Results
MEC injection resulted in severe lung toxicity with strong interstitial and alveolar edema, hemorrhage, emphysematous changes as well as mild inflammatory cell infiltration and septal thickening. In group 3, the HDAC inhibitor significantly reduced interstitial and alveolar edema, hemorrhage and inflammatory cell infiltration. On the other hand, we have observed severe lung damage by using DNMT inhibitor (group 4). In HDAC inhibitor group, the results were close to sham group. In DNMT inhibitor group, however, lungs were worse than MEC group results.

Conclusion
These preliminary results revealed that, SM itself and/or its intracellular metabolites may perturb the epigenetic environment of the affected cell in lung tissue. Hypothetically, MEC may cause HDAC induction leading to a variety of gene silencing. Trichostatine A can reduce the active enzyme level and can reactivate the already silenced genes. Further studies are needed to clarify the involvement of epigenetic perturbations in the pathogenesis of mustard toxicity.

Key Words/ Phrases: mechlorethamine, toxicity, epigenetic, HDAC, DNMT

Will not be presented

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38. NATIVE AND TABUN-INHIBITED CHOLINESTERASE INTERACTIONS WITH OXIMES

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The phosphorylation of the serine hydroxyl group in the active site of acetylcholinesterase (AChE) inactivates this essential enzyme in neurotransmission. Its related enzyme butyrylcholinesterase (BChE) also interacts with organophosphorus compounds (OP) scavenging anti-cholinesterase agents and protects synaptic AChE from inhibition. Oximes are reactivators of AChE phosphorylated by OP including insecticides and nerve agents. The effectiveness of oxime-assisted reactivation is primarily attributed to the nucleophilic displacement rate of organophosphate, but efficiency varies with the structure of the bound organophosphate, the structure of the oxime as well as rates of several other cholinesterase's reactions. Besides reactivating cholinesterases, oximes also reversibly inhibit both cholinesterases and protect them from phosphorylation by OP. We tested oximes varying in the type of ring (pyridinium and/or imidazolium), the length and type of the linker between rings, and in the position of the oxime group on the ring to find more effective oximes to reactivate tabun-inhibited human erythrocyte AChE and plasma BChE. Herein we bring an overview of *in vitro* interactions of native and tabun-inhibited AChE and BChE with oximes together with conformational analysis of the oximes relating molecular properties to their reactivation potency.

Key Words/ Phrases: acetylcholinesterase, antidote, bioscavenger, butyrylcholinesterase, nerve agents, tabun, oxime, treatment

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39. PREPARING FOR AND IMPLEMENTING THE UN SECRETARY-GENERAL'S MECHANISM ON ALLEGED USE INVESTIGATION FOR BIOLOGICAL WEAPONS

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The United Nations Global Counter-Terrorism Strategy was adopted by the UN General Assembly in September 2006. Preventing and responding to attacks using WMD were identified amongst the key areas of activities covered by the strategy.
The Secretary-General's mechanism to carry out prompt investigations in response to allegations brought to his attention concerning the possible use of chemical and bacteriological (biological) and toxin weapons was developed in the late 1980s. Triggered by a request from any member State, the Secretary-General is authorized to launch an investigation including dispatching a fact-finding team to the site of the alleged incident(s) and to report to all UN Member States. This is to ascertain in an objective and scientific manner facts of alleged violations of the 1925 Geneva Protocol, which bans the use of chemical and biological weapons.
Member States encouraged the Secretary-General in September 2006 to update the roster of experts and laboratories, as well as the technical guidelines and procedures, available to him for the timely and efficient investigation of alleged use. The roster of experts and laboratories and the guidelines and procedures

constitute the key elements of the special mechanism available to the Secretary-General for investigation of reports by Member States of alleged use of chemical, biological and toxin weapons.
The Office for Disarmament Affairs has been working with Member States since March 2007 to update the roster of experts and laboratories and the technical appendices of the guidelines and procedures so that they fully correspond with the rapid and substantial developments that have occurred in the biological area since the 1980s and also to take into account the fact that an Organization for the Prohibition of Chemical Weapons (OPCW) has since been established.
Currently, the roster of experts and laboratories has been updated and includes experts from more than 50 countries. The information available in the roster will allow Member States, in coordination with the Office for Disarmament Affairs, to design and organize special training courses for the experts.

