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WORLD ORGANISATION FOR ANIMAL HEALTH  
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## Inactivation of Residual Rinderpest Virus in Sera Potentially Containing Rinderpest Virus

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## 1. Purpose

The purpose of this document is to define how archive sera from animals infected or potentially infected with rinderpest virus (RPV) may be made safe to use by inactivation of any residual RPV. After inactivation, the sera will not be considered Rinderpest Virus Containing Material (RVCM). This SOP is for sera collected for the purpose of rinderpest surveillance, control, or research; and also for sera collected for activities not associated with rinderpest, from animals which for temporal and/or geographic and/or epidemiologic reasons could be considered as potentially exposed to rinderpest. It is the responsibility of both staff and management to ensure that such sera are appropriately inactivated to minimize the risk of accidental release of RPV. This SOP is not intended for disinfection or decontamination of RVCM for the purpose of disposal of samples. This SOP is for inactivation of RPV in samples which are to be subsequently retained for diagnostic, research, or other appropriate purposes.

## 2. Background

RPV is a negative-sense RNA genome virus of the morbillivirus family. It is the causative agent of rinderpest, a fatal disease of cattle capable of devastating epidemic spread. The incubation period ranges from 5 – 11 days and the disease is characterized by pyrexia, nasal and ocular discharges and necrosis and erosion of the nasal and oral mucosae. Animals develop diarrhoea, and death generally occurs between 7 and 12 days after onset of symptoms. RPV has poor environmental stability and is sensitive to inactivation by heat, desiccation and exposure to sunlight. The last confirmed case of rinderpest was in Kenya in 2001, and the world was declared free from rinderpest by the OIE and by FAO in 2011. Interruption of the chain of virus transmission was achieved by a global eradication programme coordinated by the UN Food and Agriculture Organization (FAO).

The cost and effort of eradication, and the global emergency and severe consequences that are likely to accompany a re-emergence or release dictate that the containment procedures for handling, packaging and shipping RVCM must be enhanced in the post-eradication era. RVCM, excluding material solely for vaccine production, must now be handled and held in BSL3 conditions.

Prior to the global eradication of rinderpest, a great numbers of serum samples were collected from animals infected with rinderpest, exposed to rinderpest, or living in areas where rinderpest was classed as endemic. Many such samples were collected for purposes that were not associated with rinderpest, and collectively they represent an important archive for research, surveillance and control of other serious animal pathogens and transboundary animal diseases.



Sera from animals infected or potentially infected with RPV are considered to be RVCM, however the risk of RPV presence in sera is considered negligible. Furthermore, heat-treatment has been proved to be very efficient in mitigating such risk.

RPV is non-infectious for humans and poses no direct hazard to human health. Containment and handling regulations are to prevent the accidental transport and introduction of the virus to susceptible animals.

### 3. Training

Training is the responsibility of the holding institution.

### 4. Procedures for inactivation of rinderpest virus in serum samples

The accepted method for inactivation of residual RPV in sera without disposal of the sample is by heat-treatment at a minimum temperature of 56<sup>0</sup>C for 2 hours.

For rapid transfer of heat, incubation in thin walled tubes in a heat block is preferable. This is not necessary when 15 minutes is added for initial heating of the material. Frozen samples must completely thawed, and all samples equilibrated to ambient temperature prior to heat-treatment.

1. Pre-warm the heat block or water bath (it should be 56 °C before inactivation).
2. Place samples in the heat block or water bath (the meniscus of the sample should be below the top of the heat block or the water level in the water bath).
3. For a water bath at least 15 minutes extra should be added for pre-heating the sampling, during pre-heating the samples are mixed by gentle mixing.
4. Incubate the sample for 2 hours at 56 °C
5. At the end of the incubation period the samples are dried and labelled similar to the label shown below

2 Hour heat inactivation 56 °C

Date:

Signature responsible person:

6. Samples are now stored in different place as the original samples to avoid confusion.



## 5. Documentation

Heat treatments of material should be documented. The documents should be kept for an appropriate period (> 10 years) and contain information on the material that is treated by heat inactivation (sample type, sample date, animal sampled, experiment number), the day of heat inactivation specifying the duration of the heat treatment, and the signature of the responsible person.