

Convention on the Prohibition of the Development, Production
and Stockpiling of Bacteriological (Biological) and Toxin Weapons
and on their Destruction

Confidence Building Measures 2016

Switzerland



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Annual Report by Switzerland in accordance with the final declaration of the Seventh Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction

Covering the year 2015

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Declaration form on “Nothing to Declare” or “Nothing New to Declare” for use in the information exchange

Measure	Nothing to declare	Nothing new to declare	Year of last declaration if nothing new to declare
A, part 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2014
A, part 2 (i)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2009
A, part 2 (ii)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A, part 2 (iii)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2001
G	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(Please mark the appropriate box(es) for each measure with a tick, and fill in the year of last declaration in the last column where applicable.)

Date: 15 April 2016
 State Party to the Convention: Switzerland
 Date of ratification/accession to the Convention: 4 May 1976

National point of contact: Mr. Sergio Bonin
 Political Affairs Officer
 Section for Arms Control, Disarmament and Non-Proliferation
 Division for Security Policy
 Federal Department of Foreign Affairs
 Bernastrasse 28
 CH - 3003 Bern
 Switzerland
 Tel: +41 58 464 57 41
 Fax: +41 58 464 38 39
 Email: sergio.bonin@eda.admin.ch

Active promotion of contacts

The Third Review Conference agreed that States parties continue to implement the following:

"Active promotion of contacts between scientists, other experts and facilities engaged in biological research directly related to the Convention, including exchanges and visits for joint research on a mutually agreed basis."

In order to actively promote professional contacts between scientists, joint research projects and other activities aimed at preventing or reducing the occurrence of ambiguities, doubts and suspicions and at improving international cooperation in the field of peaceful bacteriological (biological) activities, the Seventh Review Conference encouraged States parties to share forward looking information, to the extent possible,

- on planned international conferences, seminars, symposia and similar events dealing with biological research directly related to the Convention, and*
- on other opportunities for exchange of scientists, joint research or other measures to promote contacts between scientists engaged in biological research directly related to the Convention,*

including through the Implementation Support Unit (ISU) within the United Nations Office for Disarmament Affairs.

Exchange of data on research centres and laboratories

At the Third Review Conference it was agreed that States Parties continue to implement the following:

"Exchange of data, including name, location, scope and general description of activities, on research centres and laboratories that meet very high national or international safety standards established for handling, for permitted purposes, biological materials that pose a high individual and community risk or specialize in permitted biological activities directly related to the Convention."

Modalities

The Third Review Conference agreed on the following, later amended by the Seventh Review Conference:

Data should be provided by States Parties on each facility, within their territory or under their jurisdiction or control anywhere, which has any maximum containment laboratories meeting those criteria for such maximum containment laboratories as specified in the latest edition of the WHO¹ Laboratory Biosafety Manual and/or OIE² Terrestrial Manual or other equivalent guidelines adopted by relevant international organisations, such as those designated as biosafety level 4 (BL4, BSL4 or P4) or equivalent standards.

States Parties that do not possess a facility meeting criteria for such maximum containment should continue to Form A, part 1 (ii).

¹ World Health Organization

² World Organization for Animal Health

Exchange of data on research centres and laboratories

As of 15 April 2016, the following facilities, within the territory of Switzerland or under Swiss jurisdiction or control anywhere, were within the scope of Form A, part 1:

- Three operational BSL4 laboratories, two of them holding licenses limited to diagnostic purposes;
- One operational BSL3Ag laboratory.

Exchange of data on research centres and laboratories³

Name of facility ⁴	Labor Spiez (Spiez Laboratory)
Affiliation	Bundesamt für Bevölkerungsschutz, Eidgenössisches Departement für Verteidigung, Bevölkerungsschutz und Sport (Federal Office for Civil Protection, Federal Department of Defence, Civil Protection and Sports)

This facility is declared in accordance with Form A, part 2 (iii) [► pages 28 to 35].

Of note, the BSL4 unit is operational and holds a license as follows:

- "Development of methods to detect and analyze viral pathogens of risk group 4 (clinical samples, environmental samples, including samples suspect of bioterrorism origin) as well as evaluation of antiviral substances, neutralizing antibodies and decontamination solutions".

³ The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.

⁴ For facilities with maximum containment units participating in the national biological defence research and development programme, please fill in name of facility and mark "Declared in accordance with Form A, part 2 (iii)".

Exchange of data on research centres and laboratories³

Name of facility⁴ **Centre National de Référence pour les Infections Virales Emergentes**
(National Reference Center for Emerging Viral Infections)

Affiliation Laboratoire de Virologie, Hôpitaux Universitaires de Genève
(Virological Laboratory, University Hospitals of Geneva)

This facility is declared in accordance with Form A, part 2 (iii) [► pages 37 to 41].

Of note, the BSL4 unit is operational and holds a license for diagnostic purposes as follows:

- "Detection of viruses in clinical samples by molecular and/or serological methods".

³ The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.

⁴ For facilities with maximum containment units participating in the national biological defence research and development programme, please fill in name of facility and mark "Declared in accordance with Form A, part 2 (iii)".

Exchange of data on research centres and laboratories³

Name of facility ⁴	Institut für Virologie und Immunologie (Institute of Virology and Immunology)
Affiliation	Bundesamt für Lebensmittelsicherheit und Veterinärwesen, Eidgenössisches Departement des Innern (Federal Food Safety and Veterinary Office, Federal Department of Home Affairs)

This facility is declared in accordance with Form A, part 2 (iii) [➤ pages 42 to 47].

Of note, the maximum containment level is BSL3Ag. BSL3Ag facilities have special features not comparable to standard BSL3 or BSL4. In this particular case, the shell is considered as BSL4, whereas inside the containment area most of the space is BSL1 and BSL2 with a small BSL3 area. Licenses are as follows:

- "Veterinary virus-diagnostics";
- "Quality controls of immuno-biological products for use in applications of veterinary medicine";
- "Establishment of a cell-based rapid test to determine protection provided by vaccination against foot-and-mouth disease virus";
- "Opsonizing antibodies against foot-and-mouth disease virus: characterization and establishment of a quantitative cell-based test";
- "Storage of rinderpest virus".

