

## **Pressure, Velocity and Discharge rates of Incapacitant Sprays and How These Parameters can be Used to Predict Possible Ocular Injury.**

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The Home Office Scientific Development Branch (HOSDB) are working in collaboration with the Joint Non-Lethal Weapons Human Effects Centre of Excellence (JNLW HECO) to verify the safety of chemical incapacitant sprays, focussing on the potential occurrence of ocular injuries caused by the impact of sprays produced from aerosol canisters to the eye. The investigation was conducted to ascertain the relationship between the impact pressure, velocity and discharge rate of jets produced by incapacitant sprays. The results were also compared with the *severity effectiveness level 1 (SE1)*, a value proposed by HECO for the pressure that would cause self limiting injuries that completely resolve by themselves. This research was undertaken primarily for PAVA sprays, due to some concerns over their higher discharge rates compared with CS sprays, however the investigation may be extended to measure the impact pressures of CS sprays. The conclusions of this investigation confirm that the impact pressures of jets produced from the PAVA sprays tested are significantly lower than the proposed SE1 value, therefore confirming that the sprays should not cause ocular injury.

N.B – HOSDB are awaiting confirmation from HECO that they will allow us to release some of their data.