

Salmonella enterica (choleraesuis) subsp. enterica

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GENERAL INFORMATION

Salmonella enterica (choleraesuis) subsp. enterica

For further information on the current nomenclature of the species see [List of Prokaryotic Names with Standing in Nomenclature](#)

Document Number: 825888

Category: Bacteria

Risk group: 2
 Biological agents that can cause human disease and might be a hazard to employees; they are unlikely to spread to the community; there is usually effective prophylaxis or treatment available.

References: Note Z:
 Bacteria bearing the "Z" identifying tag in the present TRBA encompass the zoonotic pathogens named in Directive 2003/99/EC and other bacteria falling under B.4 Annex I of Directive 2003/99/EC but not specifically named there. These identifying tags originate from the BG informative document "Safe biotechnology – Classification of biological agents: prokaryotes (bacteria and archaea)" of the German Social Accident Insurance Institution for the raw materials and chemical industry (BG RCI).

Zoonotic pathogens are all viruses, bacteria, fungi, parasites or other biological units capable of causing zoonoses.

Zoonoses encompass all diseases and/or all infections which can be transmitted by natural routes directly or indirectly between animals and humans.

Footnote 1:
 Nomenclature according to Popoff, M.Y. & Leminor, L.E.: Genus XXXIII. Salmonella Lignières 1900, 389AL, pp.764-799, in: Garrity, G.M. (Editor-in-chief), Brenner, D.J., Krieg, N. R., Staley, J. T. (Editors of Vol. 2): Bergey's Manual of Systematic Bacteriology, 2nd Edition, Vol. 2 The Proteobacteria, Part B The Gammaproteobacteria. Springer, Dordrecht-Heidelberg-London-New York 2005.

Note: Footnote 1 in the new version (currently in preparation) of the "Prokaryotes" leaflet and of the [TRBA 466](#).

Footnote 2:
 Except *Salmonella Typhi* and *Salmonella Paratyphi* A, B, C.

OCCUPATIONAL SAFETY AND HEALTH

Protective measures | Inactivation/Decontamination | Occupational health care

PROTECTIVE MEASURES

The following protective measures apply to specific activities in laboratories, the husbandry of laboratory animals and biotechnological activities. For further information see [TRBA 100](#), [TRBA 120](#), [TRBA 500](#).



Technical measures

Where tasks intentionally involve biomaterials, their identity must be verified and documented routinely.

Protective measures are listed below that are generally to be taken when activities intentionally involve biological substances of risk group 2. For the biological substance referred to above, the risk assessment may indicate that additional precautions are necessary.

Areas in which the biomaterial is processed must be isolated from other areas and labelled with the 'Biohazard' warning symbol and protection level 2.

The doors of the area within which the protection level applies must open in the direction of the escape route and be equipped with an inspection window.

Where a health hazard posed by bioaerosols cannot be eliminated, the relevant activities must be performed in a microbiological safety cabinet (MSC). For detailed information on activities in MSCs, see leaflet B 011 of the BG RCI (German Social Accident Insurance Institution for the raw materials and chemical industry).

Wash basins, disinfectant dispensers, disposable towels and hand detergents must be available. Water faucets and disinfectant dispensers must be operable without the use of the hands.

Laboratories must offer suitable eyewash facilities.

All surfaces and areas that could come into contact with biological agents must be easy to clean, liquid-tight and resistant to detergents and disinfectants. A seamless wall-floor joint must be effected.

Windows and doors must be kept closed while work is in progress.

Work areas are to be maintained in a clean and tidy state. Only tools and devices that are actually needed may remain on the benches.

Pipettors must be provided and used. Mouth pipetting is not permitted.

If the use of pointed or sharp instruments cannot be avoided, they must be disposed of in suitable containers after use.

The release of biological agents must be minimised during the opening of technical equipment.

Catch basins must be in place to ensure that open sample containers are prevented from turning over during work operations.

The biomaterial must not be stored under conditions that favour its reproduction.

Clearly labelled, closed, rigid, liquid-tight and unbreakable vessels that can be disinfected from the outside must be provided and used for the in-house transport of biological agents.

Transport of biological agents outside the plant is subject to the regulations governing hazardous goods (class 6.2).

Suitable containers must be available for the collection of waste that constitutes biological agents.

Organisational measures

The number of staff must be limited to the actual requirements, and access to the area in which the protection level applies must be restricted to authorized persons.

An instruction manual must be prepared. Prior to beginning their activity and subsequently at least once a year, verbal and work-related instruction must be provided to staff members to familiarise them with the hazards and protective measures as laid down in the instruction manual. DGUV Informative Publication 213-016 (BGI/GUV-I 853) contains a prototype instruction manual on 'activities involving biological agents of Risk Group 2' in accordance with the German Ordinance on Biological Substances.

The instruction process must also include advice in occupational medicine and safety.

Restrictions of employment for expectant and nursing mothers must be observed in accordance with the German Maternity Protection Act.

Injuries must be reported immediately to the person in charge.

Personal protection - body protection

Suitable protective clothing must be worn (at least lab coats).

During the processing of infectious tissues, the protective clothing must be complemented by disposable aprons.

Remove protective clothing when leaving the area in which the protection level applies.

Keep protective clothing separate from normal clothing.

Personal protection - hand protection

Depending on the results of the risk assessment, the use of protective gloves may be mandatory for certain activities.

The skin protection plan must be observed.

Personal protection – eye and face protection

Depending on the results of the risk assessment, protective goggles or face protection may be necessary.

Personal protection - respiratory protection

Depending on the results of the risk assessment, a respiratory protection device may be necessary.