³ The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.

⁴ For facilities with maximum containment units participating in the national biological defence research and development programme, please fill in name of facility and mark "Declared in accordance with Form A, part 2 (iii)".

Exchange of data on research centres and laboratories

If no BSL4 facility is declared in Form A, part 1 (i), indicate the highest biosafety level implemented in facilities handling biological agents⁶ on a State Party's territory:

Biosafety level 3⁷ n/a

Biosafety level 2⁸ (if applicable) n/a

Any additional relevant information as appropriate:

n/a

⁶ Microorganisms pathogenic to humans and/or animals

⁷ In accordance with the latest edition of the WHO Laboratory Biosafety Manual and/or the OIE Terrestrial Manual or other equivalent internationally accepted guidelines.

⁸ In accordance with the latest edition of the WHO Laboratory Biosafety Manual and/or the OIE Terrestrial Manual or other equivalent internationally accepted guidelines.

Exchange of information on national biological defence research and development programmes

At the Third Review Conference it was agreed that States Parties are to implement the following:

In the interest of increasing the transparency of national research and development programmes on biological defence, the States Parties will declare whether or not they conduct such programmes. States Parties agreed to provide, annually, detailed information on their biological defence research and development programmes including summaries of the objectives and costs of effort performed by contractors and in other facilities. If no biological defence research and development programme is being conducted, a null report will be provided.

States Parties will make declarations in accordance with the attached forms, which require the following information:

- (1) The objective and summary of the research and development activities under way indicating whether work is conducted in the following areas: prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination and other related research;*
- (2) Whether contractor or other non-defence facilities are utilized and the total funding provided to that portion of the programme;*
- (3) The organizational structure of the programme and its reporting relationships; and*
- (4) The following information concerning the defence and other governmental facilities in which the biological defence research and development programme is concentrated;*
 - (a) location;*
 - (b) the floor areas (sqM) of the facilities including that dedicated to each of BL2, BL3 and BL4 level laboratories;*
 - (c) the total number of staff employed, including those contracted full time for more than six months;*
 - (d) numbers of staff reported in (c) by the following categories: civilian, military, scientists, technicians, engineers, support and administrative staff;*
 - (e) a list of the scientific disciplines of the scientific/engineering staff;*
 - (f) the source and funding levels in the following three areas: research, development, and test and evaluation; and*
 - (g) the policy regarding publication and a list of publicly-available papers and reports.*

National biological defence research and development programmes – Declaration

Are there any national programmes to conduct biological defence research and development within the territory of the State Party, under its jurisdiction or control anywhere? Activities of such programmes would include prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination and other related research.

Yes

If the answer is Yes, complete Form A, part 2 (ii) which will provide a description of each programme.

National biological defence research and development programmes – Description

National Biological Defense Program

1. *State the objectives and funding of each programme and summarize the principal research and development activities conducted in the programme. Areas to be addressed shall include: prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination and other related research.*

The objective is to establish national biological defense proficiency by developing and improving precise and accurate tests for the rapid diagnosis as well as for identification, including characterization, of different biological agents and toxins using various methods. Spiez Laboratory is assigned to fulfill this task and to close any gaps to reach national biological defense excellence. To improve the national biological defense capabilities of Switzerland, Spiez Laboratory has funds available to run a dedicated program with the goal of added research and development mainly benefitting detection, diagnostic and identification techniques. A major part of the program is conducted under contract with national and international industries, academic institutions as well as domestic and foreign governmental agencies, as detailed in paragraph 5 below.

Spiez Laboratory is part of the Federal Office for Civil Protection FOCP within the Federal Department of Defence, Civil Protection and Sports DDPS of the Swiss Confederation. Spiez Laboratory is the Swiss center of expertise in protection against nuclear, biological and chemical (NBC) threats and hazards. Besides delivering its expertise to relevant stakeholders, the Biology Section of Spiez Laboratory is concerned with the detection of biological agents and toxins, as well as supports military biological protection units. The Biology Section has three main branches that are engaged in the fields of virology, bacteriology and toxinology, respectively.

Spiez Laboratory possesses a high containment facility that allows for the safe handling of biological agents of risk groups 3 and 4. It is the only BSL4 high containment facility in Switzerland holding a license which is not limited to diagnostic purposes. It serves towards the comprehensive detection and identification of human pathogens. This enables Spiez Laboratory to act in the Regional Laboratory Network (➤ pages 20 to 26) as both a Regional Competence Center and as a National Reference Center having all necessary capabilities and capacities at hand.

For additional information and more on the vision of a world without weapons of mass destruction please visit: <http://www.labor-spiez.ch/en/index.htm>

2. *State the total funding for each programme and its source.*

Swiss Confederation, Federal Department of Defence, Civil Protection and Sports DDPS,
Federal Office for Civil Protection FOCP:

CHF 5'000'000.- per year

3. *Are aspects of these programmes conducted under contract with industry, academic institutions, or in other non-defence facilities?*

Yes

4. *If yes, what proportion of the total funds for each programme is expended in these contracted or other facilities?*

15 %

5. *Summarize the objectives and research areas of each programme performed by contractors and in other facilities with the funds identified under paragraph 4.*

All contracted research and development of the program is supervised by Spiez Laboratory. Please also refer to paragraph 1 above for additional details. The contractors part of the program in 2015 were as follows:

- Eidgenössische Technische Hochschule Zürich – ETHZ
Functional Genomics Center Zurich – FGCZ
Winterthurerstrasse 190
CH-8057 Zürich
Switzerland
Project title: „Next Generation Sequencing“

