

**The experience of operating
specialized mobile anti-epidemic
units of Rospotrebnadzor
(Federal Service for Surveillance
on Consumer Rights and Human
Wellbeing)**

2016



Experience of using specialized antiepidemic units (SAEU) in ensuring sanitary and epidemiological wellbeing of the population in emergency situations



Since their establishment in 1963 SAEU participated in liquidation of 117 emergencies of various kinds, including:

- liquidation of epidemic outbreaks of cholera, localization and liquidation of epidemic foci of plague, anthrax, typhoid fever, hemorrhagic fevers;
- ensuring anti-epidemic security of rescue and recovery operations in the areas of natural disasters (in Armenia in 1988-1989, in Krasnodar Region in 2002, and others)
- ensuring sanitary and epidemiological wellbeing of the population in areas of social conflicts and humanitarian disasters.





Upgraded specialized anti-epidemic units (SAEU) under Russia's Anti-Plague Institutes



**There are two deployment options:
heavy truck carrier
air-frame inflatable tents**



Advanced Concept of SAEU



Modernized SAEUs are autonomously functioning emergency response mobile units, which use advanced diagnostic and information technologies, modern equipment, equipped by modular principle, have qualified personnel capable to solve problems of liquidation and prevention of emergency situations in the field of sanitary and epidemiological wellbeing of the population.





The basic principles of SAEU functioning at the present stage are as follows:



- mobility
- autonomy
- diversification
- high technologies
- biological safety
- modular principle of equipping
- wide range of specialists trainings





Main activities of SAEU at the present stage:



- laboratory diagnostics of infectious diseases and sanitary and microbiological control of the environment;
- emergency anti-epidemic measures on localization and liquidation of epidemic outbreaks of dangerous infectious diseases;
- temporary replacement of personnel due to crisis in health structures

Structure of mobile SAEU

Лаборатория индикации (ИЛ)



Indication lab

Санитарно-гигиеническая лаборатория (СГЛ)



Hygiene lab

Лаборатория особо опасных инфекций (ЛООИ)



Especially dangerous pathogens lab

Штабной модуль (ШМ)



HQ module

Бактериологическая лаборатория (БЛ)



Bacteriological lab

Блок поддержки бактериологических исследований (БПИ)



Supporting unit

Capabilities

analysis time: 6 to 24 hours



- indication and identification (up to 500 samples per day)
- microbiological analysis of environmental samples and foodstuffs (up to 100 samples per day)
- epidemiological surveillance (12-16 epidemiological foci and 8-12 epidemiologically significant entities per day)

Operating conditions



Temperatures: from -30 to +40 C

Self-sustained operation up to 2 weeks

Transportation



Road-mobile

Railroad

Aircraft

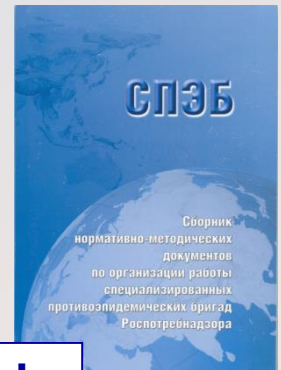
Sea

Mode and time of transportation





Scientific and methodological support of SAEU functioning



- Advanced tactics of using SAEU were developed to respond to emergencies in the field of sanitary and epidemiological wellbeing of the population. This allows to vary the personnel and SAEU laboratory modules depending on the nature of the emergency
- A collection of normative documents regulating the work of SAEU has been prepared and published at the federal level.
- In the Russian Anti-Plague Institute "Microbe" a base has been created to conduct trainings for national and foreign experts on sanitary and epidemiological work in the emergencies area

Modular approach in deploying mobile SAEU



- SAEU may be deployed as a whole or in several modules and their various combinations



- SAEU's analytical equipment may be removed and installed in stationary facilities



- Various modes of deployment: road, air, railroad, sea



- Modules may be adapted to tackling specific tasks



SAEU's deployment tactics

Full complement (All personnel, all modules)

- Epidemiological outbreaks
- Natural disasters
- Humanitarian catastrophes in conflict areas
- Major public events with international element



Select deployment (Teams of experts, several modules, and their combinations)

- Epidemiological situations that can not be verified by local public health
- Local outbreaks of especially dangerous infectious diseases with contaminating consequences; local public health has limited means to verify or suppress such outbreaks
- Significant public events with international element
- Bioterrorism acts

Ebola outbreak – a model of crisis

Initial conditions

- Weak local public health
- Lack of alertness to Ebola
- Lack of cooperation on the part of population and culturally specific burial traditions

Characteristic features of the outbreak

- High scale
- Spreading in cities
- Sustained and resilient nature of epidemic manifestations

Response

- Delayed reponse
- Multitude of independently acting stakeholders
- Lack of reliable statistics



Russia helps Guinea to fight Ebola



At the command of Russia's Government, on 22 August 2014 a team of experts and two SAEU modules were dispatched by Il-76 aircraft to Conakry, Guinea.

