

# INFORMATION ON LOW-LEVEL BLAST

## DOD SERVICE MEMBER FACT SHEET

Traumatic Brain Injury Center of Excellence

### WHAT IS BLAST OVERPRESSURE?

BOP is the sharp rise in atmospheric pressure resulting from explosives or firing weapons. The sharp rise in pressure is caused by a shock wave traveling faster than the speed of sound. When the expansion of pressure from the blast occurs in an enclosed area or near surfaces, possible effects on the brain and body can be magnified.

### WHAT ARE THE TYPES OF BLAST OVERPRESSURE?

**High-Level Blast**, also known as HLB, is generated from incoming munitions, such as improvised explosive devices or rocket-propelled grenades. It primarily occurs in operational environments but can happen in training settings. HLB exposure is unpredictable and more likely to cause injury.

**Low-Level Blast**, also known as LLB, is generated from firing weapon systems or explosives in combat or training environments. LLB exposure is not the same as a [concussion/mild traumatic brain injury](#).

### WHAT MILITARY OCCUPATIONS\* AND WEAPON SYSTEMS CAN EXPOSE SERVICE MEMBERS TO LOW-LEVEL BLAST?



*Research is still emerging on the potential health effects of exposure to blast overpressure generated from firing weapon systems. This fact sheet is intended to raise awareness of low-level blast exposure and not meant to restrict mission-essential training.*

## WHAT SYMPTOMS HAVE BEEN REPORTED AFTER LOW-LEVEL BLAST EXPOSURE?

- Concentration problems
- Dizziness
- Irritability
- Memory problems
- Slowed thinking/slow reaction time
- Decreased hand-eye coordination
- Difficulty hearing
- Fatigue
- Headaches
- Tinnitus (ringing in the ears)

Symptoms from low-level blast exposure typically resolve with time. Physical symptoms may appear immediately or may only develop after multiple exposures occur.

## WHAT SHOULD SERVICE MEMBERS DO WHEN EXPOSED TO LLB?



### Recognize

- There are specific occupations at higher risk for exposure.
- Certain weapon systems have been identified as generating LLB.
- There are ammunition firing limits for the weapon systems that you use.\*
- LLB exposure can vary depending upon your firing position and other environmental conditions such as enclosed spaces or reflective surfaces (e.g., walls, ground).
- A larger net explosive weight produces greater BOP.

\*Current firing limits are lung and hearing specific but may also protect brain health.



### Limit

- Limit exposure to as *low as reasonably achievable (ALARA)*.
- Keep an appropriate distance from weapons being fired (i.e., step away if not directly firing or assisting).
  - Turn in unused ammunition (i.e., avoid SPENDEX).
  - Wear appropriate protective equipment (e.g., [hearing protection](#)).
  - Adhere to weapon system firing limits.\*
  - Implement training substitution or adjustment methods (e.g., simulation, modeling, firing fewer rounds further apart).



### Report

- If your symptoms persist and impact your daily function, inform your command and medical provider.
- Report to medical provider should include:
  - Duration of exposure
  - Number of blasts
  - Years in higher-risk occupation/unit (e.g., MOS/NEC/AFSC)
  - Symptom details and duration
- Refer to [health.mil/TBIfactsheets](https://health.mil/TBIfactsheets) for additional resources.



Scan the QR code to download the [DOD Blast Overpressure Reference and Information Guide \(D-BOP RIG\)](#).

Do you have questions about this fact sheet? Feedback? Email [dha.TBICoEinfo@health.mil](mailto:dha.TBICoEinfo@health.mil).

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