Meeting of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction

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Consideration of the provision of assistance and coordination with relevant organizations upon request by any State Party in the case of alleged use of biological or toxin weapons, including improving national capabilities for disease surveillance, detection and diagnosis and public health systems

Timely pathogens diagnosis as a basis for preventing and minimizing epidemics of natural or intentional origin

Submitted by the Russian Federation

1. Scientists estimate that today there are more than 3.5 thousand dangerous biological agents, which can cause diseases in people, animals and crops. Meanwhile, about 40 pathogens can be considered as the most dangerous ones.

2. The existing experience shows that emergency preventive and treatment measures are the most effective during the first hours after the contamination, especially by aerogenious way. In case of early use of prophylactic or therapeutic preparations (before the first manifestation of the disease), the probability of preventing a disease increases if there are less then 1000 infecting doses of pathogens in the human body.

3. Therefore, according to Russian scientists, in order to make a decision about using medical preparations and means of immunotherapy it is essential to detect the pathogens in the environment as soon as possible. The detection is especially difficult if the environment contains large numbers of contaminants of natural or anthropogenic origin.

4. As a rule, the laboratory methods used in health care are aimed at detecting the agent of disease in the infected persons, while the technical means for early detection of pathogens in the environment help prevent or minimize the epidemic processes.

5. The technical means for identifying pathogens in the environment were developed in Russia on the basis of the achievements in molecular biology, organic chemistry, biotechnology, luminescent microanalysis, quantum electronics, nanotechnology and other sciences.

6. Russia has developed the equipment for membrane immunofiltration analysis with visual detection to track the pathogens in laboratory or environmental conditions. As to its sensitivity to pathogens and toxins this technology is as good as the classical hard-phase immunoenzyme method.

7. In particular, a technology has been developed based on using the long-phosphorescent molecules as markers of antibodies. On the basis of this technology biochips and recording equipment have been created, allowing to detect in the environment such most dangerous pathogens as plague, tularemia, anthrax, tick-borne encephalitis virus, Venezuelan equine encephalitis virus, Crimean-Congo hemorrhagic fever virus, West Nile fever virus, botulinic and cholera toxins, ricin and other agents. The technology also enables us to carry out the serodiagnosis of infectious diseases.

8. To monitor the biological safety of objects and environment Russia applies immunochromatographic methods for revealing pathogens. Using these methods, we can detect ricin, botulinic toxins, staphylococcus enterotoxin, cholera exotoxin, causative agents of tularemia, plague, anthrax, glanders, salmonellosis, legionellosis and other infections.

9. The luminescent immunochromatography is actively used for indicating pathogenes in the environment which permits to increase by 10 to 15 times the sensitivity of revealing pathogenes in the environment in comparison with indicator elements based on gold nanoparticles.

10. As practice shows, the sampling devices working in discrete and continuous mode can be successfully used for air quality control. These devices - taking into account low concentrations of biological agents - are highly productive (no less than $1m^3/min.^{-1}$), provide high level of safety of selected samples and can be used autonomously in the areas of massive concentration of people.

11. In the spirit of the Biological and Toxin Weapons Convention the Russian Federation is ready to cooperate in order to provide assistance to the States Parties to the Convention in their combat against human, animal and plant infectious diseases, including those with unusual manifestations.