model development continues through the Human Effects Modeling Analysis Program. Efforts continue to validate and verify current models, as well as to interface the various capabilities as a non-lethal human effects suite of models. Additionally, future model development will include behavioral outcomes displayed in a modeling, simulation, and gaming environment.