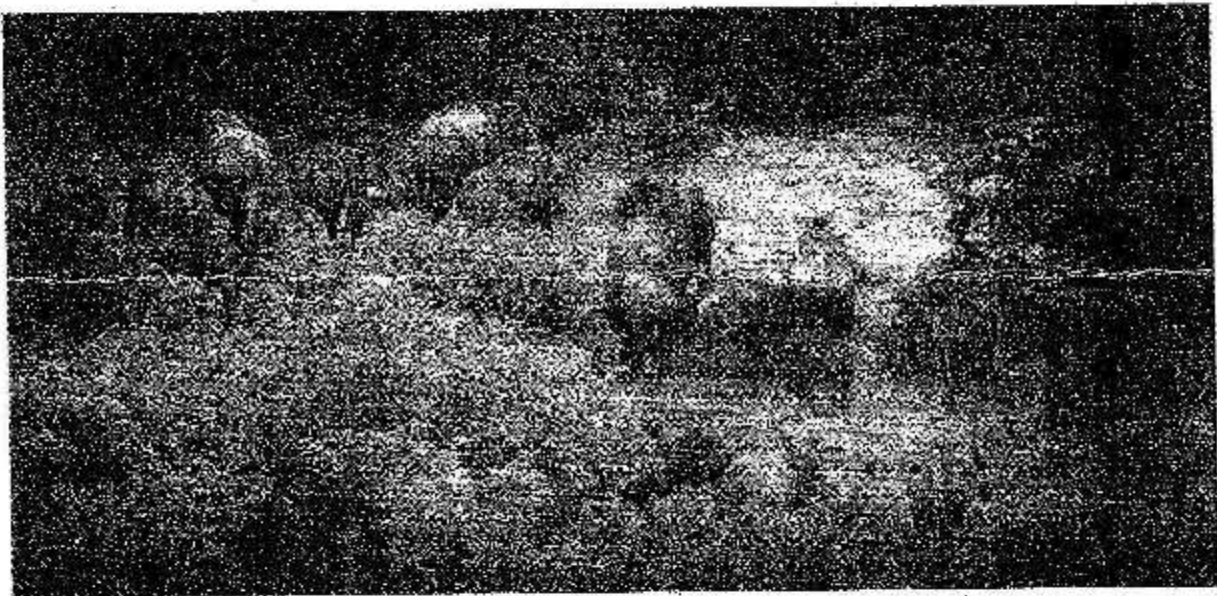


A Standard Operating Procedure for

# Dealing with Captive and Wild Elephant mortalities due to Anthrax and suspected cases of anthrax



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Project Elephant Division, Ministry of Environment, Forest and Climate Change, Government of India



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# Standard Operating Procedure for Dealing with Captive and Wild Elephant Mortalities Due to Anthrax and Suspected Cases of Anthrax

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## 1. Reference

In response to sporadic deaths of wild elephants, reportedly due to anthrax and the ubiquitous threat that it poses to elephants and other wildlife populations, an expert committee was constituted vide F. No. 2-4/2012 -PE dated 21/08/17 to suggest ways to deal with anthrax and EEHV (Elephant endotheliotropic herpes virus) cases pertaining to elephants.

## 2. Purpose of this SOP

The main objective behind preparation of this SOP is to ensure that the carcasses of elephants suspected/diagnosed with anthrax are disposed off in a scientific as well as transparent manner to prevent any spread of anthrax to other wildlife populations.

## 3. Short summary

This Standard Operating Procedure (SOP) attempts to provide minimum steps, which need to be undertaken at the field level (reserve forest, Protected Area, revenue land, tiger reserve, elephant reserve or elsewhere) for disposing of elephant carcasses suspected to be affected by anthrax.

## 4. Scope of the SOP

The SOP shall be useful to the field staff of the Forest Department in elephant range Forest Divisions and other areas elephants are likely to be affected by anthrax/suspected anthrax.

## 5. Authorities responsible for implementation of SOP

The overall responsibility at the State level would rest with the Chief Wildlife Warden of the concerned state.

- i. In the case of Tiger Reserves, the Field Director would be responsible in the case of a tiger reserve.
- ii. For a Protected Area, (National Park/Wildlife Sanctuary), the concerned Protected Area manager would be responsible.
- iii. In case of other areas revenue land/conservation revenue/community reserve/township) the Wildlife Warden, as per the Wildlife (Protection) Act, 1972, or Divisional forest Officer/Deputy Conservator of Forests (under whose jurisdiction the area falls), would be responsible.

6. Line of action required in dealing with cases of suspected anthrax in elephants

- i. Constitution of a team to oversee assessment and disposal of elephant carcasses diagnosed / suspected to be affected by anthrax
  - a. Protected Area manager in case of National Parks and Wildlife Sanctuaries. The Field Director in a Tiger Reserve/DCF in whose jurisdiction the area falls.
  - ✓ b. A nominee of the Chief Wildlife Warden of the state
  - c. A representative of the NTCA if the incident pertains to a Tiger Reserve
  - ✓ d. A representative from the local Non-Governmental organization
  - ✓ e. Veterinarian of the Tiger Reserve/Protected Area, if any
  - ✓ f. District Veterinary Officer (DVO) or his representative, who should necessarily be a veterinarian from Animal Husbandry Department. A person from a teaching institute may be co-opted if required.
  - ✓ g. A representative of the local Panchayati Raj Institution
- ii. Assess if the elephant is suspected to have died due to anthrax by carefully examining the following external signs:
  - a. Bleeding from natural orifices (ears, mouth, eyes, genitalia, rectum, trunk) wherein blood is dark, tarry coloured and does not clot
  - b. Absence of rigor mortis or incomplete rigor mortis
  - c. Saw horse posture of carcass
  - d. Excessive bloating of carcass
  - e. Rapid decomposition/ putrefaction of carcass
  - f. Subcutaneous swelling/edema in cases of acute/chronic case of anthrax

It may be noted that the aforesaid signs may be detected / externally noted in the case of other diseases and conditions as well. Therefore, as a general precaution, carcasses should not be opened up if any of the external signs discussed above are observed. Decision of opening the carcass at the field level shall be taken by the DVO or his representative. Their decision would be deemed final.

