



STATE OF NEW JERSEY,  
DEPARTMENT OF LABOR & INDUSTRY

**[REDACTED]** Commissioner  
**Percy A. Miller, Jr.**

RULES AND REGULATIONS

*governing the*

PREVENTION OF ANTHRAX

IN INDUSTRY

*Bureau of Engineering and Safety  
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## FOREWORD

Anthrax is a communicable disease caused by a rod shaped, spore forming bacillus (B. Anthracis), that is Gram-positive and non-motile. This type of bacteria belongs to a small group of disease organisms which form spores that survive adverse conditions such as heat, chemicals or light. In this (spore) form, B. Anthracis may be found on animal skins hides, horse, cow and goat hair, wool, bones, pigs bristles, carcasses as well as dried blood, bones and other animal products.

Anthrax is a compensable occupational disease and these rules are promulgated by the Commissioner in order to control and prevent its occurrence.

The danger of Anthrax is usually greatest from animal products imported from the Orient, India, Near East, South America and Europe, however, it is also known to exist in the U. S. A. There are no interstate quarantine laws nor Federal disinfection regulations at present, excepting those pertaining to bristles and hair for shaving or lather brushes.

Sanitary working conditions, personal cleanliness and prompt medical control are among the best means for prevention of this disease.

## EXTRACTS OF LABOR AND COMPENSATION LAWS

R. S. 34:1-20 ..... *The Commissioner may make and publish rules and regulations not inconsistent with the law as he shall deem necessary to enforce the provisions of this title.*

R. S. 34:6-31 ..... *Willful self-exposure to occupational diseases shall include:*

1. Failure or omission to observe such rules and regulations as may be promulgated by the Department of Labor and posted in the plant by the employer, tending to the prevention of occupational diseases;
2. Failure or omission to truthfully state to the best of the employees knowledge, in answer to inquiry, made by the employer, the location, duration and nature of previous employment of the employee in which he was exposed to any occupational disease as herein listed.

### SECTION 1 - PURPOSE AND SCOPE

- 1.1 *Purpose:* The purpose of these rules and regulations is to carry out the intent and requirements of the law and to govern the controls and means to prevent the contraction of anthrax in places of employment.

### SECTION 2 - DEFINITIONS

- 2.1 *Anthrax* - An infectious disease caused by a bacillus and characterized by skin, lung or intestinal manifestations depending on the portal of entry.

*Bacillus* - A rod-shaped Gram-positive, non-motile bacterium forming endospores leading to or causing Anthrax

*Disability* - Means the state of an employee being actually incapacitated from performing his work in the last occupation in which he was injuriously exposed to the hazards of such disease. The word "disablement" means the event of being so incapacitated.

*Adequately: effectively or securely* - Shall mean conditions subject to determination by the Commissioner.

*Substantial* - Shall mean construction of such strength and workmanship that the assembly shall under normal or reasonably foreseen conditions or circumstances resist usage, wear, shock and deterioration.

*Commissioner* - Commissioner of Labor of the State of New Jersey or any of his authorized representatives.

*Department* - New Jersey Department of Labor.

*Shall, should* - Where the word "shall" is used the requirement is mandatory; where the word "should" is used, the requirement is recommended.

### SECTION 3 - GENERAL REQUIREMENTS FOR ANTHRAX CONTROL

- 3.1 *Compliance* - All operations shall be conducted so that there shall be compliance with these rules and regulations. Where an anthrax hazard is deemed by the Commissioner to exist an adequate method of control shall be provided.
- 3.2 *Employers Responsibility* - The employer shall be responsible for the prevention of anthrax and compliance with the requirements herein set forth.
- 3.2.1 All imported wool, hides, hair, furs and other crude materials derived from animals shall be considered infected with anthrax spores and should be treated accordingly.
- 3.2.2 Infected imported bales of the materials mentioned in the preceding paragraph shall be opened in an adequately separated area and any operation, machine or process which causes dust which may be injurious to employees shall be provided with exhaust ventilation and suitable means for collection of all dust and dirt. Such waste material shall be incinerated.
- 3.2.3 Factory buildings or workshops shall be well lighted and ventilated. Floors and walls should be of such type and materials as can be easily washed, and if necessary, disinfected.