- Институт Химической Биологии и Фундаментальной Медицины – ИХБФМ
(Institute for Chemical Biology and Fundamental Medicine – ICBFM)
Lavrent'eva pr. 8
RU-630090 Novosibirsk
Russian Federation
Project title: „Electron microscopy development“

- Medizinische Hochschule Hannover – MHH
Institut für Toxikologie
Carl-Neuberg-Strasse 1
DE-30625 Hannover
Germany
Project title: „Assessing proteolytic stability and transepithelial transport of the proteinaceous toxins ricin, BoNT and SEB“
Project title: „Development of recombinant botulinum neurotoxins and assessing proteolytic stability and transepithelial transport“

- miprolab GmbH / Universität Göttingen
Marie-Curie-Strasse 7
DE-37079 Göttingen
Germany
Project title: „Detection and risk assessment of biological toxins“

- Robert Koch Institut – RKI
Zentrum für Biologische Sicherheit
Nordufer 20
DE-13353 Berlin
Germany
Project title: „Analysis of Staphylococcus enterotoxins in food“

- Schweizerisches Tropen- und Public Health Institut – STPHI
Socinstrasse 57
CH-4002 Basel
Project title: „Molecular diagnostics and epidemiology of viruses categorized as possible tools of biological terrorism“
Project title: “Evaluation of FTA-cards soaked in honey for monitoring arboviruses in mosquitoes“

- Scuola Universitaria Professionale della Svizzera Italiana – SUPSI
Laboratorio Microbiologia Applicata – LMA
Via Mirasole 22a
CH-6501 Bellinzona
Switzerland
Project title: „Optimization of methods for the identification of viruses in vectors“

- Universität Bern – UniBE
Dekanat der Medizinischen Fakultät
Murtenstrasse 31
CH-3010 Bern
Switzerland
Project title: „Animal housing in a biological containment laboratory“

- Universität Bern – UniBE
Institut für Infektionskrankheiten – IFIK
Friedbühlstrasse 51
CH-3010 Bern
Switzerland
Project title: „Stability and detection of toxins“
Project title: „Next Generation Sequencing“

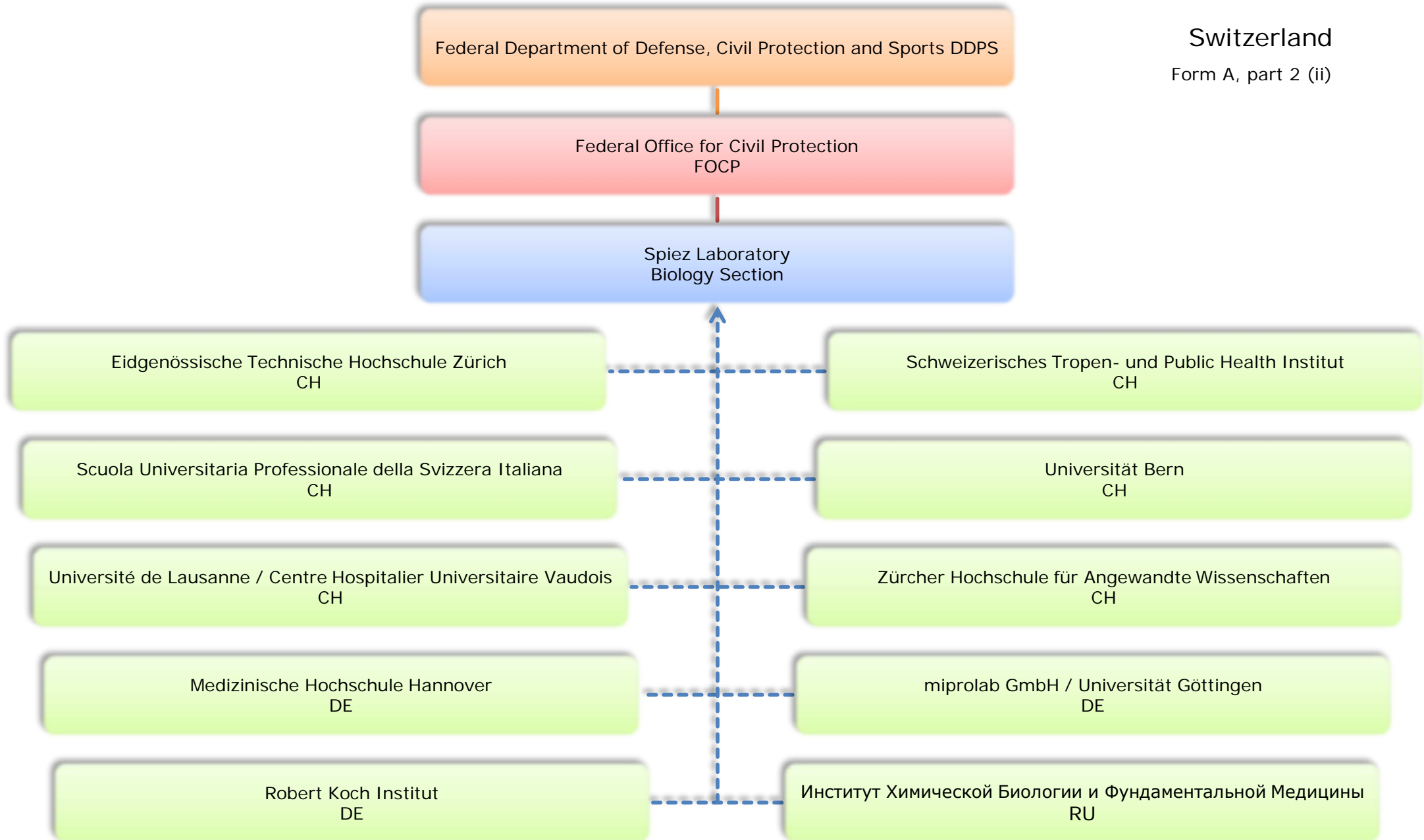
- Universität Bern – UniBE
Interfaculty Bioinformatics Unit – IBU
Baltzerstrasse 6
CH-3012 Bern
Switzerland
Project title: „Comparative genome-based analysis of Naegleria“

- Université de Lausanne / Centre Hospitalier Universitaire Vaudois – Unil / CHUV
Institut de microbiologie – IMUL
Rue du Bugnon 48
CH-1011 Lausanne
Switzerland
Project title: „Development of therapeutic strategies against Hantavirus infections“
Project title: „Identification and evaluation of antiviral substances against Hantavirus infections“

- Zürcher Hochschule für Angewandte Wissenschaften – ZHAW
Institut für Chemie und Biologische Chemie – ICBC
Einsiedlerstrasse 31
CH-8820 Wädenswil
Switzerland
Project title: „Detection of proteinaceous toxins“

6. *Provide a diagram of the organizational structure of each programme and the reporting relationships (include individual facilities participating in the programme).*

Please refer to the diagram on the following page.