- iii. Preventive Protected Equipment (PPE):
  - a. The personnel handling the carcass should wear appropriate PPE (indicative list with pictures is provided in Annexure 1) to safeguard themselves, as anthrax is a zoonotic disease
- iv. Steps for collecting biological samples:
  - ✓ a. Blood samples should be collected from the veins of ear pinnae by a personnel properly wearing PPE
  - ✓ b. Preparation of smear using the aforesaid collected blood sample for new methylene blue staining (Procedure outlined in Annexure 2).
  - ✓ c. Samples from natural orifices should also be collected.
- v. Disposal of carcasses suspected to have died due to anthrax:
  - ✓ a. Carcass in all Anthrax/suspected Anthrax cases should be burnt completely and under no circumstance be buried
  - ✓ b. Prior to burning, spray the carcass with 10% formalin solution
  - ✓ c. Area up to a radius of 50 metres around the carcass should be sanitized using a flame gun

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- ✓ Further, an area up to 50 metres around the carcass should be fenced off using appropriate material for a period of 6 months
  - ✓ Disinfect and guard off the water holes in which carcass was located to prevent disease spread to other wildlife.
  - ✓ No parts like tusk/tushes from carcass should be collected or preserved as it could also a source of infection to human as well.
  - ✓ To prevent damage and rupture of carcasses due to dragging or lifting by the machineries and escape of vegetative spores, carcasses should be burned at site of death to minimize the contamination.
  - ✓ Used equipment and contaminated inanimate object like boots, slippers and clothes of handlers should also be sanitized with 10 % formalin.
  - ✓ The area where carcass is disposed should be abundantly dusted/mixed with lime powder which will help prevent earthworms penetrating and bringing out the underneath soil.

7. Capacity building of staff and veterinarians is required in the following aspects

- ✓ Recognition of anthrax signs during post mortems. In this context, photographic reference material should be provided to all frontline personnel
- ii. ✓ Carcass disposal methods
- iii. ✓ Preventive actions to be taken consequent to carcass disposal.

8. Mapping spatial distribution of anthrax zones

It is advised to prepare a histogram of anthrax-related deaths using retrospective data overtime to forest disease occurrence. In addition, spatial distribution should be plotted to identify "anthrax zones" in the given area.

9. Continuous monitoring

- ✓ Field staff should perambulate their area and report any elephant death immediately. Staff should report the death of other species as well, which show symptoms that are similar to anthrax.
- ✓ Revisit the Anthrax carcass site after 6 months for soil testing.
- ✓ Based on the spatio - temporal dynamics of the disease, soil testing should be done yearly.
- ✓ In case soil samples test positive, sensitize the area in a 50m radius using 10% formalin followed by flaming.
- ✓ Advise the district livestock department to carry out ring vaccination programme to the livestock in the fringe areas of sanctuaries to safeguard the livestock as well as to reduce spill over of infection if affected animal die in the sanctuary limit.

10. Videography of elephant necropsy

It is advised that the entire post mortem process and elephant carcass disposal be video-graphed and supplemented with still photographs

31. Suggested test for confirmation

- i ✓ Culture of blood (collected from vein as well as from natural orifices), which is to be collected in whole blood collection tube over cold chain
- ii ✓ Polymerase Chain Reaction using blood. Blood to be collected in EDTA and transported over cold chain.



ANNEXURE I: Care taken while carrying out necropsy of anthrax suspected elephants



Photo-1: Using N95 respirator for autopsy



Photo-2: Carcass examination with protective gears



Photo-3: Double gloves and boots for elephant necropsy

## **New Methylene Blue Stain**

Stains used to demonstrate the reticulum of immature erythrocytes are called vital stains. New methylene blue stain has many other areas of use like in evaluating vaginal smears during estrus and examining for blood parasites like heartworm microfilariae. New methylene blue can be used in wet mount preparation or in the more conventional air dried mount.

### **DIRECTIONS FOR USE**

Reticulocyte count/Heartworm screen

- 1.) Two drops of blood and an equal amount of stain are left mixed for 15 to 20 minutes in a small test tube. A slide is then prepared from the mixture in the usual manner. The reticulum will stain intensely blue and the erythrocytes are seen as ghost outlines. The reticulocyte count is expressed in percentage after counting 500 RBCS.

Dry unfixed blood or cytology.

- 2.) One drip of stain is applied evenly over the dried film. The slide is immediately ready to read. Also since the stain is contained in physiologic saline, the film is not permanent and will only last a few hours.

Contents: 60ml.  
Catalog #J-324A

**GENTLY SHAKE BEFORE USE  
KEEP COVERED  
STORE AT ROOM TEMPERATURE**

Jorgensen Laboratories, Inc.  
Loveland, CO 80538