Respiratory protection equipment must be worn for only a limited period of time. This period must be defined in the risk assessment.

Occupational hygiene

The consumption and storage of food and alcohol/tobacco in the protection level area is forbidden.

The wearing of jewellery, watches and rings on the hands and the forearms is not permitted.

Fingernails are to be kept short.

Following completion of work and prior to leaving the work area, hands are to be disinfected, washed and re-moisturised according to the skin protection plan.

Skin protection and skin care agents must be made available in contamination-proof containers.

Contaminated protective clothing and shoes are to be collected safely and decontaminated, cleaned and disposed of centrally.

Work clothing must not be cleaned at home.

The cleaning regulations for employees, equipment and workplaces must be defined in a hygiene plan.

Insects and pests in the working area must be regularly controlled.

Reference: 00001 99999

INACTIVATION / DECONTAMINATION

Disinfection measures must be carried out by proven means and procedures. For detailed information see the following lists: DVG - Animal Husbandry (German Association for Veterinary Medicine, Accommodation and Husbandry of Animals), DVG - Food Area, [VAH](#) and RKI. Officially ordered disinfection measures (decontamination) required by the authorities may be carried out only with disinfection agents included in the [RKI list](#).

Furthermore, the Industrie Association Hygiene and Surface Protection ([HO](#)) supplies lists of statements of companies on the efficacy of different products. The information in this register is based on statements of the respective companies.

A suitable autoclave must be available in the same building.

Externally contaminated test vessels must be disinfected before opening.

Work areas and working equipment must be decontaminated before the performance of maintenance measures. For further information see [TRBA 100](#) ('Technical Rules for Biological Agents').

Contaminated solid wastes, liquid cultures and suspensions containing pathogens are to be collected in appropriate containers and deactivated.

Reference: 00001

OCCUPATIONAL HEALTH CARE according to [ArbMedVV](#)

Optional health care:

In the case of tasks specifically involving contact and tasks involving incidental contact with biological agents classed as Risk Group 2 under the Biological Agents Ordinance (Biostoffverordnung, [BioStoffV](#)) or which involve a comparable risk, the employer must offer an optional health care. This does not apply when on account of the risk assessment and on account of the protective measures taken it can be assumed that there is no risk of infection.

An optional health care must also be offered if as a result of the exposure to biological agents

- a serious infectious illness is to be expected and post-exposure prophylactic measures are possible, or
- an infection has resulted.

LINKS

Robert Koch Institute (RKI)

[Information provided by the Robert Koch Institute for this pathogen](#)

World Health Organization (WHO)

[Information provided by the World Health Organization to this pathogen](#)

World Organisation for Animal Health (OIE)

[Information provided by the World Organisation for Animal Health](#)

Public Health Agency of Canada (PHAC)

[Information provided by the Public Health Agency of Canada for this pathogen](#)

[Information provided by the Public Health Agency of Canada for this pathogen](#)

Centers for Disease Control and Prevention (CDC)

[Information provided by the Centers for Disease Control and Prevention for Salmonellosis \(nontyphoidal\)](#)

[Information provided by the Centers for Disease Control and Prevention for this pathogen](#)

European Association of Zoo and Wildlife Veterinarians (EAZWV)

[Information provided by the EAZWV \(European Association of Zoo and Wildlife Veterinarians\) for this pathogen](#)

Further Links:

[Information provided by the Bundeszentrale für gesundheitliche Aufklärung - BZgA \(Federal Center for Health Clarification\) for salmonella \(only in German\)](#)

[Bad Bug Book](#)

[Information provided by the Center for Food Safety and Public Health, Iowa State University](#)

[Information provided by the Center for Food Safety and Public Health, Iowa State University](#)

[Information provided by the U.S. Food and Drug Administration](#)

[Compendium of Measures to Prevent Disease Associated with Animals in Public Settings](#)

[National Research Platform for Zoonoses - Pathogen profile non-typhoidal salmonellae](#)

REFERENCES

[General information](#) | [Occupational and health protection](#) | [Links](#) | [References](#)

Quelle: 00001

Informationen aus den Technischen Regeln für Biologische Arbeitsstoffe, insbesondere aus:
Information from the technical rules for biological substances, in particular from:

- [TRBA 100](#)

Schutzmaßnahmen für Tätigkeiten mit biologischen Arbeitsstoffen in Laboratorien; Ausgabe:
Oktober 2013, geändert 2014

Protective measures for activities involving biological agents in laboratories; Edition: October 2013,
amended 2014

- [TRBA 120](#)

Versuchstierhaltung; Ausgabe: Juli 2012, geändert 2017

Experimental animal husbandry; Edition July 2012, amended 2017

- [TRBA 500](#)

Grundlegende Maßnahmen bei Tätigkeiten mit biologischen Arbeitsstoffen; Ausgabe: April 2012
Basic measures to be taken for activities involving biological agents; Edition April 2012

Quelle: 01466

[TRBA 466](#)

Einstufung von Prokaryonten (Bacteria und Archaea) in Risikogruppen; Ausgabe: August 2015,
zuletzt geändert: GMBL Nr. 25-31 vom 14. August 2019, S. 478

Classification of prokaryotes (bacteria and archaea) in risk groups; Edition August 2015, last
amended August 2019

Quelle: 02014

Verordnung zur arbeitsmedizinischen Vorsorge ([ArbMedVV](#))

Ordinance on Occupational Health Care ([ArbMedVV](#))

Quelle: 99999

Angabe des Bearbeiters

Indication of the author

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