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On outbreak and control of anthrax in Yamal

Denis Kolbasov, Russia

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CLINF

Yamalo-Nenets Autonomous Okrug

- The length of the Yamal peninsula from North to South is 750 km and from West to East - up to 240 km

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Yamal District (in orange)

In the Yamal district - 10 settlements in 6 selsovets under the district's jurisdiction

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Yamal District

- The population of the District is 15.600, including more than 10 thousand representatives of indigenous minorities of the North
- About 40% of the inhabitants of the municipal settlement are engaged in reindeer husbandry and lead a traditional nomadic way of life
- The number of reindeer in all categories of farms was 733,372 on 01.01.2016

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Locals indigenous minorities of the North

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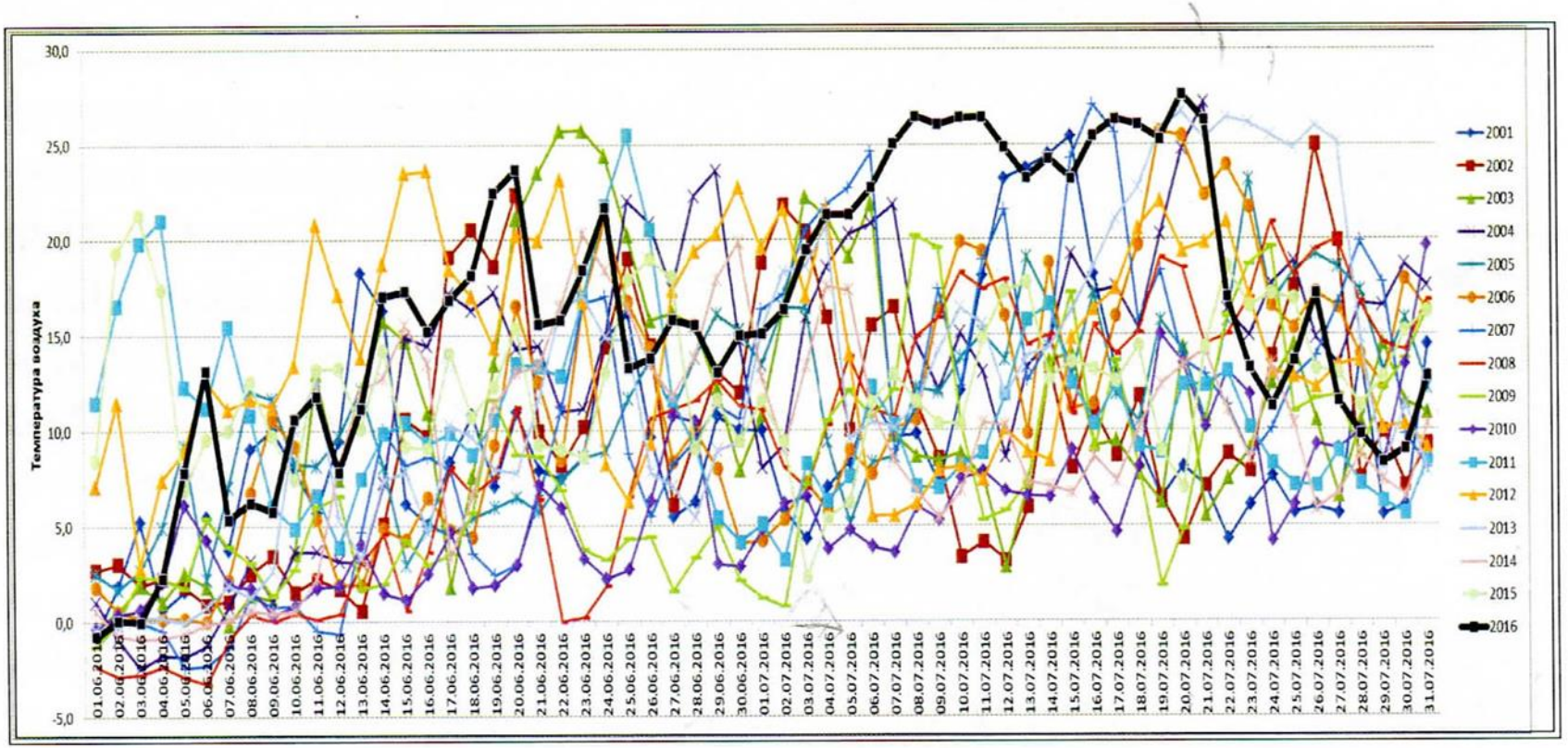
Daily mean air temperature at the Yamal Peninsula in June and July of 2000-2016