Switzerland

Form A, part 2 (ii)

7. *Provide a declaration in accordance with Form A, part 2 (iii) for each facility, both governmental and non-governmental, which has a substantial proportion of its resources devoted to each national biological defence research and development programme, within the territory of the reporting State, or under its jurisdiction or control anywhere.*

Please refer to Form A, part 2 (iii) [➤ pages 28 to 35].

National biological defence research and development programmes – Description

Regional Laboratory Network

1. *State the objectives and funding of each programme and summarize the principal research and development activities conducted in the programme. Areas to be addressed shall include: prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination and other related research.*

The objective is the establishment and maintenance of capability and capacity for the rapid laboratory-based initial diagnosis of pathogens in case of a biological emergency, whether it be of natural or accidental origin or due to deliberate release. This forms the basis for any adequate countermeasures that need to be planned and implemented to ensure the protection of the population. The consequent integration of state of the art detection and diagnostic techniques as well as their constant refinement and improvement is therefore indispensable for a holistic biological emergency concept.

The implemented structure is a decentralized network of Regional Competence Centers and National Reference Centers, all of which have been mandated by the Federal Office of Public Health. This network benefits from already existing infrastructure. The network is embedded in the Swiss CBRN concept and is coordinated by the Regional Laboratory Coordination Committee that consists of federal, cantonal and scientific experts. There is a total of three National Reference Centers and six Regional Competence Centers called Regional Laboratories. The task for Regional Laboratories is the rapid initial diagnosis of pathogens, whereas National Reference Centers are qualified for initial as well as confirmational diagnoses. All facilities pursue civil duties and are put on assignments of the Regional Laboratory Network in the event of biological emergencies only. All cantons are part of the network either as a host canton of a Regional Laboratory (underlined) or as an affiliated canton, as shown in the table below.

Regional Laboratory	Host cantons and affiliated cantons
West	FR, <u>GE</u> , NE, <u>VD</u> , VS
West Central	<u>BE</u> , JU
East Central	<u>LU</u> , NW, OW, SZ, UR
East	AI, AR, GL, GR, SG, SH, TG, ZG, <u>ZH</u> (+FL)
North	AG, BL, <u>BS</u> , SO
South	<u>TI</u>

Of note, the two cantons of Genève and Vaud share the authority over the Regional Laboratory West. The Principality of Liechtenstein (FL) is part of the Regional Laboratory East. For an explanation of abbreviations, please refer to the comprehensive map on the next page.

SWITZERLAND

- AG Aargau
- AI Appenzel Innerrhoden
- AR Appenzel Ausserrhoden
- BE Bern / Berne
- BL Basel Landschaft
- BS Basel Stadt
- FR Fribourg / Freiburg
- GE Genève
- GL Glarus
- GR Graubünden / Grischun / Grigioni
- JU Jura
- LU Luzern
- NE Neuchâtel
- NW Nidwalden
- OW Obwalden
- SG Sankt Gallen
- SH Schaffhausen
- SO Solothurn
- SZ Schwyz
- TG Thurgau
- TI Ticino
- UR Uri
- VD Vaud
- VS Valais / Wallis
- ZG Zug
- ZH Zürich

Switzerland
Form A, part 2 (ii)



The network consists of the following facilities that are described on Form A, part 2 (iii) in more detail:

Function	Authority	Facility
National Reference Center	GDK*	Labor Spiez
National Reference Center	GDK*	Centre National de Référence pour les Infections Virales Emergentes
National Reference Center	GDK*	Institut für Virologie und Immunologie
Regional Laboratory West	Canton of Genève	Laboratoire de Bactériologie
	Canton of Vaud	Centre National de Référence pour les Infections Virales Emergentes Laboratoires de Diagnostic de l'Institut de Microbiologie
Regional Laboratory West Central	Canton of Bern	Labor Spiez
Regional Laboratory East Central	Canton of Luzern	Institut für Medizinische Mikrobiologie
Regional Laboratory East	Canton of Zürich	Institut für Medizinische Mikrobiologie
		Institut für Medizinische Virologie
Regional Laboratory North	Canton of Basel-Stadt	Kantonales Laboratorium Basel-Stadt
Regional Laboratory South	Canton of Ticino	Laboratorio Microbiologia Applicata

* Swiss Conference of Cantonal Ministers of Public Health

2. *State the total funding for each programme and its source.*

All personnel involved in activities in relation to the Regional Laboratory Network is tasked with other civil duties. Many of these other activities, such as development of related methods, sample preparation and processing, training, etc., although at least indirectly of benefit to the activities in relation to the Regional Laboratory Network, remain unaccounted for and are not singled out as being of such nature. Furthermore, the whole network relies on existing infrastructures in use for other civil purposes. Due to these facts it is not possible to sort out personnel costs, cost of materials and consumables, as well as dedicated infrastructure costs for the program, however, it is possible to name the funding sources as follows:

- Swiss Confederation, Federal Department of Home Affairs FDHA
- All twenty-six cantons of Switzerland
- Principality of Liechtenstein

3. *Are aspects of these programmes conducted under contract with industry, academic institutions, or in other non-defence facilities?*

