

# INPLASY

## The history of chemical warfare: a systematic review

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### ADMINISTRATIVE INFORMATION

**Support** - David Cooper Scholarship.

**Review Stage at time of this submission** - Data analysis.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202430016

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 March 2024 and was last updated on 04 March 2024.

### INTRODUCTION

**R** **Review question / Objective** What is the historical scope of chemical warfare?

**Rationale** To date, chemical warfare has not been systematically reviewed and reported on.

**Condition being studied** Chemical warfare.

### METHODS

**Search strategy** PubMed Search strategy: ((history[Title/Abstract]) AND (chemical[Title/Abstract])) AND (agent\*[Title/Abstract]).

Web of Science Search Strategy: History (Topic) and Chemical (Topic) and Warfare (Topic)

Scopus Search Strategy:

( TITLE-ABS-KEY ( history ) AND TITLE-ABS-KEY ( chemical ) AND TITLE-ABS-KEY ( warfare ) ).

**Participant or population** Global human population.

**Intervention** Chemical warfare events.

**Comparator** n/a.

**Study designs to be included** All - meta analyses, systematic reviews, RCTs, cohort study, case-control study, cross-sectional studies, case reports and series, ideas and editorials and opinions.

**Eligibility criteria** Studies were deemed eligible if they described incidents of chemical warfare throughout history. We only focused on chemical warfare events where evidence supported that an event took place. All known chemical warfare

incidents were included from single target assassinations to mass casualty events. We also included chemical warfare events where the chemical agent class and chemical agent or weapon were unknown, but evidence supported the use of a chemical agent in warfare. Our study also covered chemical agent use whereby the exact event descriptives were not stated but enough relevant information to state it had occurred was available in any given study. Additionally, chemical weapon use at events were included if exact injury and death figures were not stated, due to the underlying assumption that not all injuries and deaths are recorded. Studies were excluded on the basis of the following exclusion criteria: (a) if they stated there was threatened use of or unconfirmed use of chemical weapons; (b) studies were not available in full text; (c) studies not published in English language.

**Information sources** Electronic databases - PubMed, Web of Science and Scopus. Grey literature and Google searching. Domain specialists in the CBRN field.

**Main outcome(s)** Incidence of chemical warfare - location, city, chemical agent, chemical class, perpetrator, villain, injuries and deaths.

**Data management** Data records do not need to be kept private.

**Quality assessment / Risk of bias analysis** A quality and risk of bias assessment was not required to assess the studies as this study is an evidence synthesis of past events.

**Strategy of data synthesis** Using STATE/BE 18.0 for Mac and Microsoft Excel, we will analyse the summary table. We will perform cross-tabulations on variable data for chemical agent class, chemical agent, geographical location and injury and death numbers to generate summary information for chemical weapon use. We will generate summary data figures using ArcGIS Pro v.3.1.

**Subgroup analysis** n/a.

**Sensitivity analysis** n/a.

**Language restriction** English only.

**Country(ies) involved** Australia.

**Keywords** Chemical warfare; history; chemical weapons; weapons of mass destruction; nerve agent; blister agent; blood agent; military medicine.

**Dissemination plans** Submit to a high-impact journal.

#### **Contributions of each author**

Author 1 - Damian Honeyman - Conceived the study, data curation, formal analysis, investigation, methodology, writing – original draft, writing – review & editing.

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