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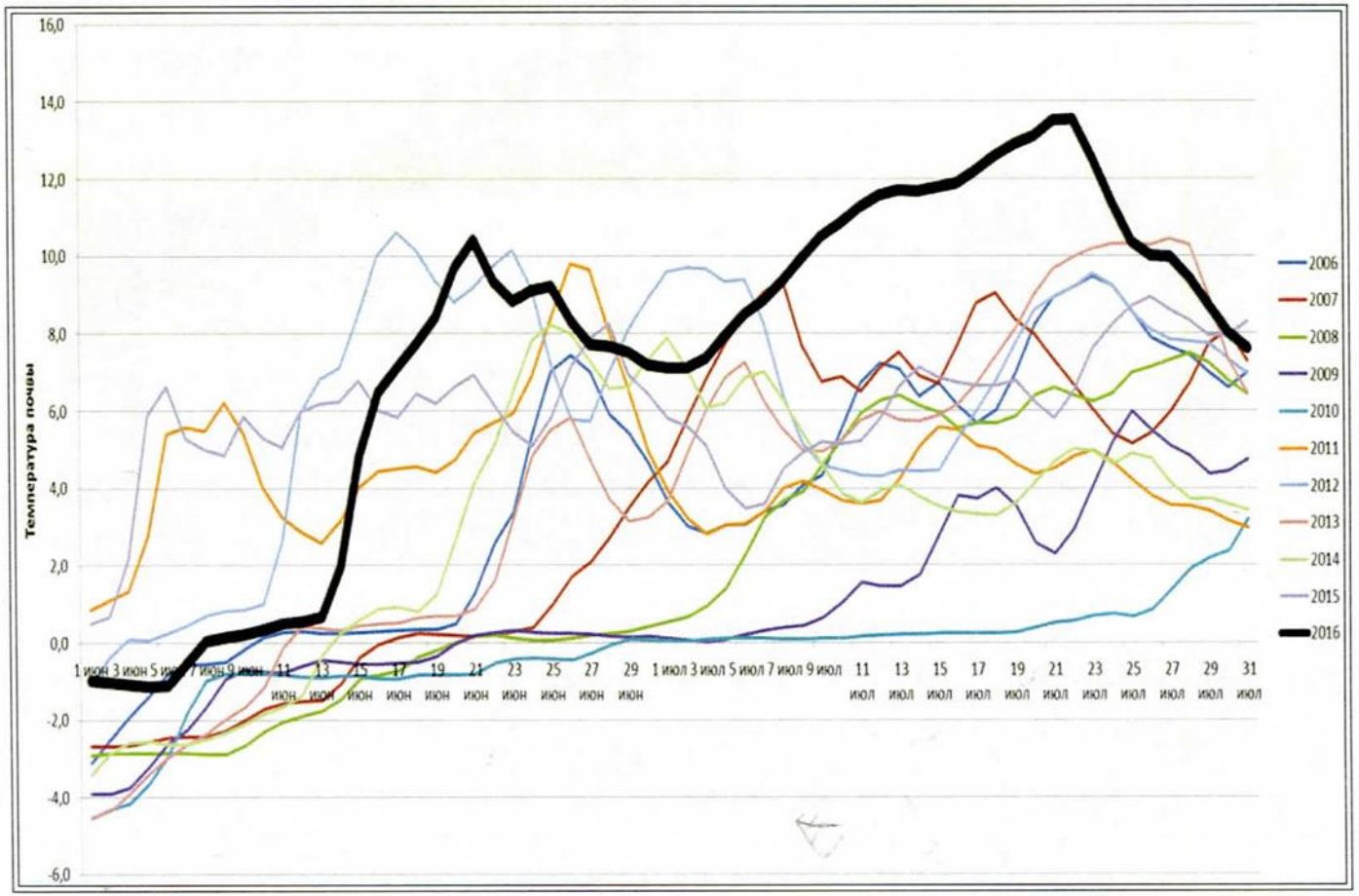
Soil temperature at the Yamal Peninsula in June and July of 2000-2016



