

Information on Ebola

03rd September, 2014

This informational letter contains basic information on Ebola and links to additional references. Please keep yourself up-to-date on the current situation by reading the web pages listed in this document.

Current information on the Ebola virus as well as behavioral recommendations can be found on the following websites:

World Health Organization:

<http://www.who.int/mediacentre/factsheets/fs103/en/>

European Centre for Disease Prevention and Control:

http://www.ecdc.europa.eu/en/healthtopics/Ebola_marburg_fevers/information-travellers/Pages/information-travellers.aspx

Centers for Disease Control and Prevention

<http://www.cdc.gov/vhf/Ebola/about.html>

Robert Koch Institute

<http://www.rki.de/DE/Content/InfAZ/E/Ebola/Uebersicht.html#doc5045280bodyText3>

Instructions for travelers can be accessed, for example on the website of your country's Foreign office (e.g. for Germany):

http://www.auswaertiges-amt.de/DE/Laenderinformationen/SicherheitshinweiseA-Z-Laenderauswahlseite_node.html

The following information about Ebola is based on the facts and details given from the above-mentioned institutions.

What is Ebola?

Ebola is a rare, often fatal virus originating in tropical Africa and associated with symptoms of hemorrhagic fever. This means both internal and external bleeding (hemorrhages) of the body. The mortality rate is around 90%. However, the risk of infection for people without any direct contact to those infected is very low.

What are the symptoms?

The illness begins suddenly with unspecified symptoms such as fever, feelings of weakness, headache and muscle pains, conjunctivitis and sore throat. Additional indications can be nausea, vomiting, diarrhea and skin rash, leading up to liver and kidney failure. The incubation time (the period between contracting the virus and the occurrence of symptoms), is 2 to 21 days.

How is the virus transmitted?

The virus is transmitted by direct contact with blood and bodily fluids of an infected person or animal. The virus can also be transmitted via contaminated objects, such as needles. Unprotected contact to infected corpses can also result in the spread of the virus.

What preventive measures are there?

Currently, there are no vaccines or specific therapy for Ebola. The risk of an Ebola infection when travelling is very low, but non-essential travel to affected countries is not recommended.

The most effective protection against transmission is to avoid contact with the blood and bodily fluids of an infected person. In case of contact, the affected parts of the body must be washed immediately with soap and water and treated with disinfectant. In case of close contact with infected people, wearing personal protective equipment (PPE) and the observance of strict hygiene are indispensable.

The Robert Koch Institute provides information on suitable protective equipment to be used and worn when in contact with infected persons:

http://www.rki.de/DE/Content/Infekt/Biosicherheit/Schutzmassnahmen/Schutzkleidung/Schutzkleidung_node.html

A comprehensive guideline on "Interim Infection Prevention and Control Guidance for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings, with Focus on Ebola" is available at the WHO website:

<http://www.who.int/mediacentre/factsheets/fs103/en/>.

Additional information on protective measures when dealing with patients infected by viruses from risk group 4 (e.g. Ebola virus) is contained in Appendix 1 of the Technical Rules for Biological Agents TRBA 250 (for PPE, see item 1.4):

http://www.baua.de/de/Themen-von-A-Z/Biologische-Arbeitsstoffe/TRBA/pdf/TRBA-250.pdf?__blob=publicationFile

However, wearing protective equipment alone is no guarantee for protection against bacteria, viruses or biologically-contaminated fluids! Only correct dressing and undressing as well as thorough disinfection, in addition to wearing protective equipment, protects the wearer from possible infection and spread of contamination.

The suitable protective equipment should always be selected on site after individual risk analysis.

Respiratory protection

Until now there are no indications of transmission of the virus from inhalation. However, infection may be spread by the mouth, nose and eyes from fluid splashes or drops such as the aerosols released when coughing, sneezing or as a consequence of medical treatment methods. The risk of Ebola entering the respiratory system can be reduced by using suitable respiratory protection.

Particle filtering half masks (FFPs) (EN 149:2001) are available in different types and protection classes. Masks of the highest protection class FFP3 provide a higher degree of protection than masks of protection class FFP1 or FFP2. They are intended for single use only and cannot be disinfected. Types with exhalation valves reduce breathing resistance, but only models without exhalation valves can be fluid resistant.

Suitable in protection class FFP3 for protective equipment compliant with the recommendation of RKI type 1, infection protection set

Dräger type: X-plore 1730 FFP3 NR D, without valve, fluid-resistant according to ASTM F1862

Also suitable in protection class FFP2 or NIOSH N95 in accordance with the recommendation of the WHO as per the above-mentioned guideline. "Interim Infection Prevention and Control Guidance for ..." for selected activities within the medical field. Various Dräger models are available in these protection classes.

