services, with the help of persons involved in nuclear-chemical-biological weapons development programs. In the last couple of years while processing mafia conflicts in ex-communist countries in Southeastern Europe fascinating information has been revealed that the people accused and often convicted because of organized crime in the past have also been members of secret police, intelligence services, special forces etc. and in closing the deals and their execution the criminals do not care about nationality and nation-state borders. The authors will try to come up with answers, on the basis of expert-scientific and well-argumented premises, whether organized crime on the territory of Southeastern Europe could get hold of WMD deriving from development programs from ex-communist countries and whether these weapons will be used in their mutual conflicts and conflicts with those in power in their own or neighboring countries.

Key Words/ Phrases: CRB terrorism, organized crime, members of secret police and secret services of ex-communist countries

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67. *FRANCISELLA TULARENSIS* - POTENTIAL BIOLOGICAL AGENT

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Francisella tularensis is a small, nonmotile, aerobic, gram-negative coccobacillus capable of surviving for weeks at low temperatures in water, moist soil, hay, straw, or decaying animal carcasses. *F. tularensis* is the causative of the zoonotic disease tularemia. This bacterium was first identified in ground squirrels in Tulare County, California (1912). The human disease was recognized and described by Edward Francis (1922) as tularemia, and the agent was renamed *Francisella tularensis* in his honor. *F. tularensis* is one of the most infectious bacterial pathogens known, as few as 10-50 organisms can cause disease. Humans can become incidentally infected through diverse environmental exposures: bites by infected arthropods; handling infectious animal tissues or fluids; direct contact with or ingestion of contaminated food, water, or soil and inhalation of infective aerosols. Humans can develop severe and sometimes fatal illness, but do not transmit the disease to others.
F. tularensis have few subspecies: 1) *F. tularensis* subsp. *tularensis* (type A), highly virulent, found only in North America. The bacterium is transmitted among animals and from animals to humans by ticks, occasionally deerfly, or by aerosols; 2) *F. tularensis* subsp. *holarctica* (type B), moderately virulent, occurs in Euroasia and North America, mainly associated with streams, lakes, ponds, rivers and semi-aquatic animals such as muskrats and beavers (water-borne disease). Type B tularemia has been observed during war times (during Second World War 100 000 cases occurred each year, in Kosovo in 2000 and 2003 over 300 cases each year); 3) *F. tularensis* subsp. *mediasiatica*, rarely reported, isolated only in Kazahstan and Turkmenistan; 4) *F. tularensis* subsp. *novicida* is of low virulence, isolated in USA, Canada, Spain and Australia; 5) *F. tularensis* subsp. *philomiragia*, is of low virulence, associated with salt water (Atlantic, Mediterranean).
Tularemia is very rear in Macedonia, but in 1996 an epidemic of glandular/oropharyngeal tularemia occurs in East part of the country (26 cases confirmed by serology only, subspecies not confirmed).
F. tularensis could be used as a biological weapon in a number of ways. Release in a dense populated area would be expected to result in an abrupt onset of large numbers of acute, nonspecific febrile illness beginning after 3–5 days (incubation 1–14 days). An aerosol release would likely have the greatest adverse medical and public health consequences. Airborne *F. tularensis* would be expected to principally cause pleuropneumonitis, might contaminate the eye (ocular tularaemia); penetrate broken skin (ulceroglandular or glandular disease); or cause oropharyngeal disease with cervical lymphadenitis.
Stockpiling effective antibiotics to treat infected people, coordinating a nation-wide program, sharing of information, education for health professionals (prevention, diagnosis, treatment), the public and the media are essential needs for prevention and control of tularemia, occurred naturally or by possible bio attack by *F.tularensis*.

Will not be presented

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68. DIRTY BOMBS: ASSESSMENT OF RADIOLOGICAL IMPACTS

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In some countries, regulatory control of radioactive sources, used extensively in medicine and industry, remains weak. Global concerns about the security and safety of radioactive sources escalated following the September 11 2001 terrorist attacks in the United

States. There are fears that some radioactive sources could be used by terrorists as radiological dispersal devices (RDD's), or so called "dirty bombs." The radioactive material dispersed, depending on the amount and intensity, could cause radiation sickness for a limited number of people nearby if, for example, they inhaled large amounts of radioactive dust. But the most severe tangible impacts would likely be the economic costs and social disruption associated with the evacuation and subsequent clean-up of contaminated property. It has been shown that usage of realistic data in a first response decision making as to avoid inappropriate public reaction accompanied by economic and social consequences is necessary.

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Key qualifications:
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Author of National Radioactive Waste and Disused Sources Management Policy and Strategy
Author of National Regulation on Radioactive Waste and Disused Sources Management
Author of National Regulation on Security of Radiation Sources.

69. BACTERIOPHAGE AND LYTIC ENZYMES .... CAN THEY HELP US IN THE WAR WITH ANTIBIOTIC RESISTANT BACTERIA

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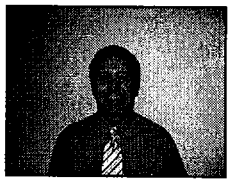
Drug-resistant pathogens are a growing menace to all people, regardless of age, or socioeconomic background. They endanger people industrial societies like the United States, as well as in less developed nations and are even causing problems in military field hospitals.
From *Streptococcus pneumoniae* to *Staphylococcus, C. difficile*, and multidrug-resistant *TB,* the list is growing. The threat of engineered microorganisms further complicates the interaction between man and Mother Nature.
Additionally, although antibiotics were specifically designed for treating human health emergencies, their use for raising livestock animals has expanded. In the US, large amounts of antibiotics are routinely mixed into feed in order to promote growth rather than combat disease and as prophylactic treatment to offset unnatural diets and unhealthy living conditions. U.S.-raised animals in the 1950s received 2 million pounds per year of antibiotics in their feed compared to 50 million pounds today—a 2,500-percent increase.
A large percentage of these drugs pass into the environment. In fact, prior to 1995, when fluoroquinolones were first approved to treat poultry, very few fluoroquinolone-resistant *Campylobacter* were found in people with foodborne diseases in the United States. After the approval, however, many more fluoroquinolone-resistant bacteria were found in humans and in poultry from slaughter plants and retail stores. The threat to our food supply becomes a threat to security.
What can be done? One approach is to treat bacterial diseases by the use of bacteriophages. Phages are very small viruses that destroy by lysing select bacteria. The idea of using phage as a therapy for infectious bacterial diseases was first proposed by d'Herelle around World War I and over 80 years bacteriophage has been a key tool of healthcare professionals within Eastern Europe.
More recently professionals in the USA and Western Europe have isolated and developed specific lytic components which have further broadened the potential of phage derived technologies. These include applications for treatments, preventatives and decontaminants as well as diagnostics. The use of these enzymes has been further expanded to include replacement of antibiotics in animal food/feed as well as in aquaculture as an aid in improving animal health and food productivity.
The current state of the phage related technologies will be discussed with specific application examples provided.
These will include therapies as well as detection applications for anthrax and other bacteria. Also, a novel decontamination method for military and hospital use developed under various USG programs will be presented. Next step projects and technologies will be mentioned with a goal of enhancing collaborations and applications between the West and other countries.



Dave has almost 40 years experience in the diagnostic field, including chemical/ biological / nuclear officer with the U.S. Army, positions with Pfizer, Becton Dickinson, New Horizons Diagnostics and most recently with Battelle Memorial Institute. He has managed programs in the Far East, former Soviet Union, Europe, and Middle East.
He has authored and assisted in numerous publications and patents on the subject of rapid bacteria detection and sampling. Most recently on the use of Phage Associated Enzyme in detection.