



Educational Programs in Dual Use of Life Sciences: Ways of Biosecurity Risk Mitigation

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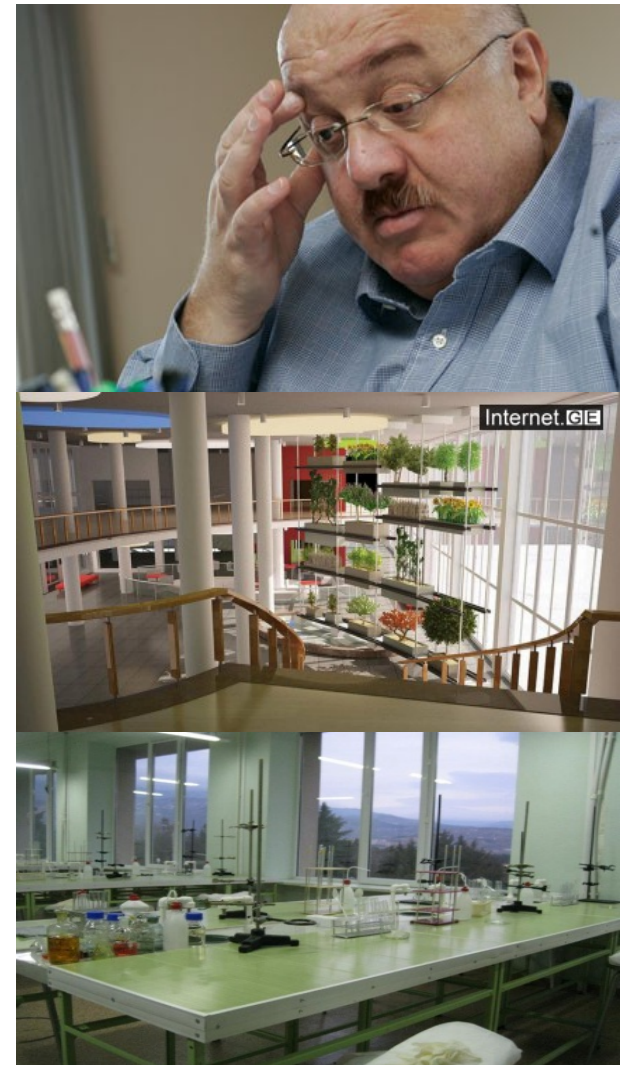
Georgia State Agricultural University

- the leading Georgian institution of higher education for agriculture and related fields. Established in 1929
- Umbrella institution for 17 distinct research institutes (Institute of Biochemistry and Biotechnology, Institute of Plant Protection, Institute of Veterinary, etc.)
- Closely collaborates with the Ministry of Agriculture of Georgia, National Food Agency (NFA), Laboratory of the Ministry of Agriculture (LMA), National Center for Disease Control and Public Health (NCDC), Central Public Health reference laboratory (CPHRL), etc.
- Partner of the 20th world's leading universities (Universities of Maryland, Florida, Burgundy, Iowa, Kassel. etc.)



In March, 2011, Agricultural University became a private university owned by the Knowledge Foundation

- Extensive renovations began immediately, and the University now houses 12,000 square meters of modern, fully-equipped classrooms, seminar rooms, and lecture halls. Classroom laboratories are completed and the installation of state-of-the-art research laboratories has started, along with the renovation of the library, cafeteria, culture center, athletic facilities, and administrative and faculty offices.



Past Experience

- When part of the Former Soviet Union, Georgia shared all the legislation, including very strict regulations on biosafety and work with especially dangerous pathogens (EDPs), with other republics of the USSR.
- Today there is an increased risk of EDPs being misused
- To address this risk we need not only to secure EDPs in appropriate containment laboratories and facilities but also ensure personnel reliability.



The Soviet Anti – Plague System

- The Former Soviet Union operated a large and unique network of facilities, called the "anti-plague system," whose main mission was to control deadly endemic diseases and to prevent the importation of exotic pathogens from other countries.
- Throughout the Soviet era, the Anti-Plague (AP) system appears to have worked effectively, preventing major epidemics from claiming the lives of Soviet citizens in regions where diseases such as anthrax, brucellosis, bubonic plague, Crimean-Congo Hemorrhagic Fever, and tularemia were endemic.
- In the 1960s, however, the AP system was directed to undertake tasks under the Soviet biological warfare (BW) program.