In contrast to particle filtering half masks (FFP's), **half masks** (EN 140) can be disinfected and can therefore be used repeatedly. They can be combined with particle filters of protection class P3. The fit of the mask to the face can be improved by individual size selection of the mask body.

Dräger half masks: X-plore 3300 or 3500, available in three sizes S, M, L

Note for countries in the approval area NIOSH instead of EN: Comparable products with NIOSH-approval instead of EN are half masks with particle filters with the protection class P100.

In addition to protecting the airways, **full-face masks** (EN 136) also provide eye protection. They can be disinfected and can therefore be used repeatedly. They can be combined with particle filters of protection class P3 or with combination filters ABEK-P3, whereby a filter with the ABEK classification can also absorb gases arising during the decontamination phase. A full-face mask usually has a better sealing line between the mask and face compared to a half mask or a particle filtering half mask (FFP). Normally, a full-face mask also makes it easier to seal the transitional areas between the mask and the protection suit.

Suitable for protective equipment according to the recommendation of the RKI type 2, protection suit with mask and filter attachment.

Dräger full face masks: X-plore 6300/6500 (single-filter system) or X-plore 5500 (dual-filter system)

Note for countries in approval area NIOSH instead of EN: Comparable products with NIOSH-approval instead of EN are full-face masks with particle filters of protection class P100 or combination filters Multi-Gas+/P100.

Eye protection

Suitable eye protection can reduce the risk of contracting the Ebola virus via the eyes.

Protective eyewear (EN 166) must be tight fitting and achieve a good seal between the eyes and the face. Full-view protective glasses with a soft and tight, all-round seal (without ventilation slots) are better suited to stop fluids, fluid splashes or airborne infectious agents than protective glasses that are open at the side and top. The latter should therefore not be used for protection against infection.

Suitable for protective equipment according to the recommendation of RKI type 1, infection protection set

Dräger type: X-pect 8515, goggles with an all-round seal, without ventilation slot

Full-face masks offer combined eye and respiratory protection. They have less transition points than a separate mask/glasses combination and therefore have a better sealing area around the face, protecting both the respiratory tract and eyes.

Suitable for protective equipment according to the recommendation of the RKI type 2, protection suit with mask and filter attachment

For Dräger types and further information on full-face masks, see Respiratory protection.

The following table provides an overview of Dräger products that comply with the specified guidelines:

Product type	Product	Approval	Protection category	Degree of protection		
				Respiratory protection*	Eye protection	Face protection
Respiratory protection products						
FFP	Dräger X-plore 1730 FFP3 NR D	EN 149	FFP3	Yes	No	No
Half mask + particle filter	Dräger X-plore 3300 or 3500 + Particle filter bayonet P3 R or Pure P3 R	EN 140 (half mask) + EN 143 (filter)	P3	Yes	No	No
Full-face mask + particle filter	Dräger X-plore 5500 + Particle filter bayonet P3 R or Pure P3 R	EN 136 (full-face mask) + EN 143 (filter)	P3	Yes	Yes	Limited
Full-face mask + combination filter	Dräger X-plore 5500 + Combination filter bayonet A1B1E1K1 Hg P3 R D	EN 136 (full-face mask) + EN 14387 (filter)	A1B1E1K1 Hg P3	Yes	Yes	Limited
Full-face mask + particle filter	Dräger X-plore 6300/6500 + Particle filter 1140 P3 R	EN 136 (full-face mask) + EN 143 (filter)	P3	Yes	Yes	Limited
Full-face mask + combination filter	Dräger X-plore 6300/6500 + Combination filter 1140 A2B2E2K2 Hg P3 R D	EN 136 (full-face mask) + EN 14387 (filter)	A2B2E2K2 Hg P3	Yes	Yes	Limited
<i>for countries in approval area NIOSH instead of EN:</i>						
Half mask + particle filter	Dräger X-plore 3300 or 3500 + Particle filter bayonet P100 or Pure P100	NIOSH	P100	Yes	No	No
Full-face mask + particle filter	Dräger X-plore 5500 + Particle filter bayonet P100 or Pure P100	NIOSH	P100	Yes	Yes	Limited
Full-face mask + combination filter	Dräger X-plore 5500 + Combination filter bayonet MultiGas+/P100	NIOSH	MultiGas+/P100	Yes	Yes	Limited
Protective glasses						
Full-view protective glasses	Dräger X-pect 8515 (without ventilation)	EN 166	345 FT (frames), 2C-1.2 D 1 FT (visor)	No	Yes	No

* within the scope of the indicated protection category

Protective clothing

Chemical protective suits are divided into six different types, according to the European standard which defines and classifies the performance requirements for protective clothing. A differentiation is made between gas-tight and liquid-proof, or simple particle protection suits.