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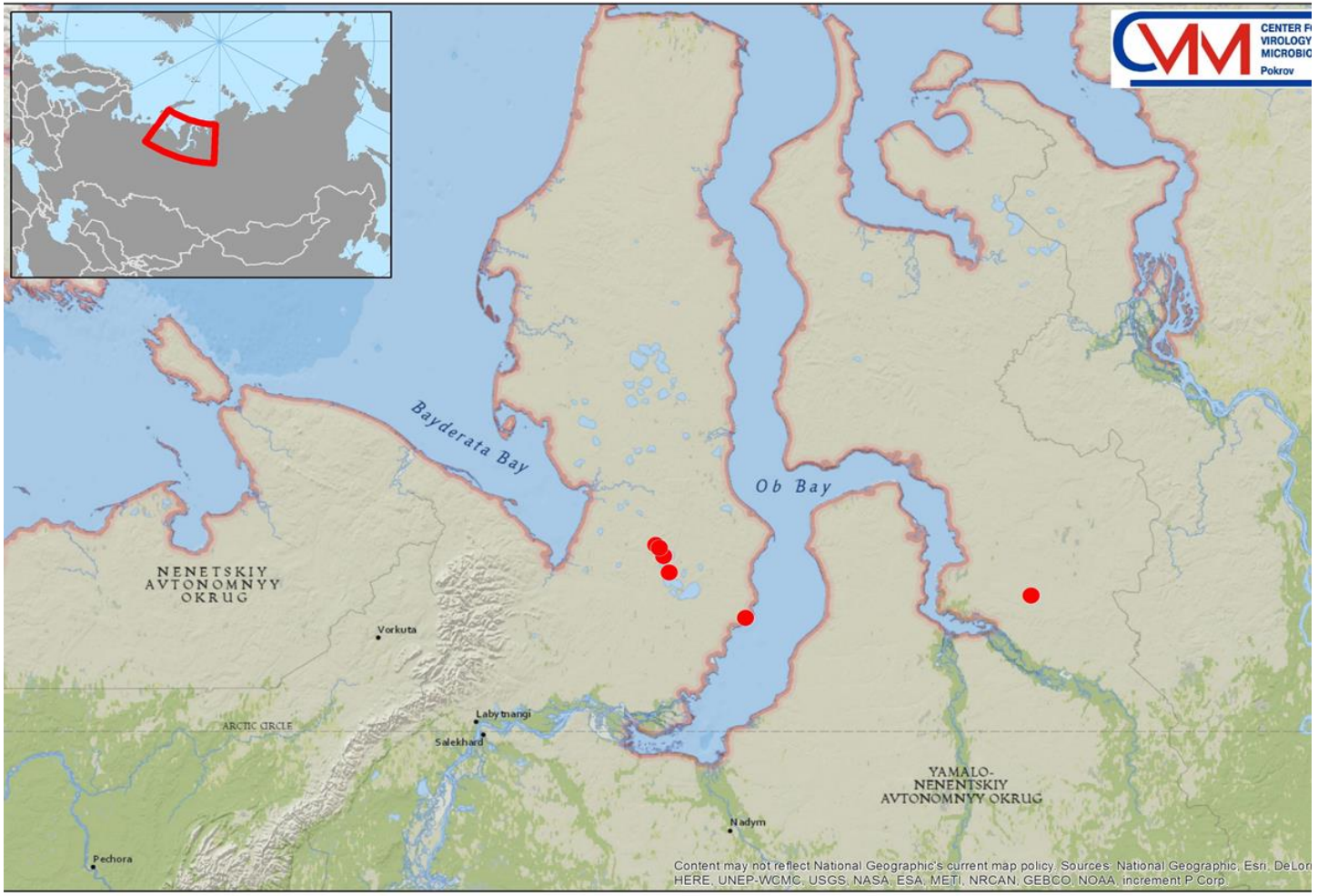
In 2016 Six outbreaks of anthrax were notified in a reindeer population in 2 districts of the territory of Yamalo-Nenets Autonomous Okrug, in which 2657 reindeer dead