- 3.2.4 Vacuum type cleaning equipment or some method which causes a minimum of dust dispersion shall be used for cleaning the plant and removing dust.
- 3.2.5 A medical department or prompt medical service which is efficient in diagnosing and treating anthrax cases shall be provided.
- 3.2.6 Adequate personal protective equipment shall be provided without cost to the employee in those operations requiring protective clothing or respiratory equipment. Such clothing or equipment shall be kept clean and in good repair.
- 3.2.7 All tables, workbenches, seats and stools should be scrubbed daily with soap and hot water.
- 3.2.8 Adequate dressing and washrooms with separate lockers for street and work clothes, located outside the room where manufacturing operations are conducted shall be provided all employees, in accordance with the Department regulations governing sanitation.
- 3.2.9 An adequate supply of hot and cold running water, toilets, showers and drinking facilities shall be provided in accordance with the Department regulations governing sanitation.
- 3.2.10 No food should be permitted in the work rooms.
- 3.2.11 Informative talks and or printed matter should be made available to all employees indicating their susceptibility to anthrax and the safe methods of control and safe working practices that must be observed for proper prevention.
- 3.2.12 Good housekeeping shall be practiced in order to maintain a clean shop. No dry sweeping shall be permitted.
- 3.3 *Employees Responsibility* - The employee shall be required to observe and perform the following safety measures to prevent infection.
- 3.3.1 Employees shall wash face, hands, neck and arms before eating and should not eat in work rooms.
- 3.3.2 Everyone employed in a potentially hazardous area should take a hot shower after work.
- 3.3.3 Individuals shall use the protective equipment provided for their protection, and shall not use the equipment of others.
- 3.3.4 Everyone shall report spots or pimples and consult a physician or nurse who shall be informed of the occupation and the materials handled by the patient.
- 3.3.5 Employees shall carefully follow all health and safety instructions and cooperate with their employer to reduce the hazard of anthrax infection.
- 3.3.6 No worker having an open cut, scratch, wound, or abrasion shall work in hazardous areas until the skin has healed, or is adequately treated and protected by proper medical authority.

#### SECTION 4 - ADDITIONAL REQUIREMENTS & MODIFICATION

- 4.1 Every employer shall keep a record of all cases of employees receiving medical attention and shall include physician's certificates permitting examined personnel treated for possible anthrax to return to work. Such cases shall be reported to the Commissioner.
- 4.2 When strict compliance with all of the provisions of these regulations would involve undue hardship, the Commissioner may, upon application in writing, permit modification of the requirements when protection equally effective as that required by these regulations has been provided. The application for modification of any of these regulations in any particular case shall be accompanied by a full statement of the existing conditions and the reasons for requesting such modification. Any modification granted under the provisions of this paragraph shall be limited to the particular case covered by the application for such modification.
- 4.3 In cases where all raw materials are sterilized by an approved method, modification of requirements may be allowed by the Commissioner if in his opinion reasonable protection for the workers is provided.

## APPENDIX

This appendix is not a part of these rules and regulations. It comprises a discussion of the rules and regulations and recommendations for ways and means of effectuation.

The hazard of anthrax infection exists wherever infected animals or animal products are processed, handled or stored. In man, the infection may enter the skin or the lungs or may infect the digestive tract and produce intestinal lesions. Human anthrax is mostly an industrial disease contracted through the handling of skins, hair or animals themselves.

In anthrax of the skin, the infection usually enters through slight abrasions, scratches, or small wounds especially on the forearm, hand, neck, or face. The earliest evidence of anthrax in the skin is an innocent looking small pimple or boil. Swelling of the infected area usually follows shortly thereafter and forms a malignant pustule. At this stage, the pimple or boil may be painless or may cause a burning and stinging sensation. Fever also occurs at this stage. Later general infection may result which may be fatal if not properly treated.

Woolsorter's disease, or anthrax of the lungs, appears to be due to the inhalation of anthrax spores. It is observed only among those who handle skins or who work with horsehair, wool or other raw materials from animals afflicted with anthrax. The symptoms are like those of pneumonia; this form is frequently fatal.