No

4. *If yes, what proportion of the total funds for each programme is expended in these contracted or other facilities?*

n/a

5. *Summarize the objectives and research areas of each programme performed by contractors and in other facilities with the funds identified under paragraph 4.*

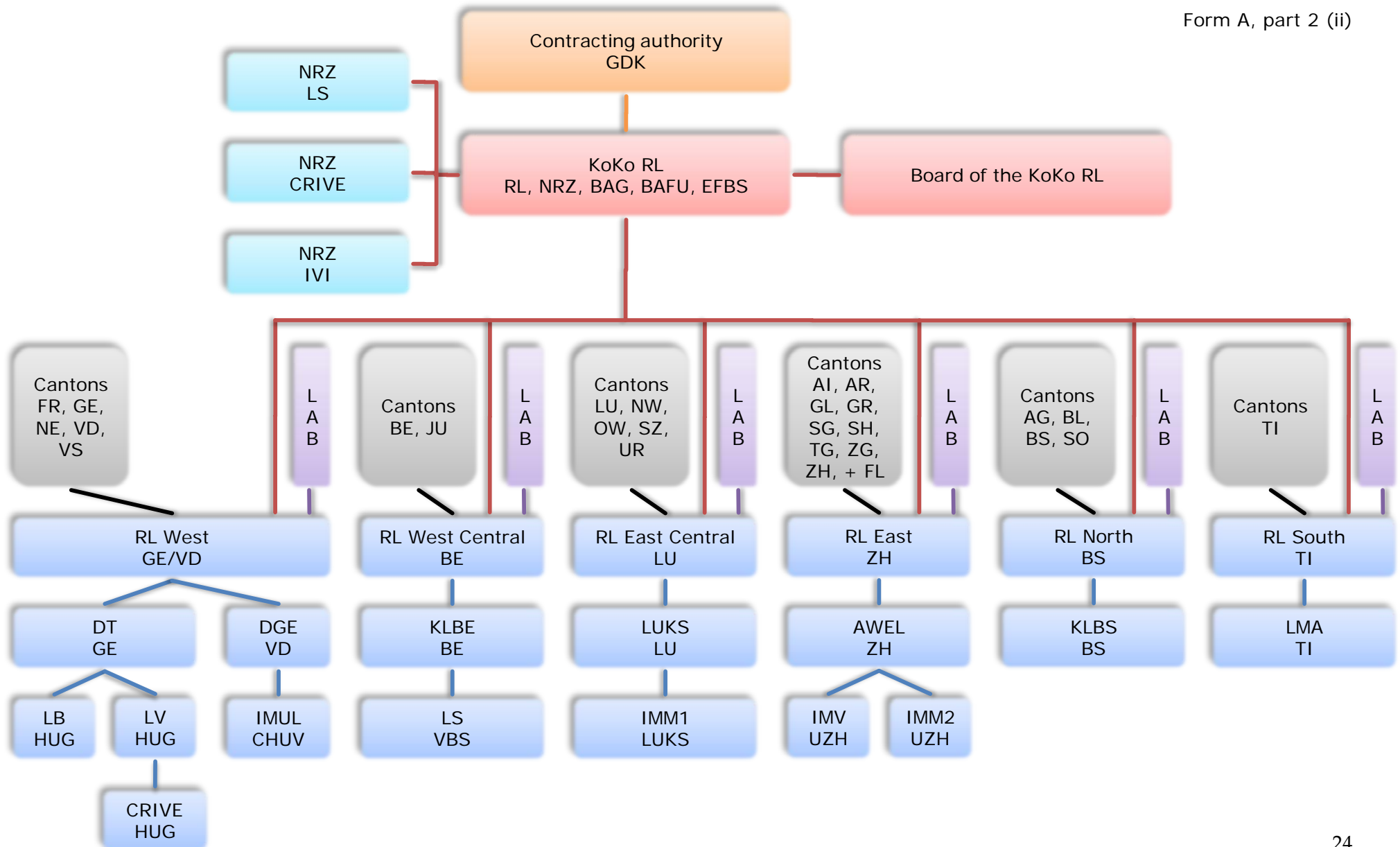
n/a

6. *Provide a diagram of the organizational structure of each programme and the reporting relationships (include individual facilities participating in the programme).*

Please refer to the diagram on the next page.

Switzerland

Form A, part 2 (ii)



Abbreviations used in the diagram on the previous page:

AWEL:	Section for Waste Management and Operations	IVI:	Institute of Virology and Immunology
BAFU:	Federal Office for the Environment	KLBE:	Cantonal Laboratory of Berne
BAG:	Federal Office of Public Health	KLBS:	Cantonal Laboratory of Basel-Stadt
Cantons:	Please refer to the map in paragraph 1 above	KoKo:	Coordination Committee
CHUV:	University Hospital Center of Vaud	LAB:	Laboratory Advisory Board
CRIVE:	National Reference Center for Emerging Viral Infections	LB:	Bacteriological Laboratory
DGE:	Office for Environment	LMA:	Laboratory of Applied Microbiology
DT:	Department of Territory	LS:	Spiez Laboratory
EFBS:	Swiss Expert Committee for Biosafety	LUKS:	Cantonal Hospital of Luzern
GDK:	Swiss Conference of Cantonal Ministers of Public Health	LV:	Virological Laboratory
HUG:	University Hospitals of Geneva	NRZ:	National Reference Center
IMM1:	Department of Medical Microbiology	RL:	Regional Laboratory
IMM2:	Institute of Medical Microbiology	UZH:	University of Zurich
IMUL:	Diagnostic Laboratories of the Institute of Microbiology	VBS:	Federal Department of Defense, Civil Protection and Sports
IMV:	Institute of Medical Virology		

Switzerland

Form A, part 2 (ii)

7. *Provide a declaration in accordance with Form A, part 2 (iii) for each facility, both governmental and non-governmental, which has a substantial proportion of its resources devoted to each national biological defence research and development programme, within the territory of the reporting State, or under its jurisdiction or control anywhere.*

Please refer to Form A, part 2 (iii) [➤ pages 36 to 80].