According to recommendations of the Robert Koch Institute, chemical protective suits must comply with Category III, Type 1 (gas-tight) or Type 3 (liquid-proof) as per Guideline 89/686/EEC to protect against Ebola.

Additionally, for protection against viruses, bacteria or other microorganisms, the European standard EN 14126 defines special requirements for protective clothing and especially its material against infectious agents.

Dräger has various chemical protective suits of recommended Types 1 and 3 in its product range.

Category III, Type 3 protective clothing




The one-piece overall, with liquid-tight welded seams, are designed for use with mask-filter combinations, compressed air breathing apparatuses, powered-air purifying respirators, or compressed airline systems. The gloves and boots must be bonded together for a secure seal. If a full-face mask is not worn, the face must be additionally protected with the appropriate eye and respiratory protection. Ears can be protected with the integrated hood.

Product name	SPC 3800	Protec Plus TC / TF
Image		
Approvals		
EN 14605 (Type 3, 4)	x	
prEN 1511:1997 (Type 3, 4)		x
EN ISO 13982-1 (Type 5)	x	x
EN 13034 (Type 6)	x	
prEN 13034:1997-09 (Type 6)		x
EN 14126 (Protection against contamination from infectious agents)	x	x
Material data		
Abrasion resistance (EN 530)	Class 6/6	Class 6/6
Tear resistance (ISO 9073-4)	Class 2/6	Class 2/6
Puncture resistance (EN 863)	Class 2/6	Class 2/6
Resistance to penetration of infectious agents (EN 14126)		
Resistance to pathogens transmitted by blood	Class 6/6	Class 6/6
Resistance to penetration by infectious agents induced by mechanical contact with substances containing contaminated liquids	Class 6/6	Class 6/6

Furthermore, the SPC 3800 is configured with a soft face cuff that permits the full-face mask to be worn below or above the cuff to create a sealing line between the full-face mask and the suit. The suits are also configured with firmly attached gloves, so they do not need to be separately sealed. Due to the configuration with socks made of suit material, the wearer is protected by the material and can select the individual boot size.

Category III, Type 1 protective clothing

The one-piece chemical protection suits with liquid-tight and gas-tight heat-sealed seams are designed for use with compressed air breathing apparatus worn on the inside or on the outside of the suit. The protection suits have attached gloves and socks made of suit material, allowing the user to wear individual boot sizes or permanently attached boots.

Product name	CPS 7900	CPS 6900	CPS 5900
Image			
Approvals			
EN 943-1 (Type 1)	X	X	X
EN 943-2 (Type 1 for emergency responders; higher requirements)	X	X	X
EN 14126 (Protection against contamination from infectious agents)	X	X	-
Material data			
Abrasion resistance (EN 530)	Class 6/6	Class 6/6	Class 6/6
Tear resistance (ISO 9073-4)	Class 3/6	Class 4/6	Class 5/6
Puncture resistance (EN 863)	Class 3/6	Class 3/6	Class 2/6
Resistance to penetration of infectious agents (EN 14126)			
Resistance to penetration by infectious agents induced by mechanical contact with substances containing contaminated liquids	Class 6/6	- *	-
Resistance to penetration of contaminated liquids under hydrostatic pressure	Class 6/6	Class 6/6	-

**due to the results of EN943 along with the gas-tight construction of the suit, the additional tests were waived*

Additionally, Dräger offers protective suits with comparable performance features which allow the compressed air breathing apparatus to be worn on the outside of the suit.

In hazardous situations, in which emergency teams are subjected not only to biological risks but also to other hazardous substances, fully encapsulated protective suits with self-contained breathing apparatus are used (compressed air breathing apparatus or compressed airline system).

A compressed air breathing apparatus worn on the inside has the advantage that it is already protected against contamination, allowing easy disinfection.

Supplemental to this, additional breathing air can be fed into the compressed air breathing apparatus by an external air source (e.g. Airpack). The heavy physical and mental strain limit the time the suit can be worn.

An optional ventilation valve (depending on the suit type) allows the suit to be flushed to create a comfortable climate inside the suit. The additional ventilation prevents the risk of infectious agents entering the suit if its material is damaged.

Local requirements regarding maximum working times under a gas-tight protective suit must be observed.

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Thank you for reading this data sheet.

For pricing or for further information, please contact us at our UK Office, using the details below.



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Please note - Product designs and specifications are subject to change without notice. The user is responsible for determining the suitability of this product.