Dr. Kraatz - Wadsack holds degrees in Veterinary Medicine from Ludwig – Maximilians - Universitaet in Munich, Germany and in Microbiology from the Bavarian State Chamber. She worked for ten years in the Bacteriology and Immunology Laboratories at the Institute of Microbiology at the German Federal Armed Forces Medical Academy in Munich, Germany. Dr. Kraatz-Wadsack is currently the Chief of the Weapons of Mass Destruction Branch, Department for Disarmament Affairs at the United Nations.
Recent activities include: Senior Advisor on the CWC and BTWC at the German Federal Foreign Office, CW/BW Divison, Department for Disarmament and Arms Control. Senior Advisor to the Robert Koch Institute in Berlin to help set up the first counter-bioterrorism-center.
UNMOVIC New York, Chief BW operations, Division of Planning and senior adviser on training for Biological Weapons Inspections 26 inspection missions in the biological, chemical and delivery system area, eight as Chief Inspector of Biological Weapons Inspections for UNSCOM (United Nations Special Commission on Iraq) and desk officer for ongoing monitoring and verification of Iraq's biological dual-use infrastructure.

40. BIOSAFETY LEVEL 3 FACILITY: ESSENTIAL INFRASTRUCTURE IN BIODEFENSE STRATEGY IN THE REPUBLIC OF CROATIA

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Wide spectrum of microorganisms nowadays present serious health risks to humans and animals and their potential for use as biological weapons has become an important concern for governments and responsible authorities. This has resulted in the implementation of measures (known as biodefense) directed toward containment of potentially harmful biological agents with the purpose to reduce or eliminate hazards to laboratory workers, other persons, and the outside environment. Many of such pathogens are dangerous pathogens which request biosafety level 3 (BSL-3) facility for research and management.
Biosafety level 3 comprises the combinations of standard and special microbiological laboratory practices and techniques, safety equipment, and laboratory facilities recommended for work with indigenous or exotic agents that may cause serious or potentially lethal disease through inhalation route exposure.
Croatia is endemic for many of these threatening pathogens/diseases (e.g. tularemia, pulmonary and non-pulmonary tuberculosis, brucellosis, Q fever, glanders, melioidosis, typhoid fever, viral hemorrhagic fevers, hepatitis B and C, HIV etc.). Its strategic geographic position and the overall world rise of international trade and travel unlocks the possibility for importing some new microorganisms or even occurrence of an outbreak of totally unknown infectious origin. We, also, cannot exclude the possibility of the so called deliberately emerging microbes used in intentional bioterrorist purposes. However, it is obvious that Croatia needs infrastructure and well trained human capacities on biosafety level 3 to cope with incoming public health challenges and threats. The fundamental objective of the laboratory under which dangerous agents can safely be handled, is surveillance and quick response, as a key elements in controlling of scenarios referred to above. For that purpose, the first BSL-3 facility in Croatia is in the final phase of its reconstruction at the University Hospital for Infectious Diseases in Zagreb. The process of training has already been established with the University of Texas Medical Branch and Galveston National Laboratory, Galveston, TX, USA.

Key Words/ Phrases: Biodefense, Biosafety Level 3, Dangerous Microorganisms, Bioterrorism, Croatia

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She has six publications, and two are in process of publication. She is also author and co-author of two book chapters.
She participated in numerous international and national scientific meetings and received several travel awards. She presented four invited lectures and is a member of several scientific associations.
Since 2008 lecturing at the Postgraduate Specialist Study in Infectology as an assistant.