National biological defence research and development programmes – Facilities

Complete a form for each facility declared in accordance with paragraph 7 in Form A, part 2 (ii).

In shared facilities, provide the following information for the biological defence research and development portion only.

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Schweizerisches Fachinstitut für ABC-Schutz (Swiss Center of Expertise in NBC Protection)
Name of facility	Labor Spiez (Spiez Laboratory)
Affiliation	Bundesamt für Bevölkerungsschutz, Eidgenössisches Departement für Verteidigung, Bevölkerungsschutz und Sport (Federal Office for Civil Protection, Federal Department of Defence, Civil Protection and Sports)

2. *Where is it located (include both address and geographical location)?*

Location	Austrasse CH-3700 Spiez
Geographical location	N 46° 41' 26.32", E 7° 38' 39.41"

3. *Floor area of laboratory areas by containment level:*

BSL2	483 m ²
BSL3	126 m ²
BSL3Ag	0 m ²
BSL4	118 m ²
Total	727 m ²

Of note, further information on the facility is presented on pages 33 to 35.

4. *The organizational structure of each facility.*

(i) *Total number of personnel*

20

Of note, as of 1 January 2016 the total number of personnel at Spiez Laboratory amounts to 104, 17 of which in the Biology Section and 3 of which in the Logistics, Quality & Security Section dealing with technical and security issues related to the Biology Section.

(ii) *Division of personnel:*

Military	0
Civilian	20

(iii) *Division of personnel by category:*

Scientists	10
Engineers	0
Technicians	10
Administrative and support staff	0

(iv) *List the scientific disciplines represented in the scientific/engineering staff.*

Virology, bacteriology, toxinology, biosafety and biosecurity

(v) *Are contractor staff working in the facility? If so, provide an approximate number.*

6

(vi) *What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?*

Swiss Confederation (Federal Department of Defence, Civil Protection and Sports)

(vii) *What are the funding levels for the following programme areas:*

Total	CHF 5'000'000.-
Research	15 %
Development	10 %
Test & Evaluation	5 %
Analysis / Diagnosis	15 %
Education & Training	5 %
Other activities	50 % (costs for operation, maintenance and amortization)

(viii) *Briefly describe the publication policy of the facility:*

Publication in open literature

(ix) *Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)*

List of publicly available papers and reports published in 2015:

Carroll MW, Matthews DA, Hiscox JA, Elmore MJ, Pollakis G, Rambaut A, Hewson R, García-Dorival I, Bore JA, Koundouno R, Abdellati S, Afrough B, Aiyepada J, Akhilomen P, Asogun D, Atkinson B, Badusche M, Bah A, Bate S, Baumann J, Becker D, Becker-Ziaja B, Bocquin A, Borremans B, Bosworth A, Boettcher JP, Cannas A, Carletti F, Castilletti C, Clark S, Colavita F, Diederich S, Donatus A, Duraffour S, Ehichioya D, Ellerbrok H, Fernandez-Garcia MD, Fizet A, Fleischmann E, Gryseels S, Hermelink A, Hinzmann J, Hopf-Guevara U, Ighodalo Y, Jameson L, Kelterbaum A, Kis Z, Kloth S, Kohl C, Korva M, Kraus A, Kuisma E, Kurth A, Liedigk B, Logue CH, Lüdtke A, Maes P, McCowen J, Mély S, Mertens M, Meschi S, Meyer B, Michel J, Molkenhain P, Muñoz-Fontela C, Muth D, Newman EN, Ngabo D, Oestereich L, Okosun J, Olorokun T, Omiunu R, Omomoh E, Pallasch E, Pályi B, Portmann J, Pottage T, Pratt C, Priesnitz S, Quartu S, Rappe J, Repits J, Richter M, Rudolf M, Sachse A, Schmidt KM, Schudt G, Strecker T, Thom R, Thomas S, Tobin E, Tolley H, Trautner J, Vermoesen T, Vitoriano I, Wagner M, Wolff S, Yue C, Capobianchi MR, Kretschmer B, Hall Y, Kenny JG, Rickett NY, Dudas G, Coltart CE, Kerber R, Steer D, Wright C, Senyah F, Keita S, Drury P, Diallo B, de Clerck H, Van Herp M, Sprecher A, Traore A, Diakite M, Konde MK, Koivogui L, Magassouba N, Avšič-Županc T, Nitsche A, Strasser M, Ippolito G, Becker S, Stoecker K, Gabriel M, Raoul H, Di Caro A, Wölfel R, Formenty P, Günther S. Temporal and spatial analysis of the 2014-2015 Ebola virus outbreak in West Africa. *Nature*. 2015 Aug 6;524(7563):97-101.

Osthoff A, Egli A, Schürch N, Leib S, Mihatsch F, Frei R. Ein nicht alltägliches türkisches Souvenir. *Schweiz Med Forum*. 2015 Jun;15(25):611–613.

Lasch P, Wahab T, Weil S, Pályi B, Tomaso H, Zange S, Kiland Granerud B, Drevinek M, Kokotovic B, Wittwer M, Pflüger V, Di Caro A, Stämmeler M, Grunow R, Jacob D. Identification of Highly Pathogenic Microorganisms by Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry: Results of an Interlaboratory Ring Trial. *J Clin Microbiol*. 2015 Aug;53(8):2632-40.

Schneeberger PH, Becker SL, Pothier JF, Duffy B, N'Goran EK, **Beuret C**, Frey JE, Utzinger J. Metagenomic diagnostics for the simultaneous detection of multiple pathogens in human stool specimens from Côte d'Ivoire: a proof-of-concept study. *Infect Genet Evol*. 2015 Sep 25. pii: S1567-1348(15)00367-6.