Anthrax on animals in 2016-2018

Epizootic of anthrax in the Yamal-Nenets Autonomous District 1/4

On July 16, 2016, the Public-Safety Answering Point of the Yamal District received information from the reindeer herders of Brigade 13 of the municipal reindeer husbandry "Yarsalinskoye“ about loss of the domesticated reindeer population of reindeer herders who were located 20 kilometers away from the encampment of Brigade No. 13 of the MPS "Yarsalinskoye"

Epizootic of anthrax in the Yamal-Nenets Autonomous District 2/4

- On July 17, 2016, specialists of the Veterinary Service of the Yamal-Nenets Autonomous District organized a trip to the alleged encampment of private reindeer herders
- At the time of collection of the anamnesis, it was noticed that about 60 heads of reindeer died during the period from 01 to 16 July 2016. In the beginning of July, losses were about 1-3 heads of animals per day; On 15 and 16 July, the index case was already 20 heads per day. The increase in the number of fallen reindeer occurred after transhumance

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Epizootic of anthrax in the Yamal-Nenets Autonomous District 3/4

- On July 20, 2016, samples collected from the fallen reindeer belonging to the private reindeer herder Salinder G.D., submitted to the Tyumen Regional Veterinary Laboratory, Confirmed on July 25, 2016
- July 24, 2016 selected samples were additionally sent to the Federal Research Center for Virology and Microbiology in Pokrov. Confirmed on July 25, 2016

Epizootic of anthrax in the Yamal-Nenets Autonomous District 4/4

- On July 25, 2016 inquiry on the establishment of restrictive measures (quarantine) in the reindeer herding territory of private reindeer husbandry in the area of Lake Pisyot in the Yamal district was sent to the Governor of the Yamal-Nenets Autonomous District
- On July 25, 2016, the decree of the Governor of Yamal-Nenets Autonomous District No. 181-R "On the establishment of restrictive measures (quarantine) in the territory of grazing of reindeer belonging to private reindeer husbandry in the area of Lake Pisoto in the Yamal district“ was signed and the Veterinary Service prepared a Emergency plan for anthrax outbreak control and eradication

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Local traditions – one of the risk factor

Clinical signs of anthrax in the field

- Animals became sluggish, separated from the herd and fell
- Discharge of white foam from the oral and nasal cavities sometimes the foam was pink or red.
- Corpses of fallen animals was well-fed
- External damage to the skins of dead animals was not detected
- Ulcers, erosion on visible mucous membranes were not observed

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Statistical data of animals dead from anthrax

female-reindeer	**50%**
reindeer-castrates	40%
youngsters	10%

A peculiarity of this outbreak was the involvement in the epizootic process of shepherd's dogs

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Potential risk factors for anthrax spreading

- Considering late diagnosis of anthrax, in the period from July to August 2016 reindeer antlers were actively collected for their subsequent processing into food additives and medicines
- According to the Federal Security Service during the outbreak were committed cases of cutting antlers from corpses of reindeer fallen from anthrax

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Risks in the spread of anthrax with raw materials of antlers

- Absence of veterinary control in the preparation of antlers
- A large number of people involved in the collection, transportation and handling of antlers
- Numerous illegal storage and artisanal drying points for antlers located on private farms, in garages and other objects within the boundaries of residential development
- Shipping of antlers by food transports