The mode of transmission in intestinal anthrax may be through infected meat and other food. The usual heat of cooking or even canning does not necessarily kill anthrax spores. Intestinal anthrax is rare, but when it does occur is rapidly fatal.

The anthrax spore, formed in the presence of oxygen, is exceedingly resistant to heat and external influences such as dryness and sunlight, and also to germicidal agents. Its resistance may be compared to the tetanus spore.

The incidence of anthrax in various phases of industry has increased appreciably during the last few years. For this reason, more strict industrial hygiene measures are essential to control the disease. In general, these measures are characteristic of three separate categories: (1) sterilization of the imported raw product, (2) individual and plant hygiene, and (3) medical control.

Various methods have been recommended for sterilization of the imported hides and hair. The ultimate method is that which provides a high degree of sterilization while not adversely effecting the material.

A process of disinfecting infected wool has been in successful operation in England since 1921. In general the infected wool is mechanically handled at all times throughout the disinfection processes. Any source of generated dust is exhausted, local or general, into the boiler furnace, where it is properly incinerated. The wool is fed into a series of five baths. The first three preliminary baths contain a slightly alkaline solution at 100 degrees F. which washes the material prior to its entry into the last two disinfecting baths containing a 2 to 2½ percent solution of formaldehyde.

As the wool is discharged from the last bath, it is dried in a temperature of 220 degrees F. although the wool itself does not reach a temperature greater than 160 degrees F. From the dryer, the wool is cooled in a current of cold air and is then re-baled for future handling. The output of one sterilization unit is rated at 1,000 lbs. of wool per hour.

Recent laboratory experiments on the heat resistance of spores of *Bacillus Anthracis* and related aerobic bacilli in hair and bristles indicate that the spores are probably not as resistant to heat as previously reported by a few early investigators. For example, a temperature of 248 degrees F. completely sterilized the most resistant strain of *B. subtilis* in 20 minutes. The reliability of using steam pressure sterilization techniques is maintained by limiting the diameter of the hair bundles, properly packing the autoclave, and measuring the temperature in the exhaust vent of the autoclave instead of the entrance valve.

The tannery problem is a much more difficult one. Various methods have been suggested for the disinfection of hides and skins, but none of them have proved entirely satisfactory. The three important essentials of a generally satisfactory method are: (1) sureness of action, (2) lack of damage to materials, and (3) economy; this is a combination which is hard to meet. Many efficient germicides, regardless of cost, would so affect animal tissues as to make them untannable. Steam is out of the question, as is formaldehyde, because of physical

action on skins. Chlorine softens skins too much. Phenol and mercuric chloride are too slow and uncertain in useable dilutions. The Austrian Schattenfroh method which requires soaking for forty-eight hours at room temperature in a 2% hydrochloric acid in 10% sodium chloride solution is effective, as in a shorter period at a higher temperature. This method is recommended by the U. S. Bureau of Animal Industry but is not insisted upon and many tanners insist that satisfactory tanning is accomplished only at increased expense and trouble. A method of using a 1% or 0.5% iodine solution for complete disinfecting skins without injury has been proposed. However, the cost of iodine made its use prohibitive. Other methods, milk of lime, bichloride of mercury, solutions have not proven satisfactory for one reason or another.

Plant hygiene is closely related to industrial engineering in relation to plant lay-out of operation and material handling. This requires isolation of potentially hazardous operations, dust control, local and general exhaust systems, proper disposal of all waste products, efficient and adequate use of machines or methods to keep working areas clean and free from accumulated waste products, provisions for clean and separate lunch rooms, and provisions for adequate medical facilities.

Personal hygiene depends upon the education of the individual worker so that he effectively uses the various protective devices and faithfully follows the plant's hygienic rules and regulations.

Medical control involves prompt treatment of all injuries to prevent infection, and immediate diagnosis and therapy where infection has occurred. All cuts, scratches, abrasions, or sores whether or not they occur in the course of treatment, should be referred promptly to adequately trained medical personnel.