Silbereisen A, Tamborrini M, Wittwer M, Schürch N, Pluschke G. Development of a bead-based Luminex assay using lipopolysaccharide specific monoclonal antibodies to detect biological threats from *Brucella* species. *BMC Microbiol*. 2015 Oct 5;15(1):198.

Kümin D, Signer J, Portmann J, Beuret C. Of a Storm in a Teacup and a Gutter Heater—Practical Aspects of VHP Room Fumigation. *Appl Biosafety*. 2015;20(3).

Harju K, Rapinoja ML, Avondet MA, Arnold W, Schär M, Luginbühl W, Kremp A, Suikkanen S, Kankaanpää H, Burrell S, Söderström M, Vanninen P. Results of a Saxitoxin Proficiency Test Including Characterization of Reference Material and Stability Studies. *Toxins (Basel)*. 2015 Nov 25;7(12):4852-67.

Harju K, Rapinoja ML, Avondet MA, Arnold W, Schär M, Burrell S, Luginbühl W, Vanninen P. Optimization of Sample Preparation for the Identification and Quantification of Saxitoxin in Proficiency Test Mussel Sample using Liquid Chromatography-Tandem Mass Spectrometry. *Toxins (Basel)*. 2015 Nov 25;7(12):4868-80.

Simon S, Worbs S, Avondet MA, Tracz DM, Dano J, Schmidt L, Volland H, Dorner BG, Corbett CR. Recommended Immunological Assays to Screen for Ricin-Containing Samples. *Toxins (Basel)*. 2015 Nov 26;7(12):4967-86.

Weisemann J, Krez N, Fiebig U, Worbs S, Skiba M, Endermann T, Dorner MB, Bergström T, Muñoz A, Zegers I, Müller C, Jenkinson SP, Avondet MA, Delbrassinne L, Denayer S, Zeleny R, Schimmel H, Åstot C, Dorner BG, Rummel A. Generation and Characterization of Six Recombinant Botulinum Neurotoxins as Reference Material to Serve in an International Proficiency Test. *Toxins (Basel)*. 2015 Nov 26;7(12):5035-54.

Pilloux L, Aeby S, Gäumann R, Burri C, Beuret C, Greub G. The high prevalence and diversity of Chlamydiales DNA within *Ixodes ricinus* ticks suggest a role for ticks as reservoirs and vectors of Chlamydia-related bacteria. *Appl Environ Microbiol*. 2015 Dec;81(23):8177-82.

5. Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms⁹ and/or toxins studied, as well as outdoor studies of biological aerosols.

Spiez Laboratory, which is part of the Federal Department for Civil Protection, is the Swiss Center of Expertise in NBC Protection. Its Biology Section has a range of activities including research, development, test & evaluation, training, as well as diagnosis in the fields of virology, bacteriology, toxinology and biosafety. The tasks include analysis of unknown samples, diagnostics and identification of potential biological warfare and bioterror agents, food and water analysis for the Swiss Armed Forces, and research & development in coordination with contractors. Spiez Laboratory deals with many different biological agents and toxins known to be pathogenic for humans.

In addition, Spiez Laboratory is a National Reference Center as follows:

- National Reference Center for Anthrax
 - o *Bacillus anthracis* (anthrax)
 - o *Francisella tularensis* (tularemia)
 - o *Yersinia pestis* (plague)
 - o *Brucella spp.* (brucellosis)
 - o *Clostridium botulinum* (botulism)

- National Reference Center for Tick-Transmitted Diseases
 - o Tick-borne encephalitis virus (TBE)
 - o *Coxiella burnetii* (Q fever)
 - o *Borrelia burgdorferi* s.l. (Lyme disease)
 - o Other rare / emerging tick-transmitted pathogens

Further to Spiez Laboratory's two functions as National Reference Center it supports the National Reference Center for Emerging Viral Infections responsible for the detection of emerging and reemerging viruses, especially hemorrhagic fever viruses and variola virus.

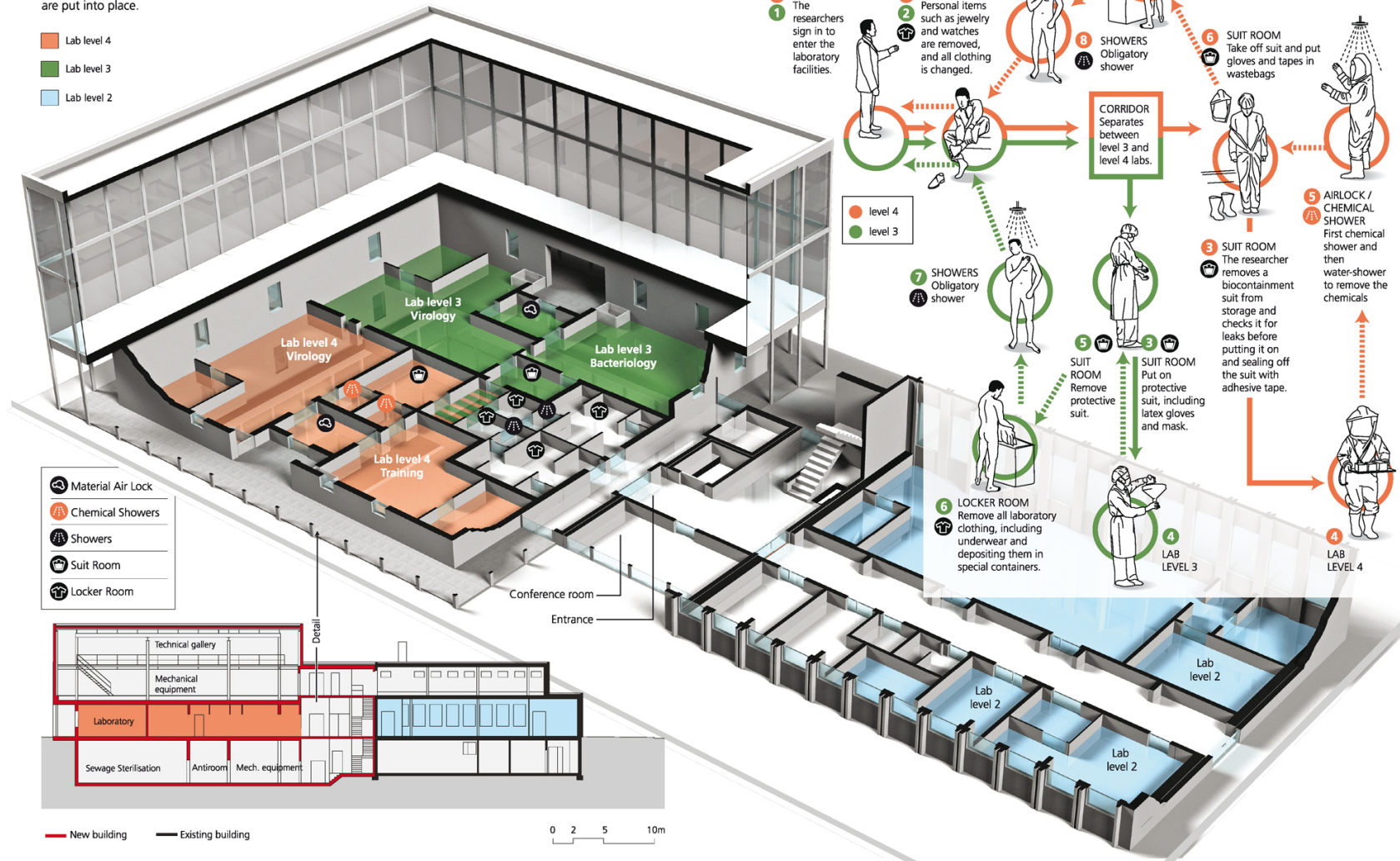
For additional information please refer to Form A, part 2 (ii) [► pages 14 to 26] and visit: <http://www.labor-spiez.ch/en/index.htm>