SAEU's personnel and equipment



- **Two lab modules;**
- **6 experts from "Microbe" Anti-Plague Reserach Institute;**
- **2 experts from "Vector" Virology and Biotechnology Research Centre**
- **Personnel from the Central Reserach Institute of Epidemiology and Rospotrebnadzor's Rostov Regional Directorate**

Tasks of SAEU in Guinea

1. **Conducting diagnostic tests;**
2. **Medical advice and consultations to benefit local population;**
3. **Providing consultancy to IGOs and Guinea's specialisits in planning and executing measures to contain and suppress epidemic outbreaks**
4. **Training for local specialists to man Russia-Guinea anti-epidemic centre**



Analytical techniques employed in Guinea

Methods:

- Real time PCR
- ELISA,
- IHA,
- Range of nosologies SAEU in Guinea capable of diagnosing (over 20):
 - Ebola, Marburg, Lassa, Dengue, Yellow fever, cholera, plague, AIDS, hepatitis A,B,C, and others.



Ensuring biosafety in SAEU lab modules deployed in Guinea

Indication lab

Processing original samples (sample preparation)

- BSL-3 cabinet;
- BSL-2 cabinet;
- Supply-and-exhaust ventilation with HEPA filters
- Negative air pressure in the lab
- Autoclave
- Collecting and treating liquid waste
- Decontamination and change room

Bacteriological lab

Processing de-activated samples

- BSL-II cabinet;
- Supply-and-exhaust ventilation with HEPA filters
- Collecting and treating liquid waste
- Decontamination and change room

Ensuring biosafety
of SAEU activities



Deployment of SAEU in Guinea



140 km
Re-deployment of
mobile lab on
11.01.2015



National hospital, Donka



Russia-Guinea hospital, Kindia

Incorporation of mobile SAEU into international response system

SAEU



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International cooperation



Cooperation is established with the Ministry of Health of Guinea, IGOs and NGOs (UN, WHO, MSF, ICRC)

SAEU deployment in conflict area (Republic of South Ossetia)

1 Prevention of epidemic outbreaks

2 Containment of acute intestinal infections

3 Assistance in rebuilding public health system



SAEU activities as part of WHO-Euro

Tajikistan (6-18 July 2008)



conducting an epidemiological investigation, retrospect and situational epidemiological analysis ;

laboratory analysis of biomedical and environmental samples.



SAEU activities during floods in Russia's Far East



**Situational analysis of epidemiological situation,
Laboratory analysis of environmental samples (water, soil, foodstuffs,
etc) and biomedical samples
Organisation of anti-epidemic activities**

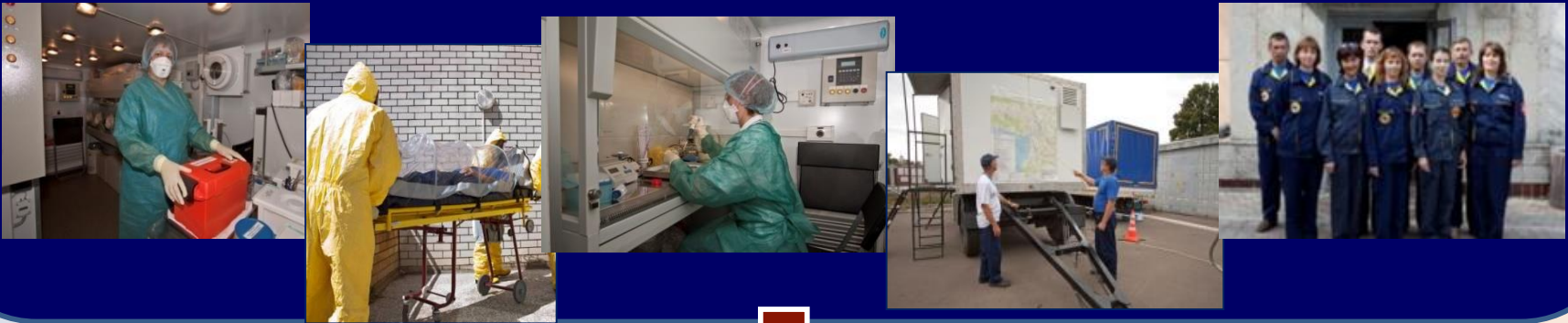


SAEU activities to ensure biosafety during major public events with international element

- ✓ APEC summit – 2012 , Vladivostok
- ✓ Universiade-2013, Kazan
- ✓ G20 summit - 2014, Saint Petersburg
- ✓ Winter Olympics –2014, Sochi
- ✓ IV Caspian summit-2014, Astrakhan



Implementation of updated SAEU concept of operations in responding to public health emergencies in Russia



Participation of SAEU in responding to public health emergencies at the international level



Modernized SAEU are internationally positioned as the tools for joint implementation of measures aimed at ensuring biological safety not only in areas of natural catastrophes, disasters, social conflicts, outbreaks of infectious diseases of different origin, but also when preparing and carrying out international public events

Cost of SAEU equipment/2016 pattern



SAEU 2016 pattern, 6 modules including BSL-3 containment

Capital expenditure: USD 2.36 mn (USD 1.85 mn is the cost of the platform, USD 507,500 is the cost of removable analytical equipment)

Average cost of one module is USD 393,000