

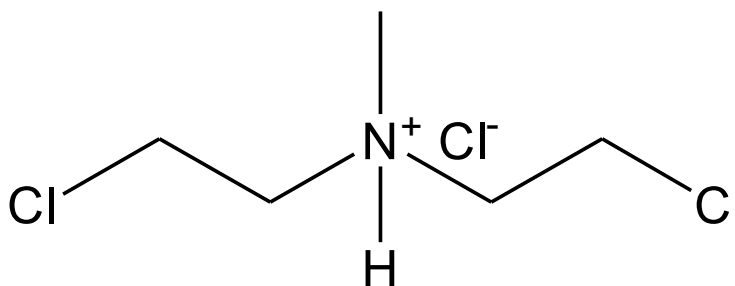
Safety considerations when developing highly active compounds- case study Mechlorethamine API

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Mechlorethamine belongs to the class of nitrogen mustards (NMs), which are cytotoxic organic compounds characterized by the bis(2-chloroethyl)amino functional group [1]. Although originally developed as chemical warfare agents [2], [3], nitrogen mustards were the first chemotherapeutic agents used in cancer treatment. These compounds are nonspecific DNA-alkylating agents.



Nitrogen mustards are classified as chemical weapons, and therefore their handling requires careful evaluation. Appropriate safety measures must be implemented to minimize risks during their use. The ability to produce such drug substances (DS) and the corresponding drug products (DP) has significantly impacted the understanding of the regulations governing their handling and use.

At Helsinn (HAS, HBP, and HHC), we conducted an extensive review of the literature and collected information on the safety requirements, regulations, and guidelines necessary for managing these compounds. Following an in-depth investigation of the relevant literature and guidelines, several measures were implemented across Helsinn's sites to enable the safe manufacture of mechlorethamine API and its management during DP manufacturing processes.

The objective of this presentation is to summarize the key aspects of the evaluations and implementations carried out at Helsinn.

[1] "Mustards". The IUPAC Compendium of Chemical Terminology. 2014. doi:10.1351/goldbook.M04071.

[2] Nitrogen mustard gas was stockpiled by several nations during the Second World War, but it was never used in combat. Daniel C. Keyes; Jonathan L. Burstein; Richard B. Schwartz; Raymond E. Swinton (2004). Medical Response to Terrorism: Preparedness and Clinical Practice. Lippincott Williams & Wilkins. p. 16. ISBN 978-0781749862 – via books.google.com.

[3] Centers for Disease Control and Prevention (April 4, 2013). "Facts About Nitrogen Mustards". cdc.gov. Archived from the original on September 3, 2013. Retrieved September 12, 2013.