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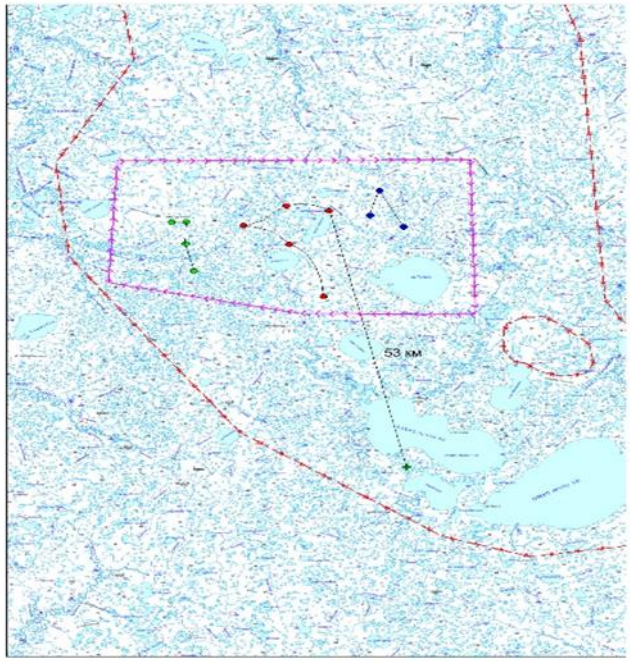
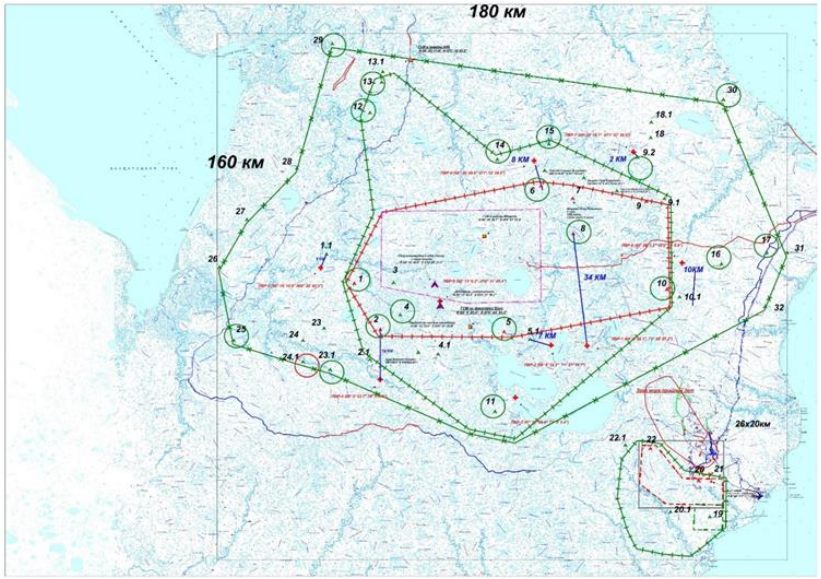
Changes in the boundaries of an outbreak and the threatened zone from beginning to the end of the epizootic

Beginning of the epizootic, July 2016



End of the epizootic, August 2018



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Map of the transhumance and location of the burial fields (threatened zone) in the Yamal-Nenets Autonomous District

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Factors contributing to the emergence of epizootic of anthrax in the Yamal-Nenets Autonomous District

- The absence of vaccination of reindeer against anthrax in the territory of Yamal from 2007
- In 6 districts of the Yamalo-Nenets Autonomous Okrug, 59 "burial places" (dead fields) of potentially contaminated by anthrax were registered, including 10 in the Yamal District were not defined before the outbreak
- Hot weather in June 2016 (above 30 degree Celsius)
- Insufficient of communication tools in the territory of the Yamal district

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Changes in legislation after the outbreak

- Taking into account the situation of nthrax epizootic, it was suggested to make a number of changes in federal regulation
- For example, “burial places " - the territory where the death of animals was noted, without clear boundaries of burial. The territory of “burial places " is marked on maps and is considered a threatened territory