All specialists at Soviet Anti – Plague System were prepared at specialized institutions

- Kazakh Anti – Plague Institute
- Stavropol Anti – Plague Institute
- Irkutst Anti – Plague Institute. etc.



So How Can We Mitigate Biorisks?



Young scientists in the field of life sciences, biotechnology, etc., and professionals of public health must acquire the sense of responsible science at the very beginning of their professional education.

Not Only Researchers who deal with EDPs Face Dual – Use Dilemma...

- There is only one institution preparing specialists in life sciences that had introduced the course of biosafety/ biosecurity – Agricultural University of Georgia
- In most of educational institutions, when they speak about “biosafety” and “biosecurity”, they mainly consider GMOs



We had carried out survey on awareness on biosafety, biosecurity and misuse in biotechnology among students

- None of educational institutions had the course on biosafety/biosecurity in their curricula, there were some topics on bioethics in some disciplines included
- No courses or even lectures on bioterrorism prevention, dual – use of life sciences
- Tbilisi State University had used National Series in their Epidemiology and Public Health course



The course “Basics of Biosafety and Ethics of Life Sciences” was introduced at Agricultural University of Georgia

Ilia State University is Planning to Launch Course on Biosafety/Biosecurity



The Syllabus of the Course “Basics of Biosafety and Ethics of Life Sciences” at AUG

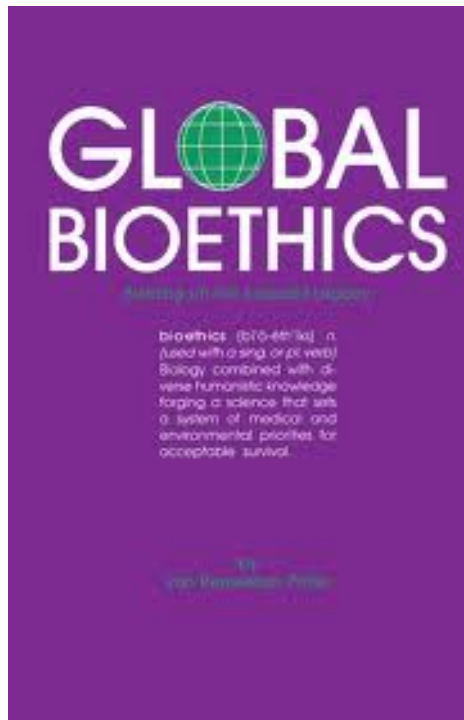
1. Basics of Biosafety. Laboratory Biosafety;
2. Biological Risk Assessment;
3. Personal Protective Equipment; Transportation of Infectious materials;
4. Criteria for laboratory biosafety levels: biosafety levels 1-2;
5. Criteria for laboratory biosafety levels: biosafety levels 3 – 4;
6. Criteria for animal laboratory biosafety levels, animal facilities, studies involving animals;
7. Principles of biosecurity, methodology for risk management, emergency situations management, Occupational health and immunoprophylaxis;
8. Standards of biosafety and biosecurity: international and national regulations;
9. Occupational health legislation;
10. Laboratory biosafety during field works;
11. Import/export and transfer of pathogens; disinfection/decontamination;
12. Regulation of life sciences; dual – use of biological and biotechnological research. Dual – use dilemma;
13. Biotechnologies. Genetically modified organisms. Genetic engineering. international and national legislation related to genetically modified organisms / products;
14. Ethics in biomedical and veterinary research. human/ patients’ rights; animal use committees;
15. Bioterrorism: potential biowarfare agents, toxins; agricultural terrorism; history; biowarfare on different countries; international antiterrorist acts, agreements.



Project 18 - International Network of Universities
and Institutes for Raising Awareness on Dual-
Use Concerns in Bio-Technology

Project 3 - Knowledge development and transfer
of best practice on bio-safety/bio-security/biorisk
management”





- "Science of Survival should be not just a science, and new wisdom, which would unite the two most important and critical elements - **the biological knowledge and human values** .

Based on this, I suggest the term for its designation - Bioethics ".

Wang Rensselaer Potter



Thank you!

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