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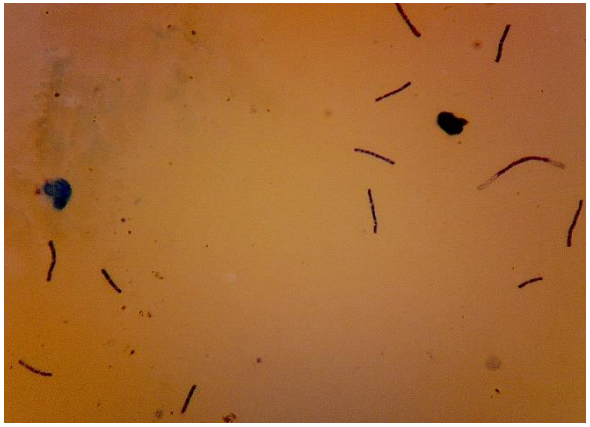
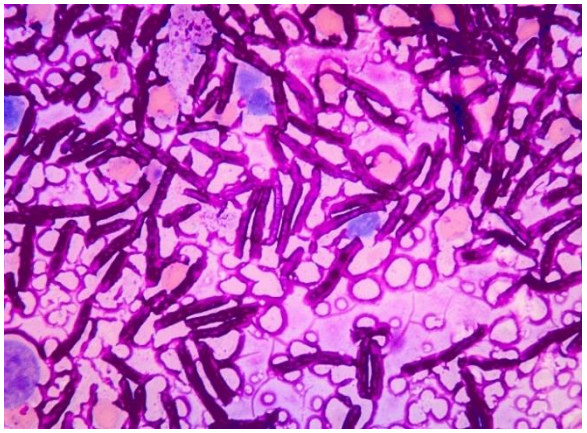
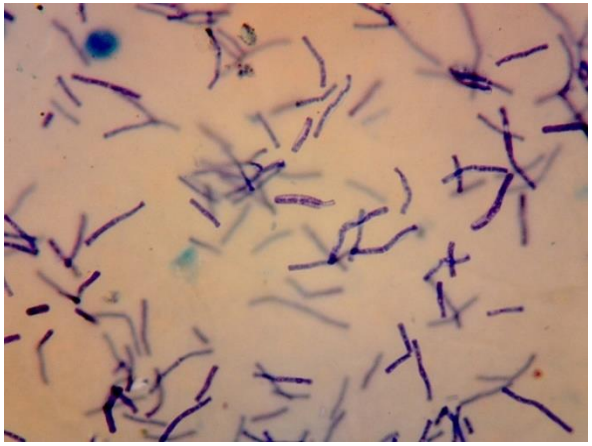
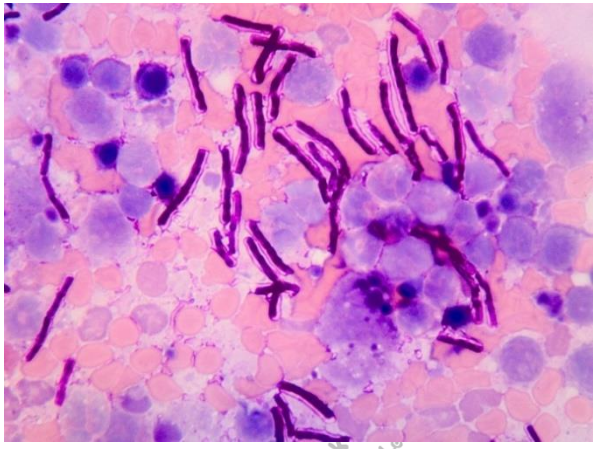
Microscopy of smears-prints of the pathological material of the ears of fallen reindeer and organs of bioassay mice









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Measures for the outbreak eradication

- Definition of control zone
- Design of the vaccination plan for animals in the outbreak and emergency vaccination for the reindeer
- Identification of transhumance routes and ways to remove vaccinated animals and humans to a safe area
- Calculation of the additional number of veterinary specialists needed for eradication of the outbreak
- Design of a disinfection plan
- Destroying of 2,485 carcasses of dears by incineration with subsequent disinfection of the area

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Measures for eradication of the outbreak

- Identification of storage sites for livestock products taken from persons in the quarantine zone
- Export ban on livestock products from the Yamal region
- Daily epi data collection (numbers and places of new dead reindeers)
- Vaccination and antibiotic treatment for persons who are at risk of working in an epizootic outbreak
- Providing Government financial support to compensate losses of the reindeer-breeders
- Data collection and mapping burial places on the territory of Yamal District
- Laboratory monitoring of environment (feed, soil, water)

Agencies that participated in the eradication of the outbreak of anthrax in the YAND

- Ministry of Agriculture of Russia
- Federal Service for Veterinary and Phytosanitary Surveillance
- Federal Service on Customers Rights Protection and Human Well-being Surveillance
- Ministry of Health of Russia
- Russian Emergency Ministry
- The Ministry of Defense of Russia;
- Federal Agency for Scientific Organizations

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Thank you for your attention!
info@vniivvim.ru