⁹ Including viruses and prions.

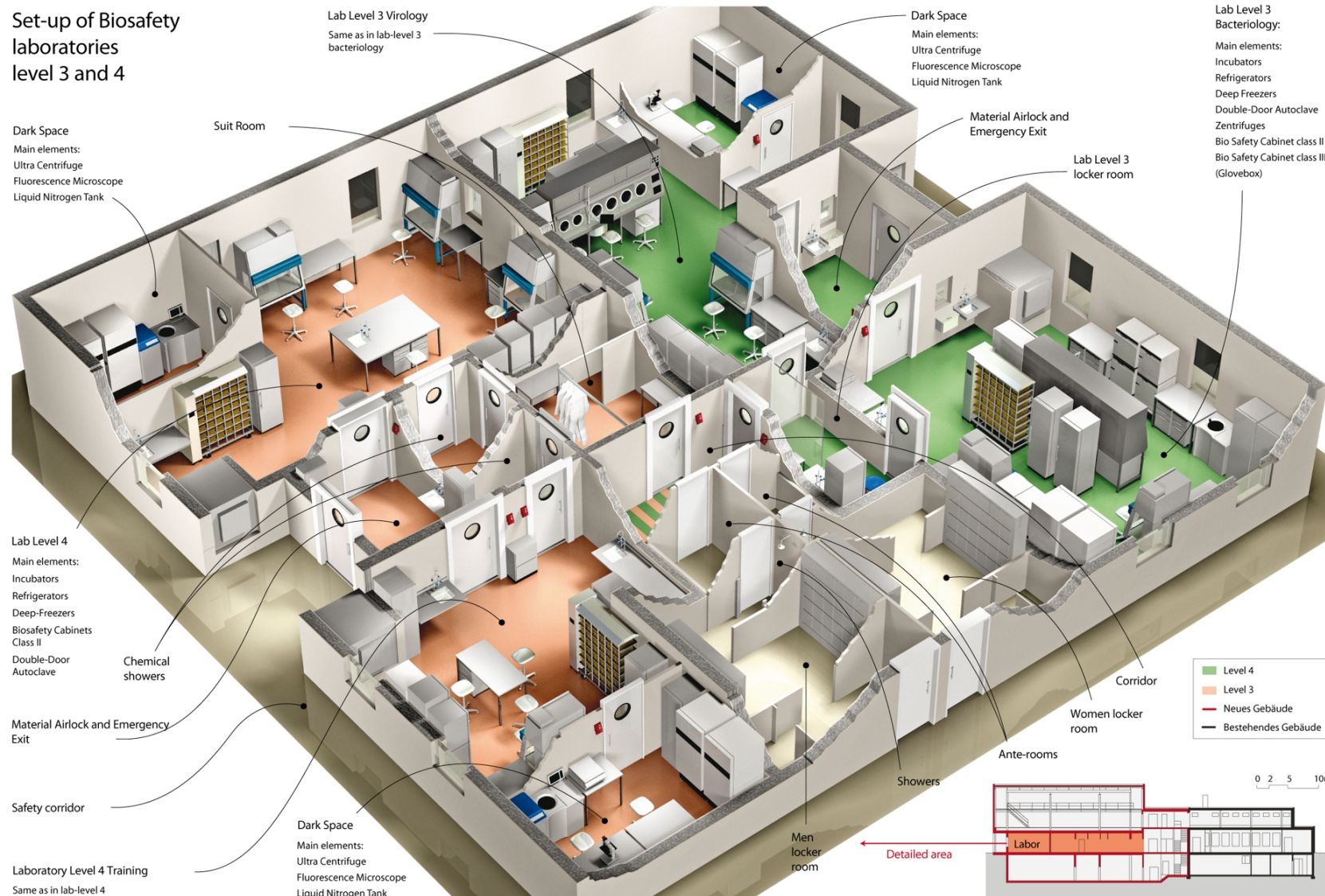
The Security Lab

The new building will house facilities for level-3 and level-4 laboratories. For each level separate security-measures are put into place.

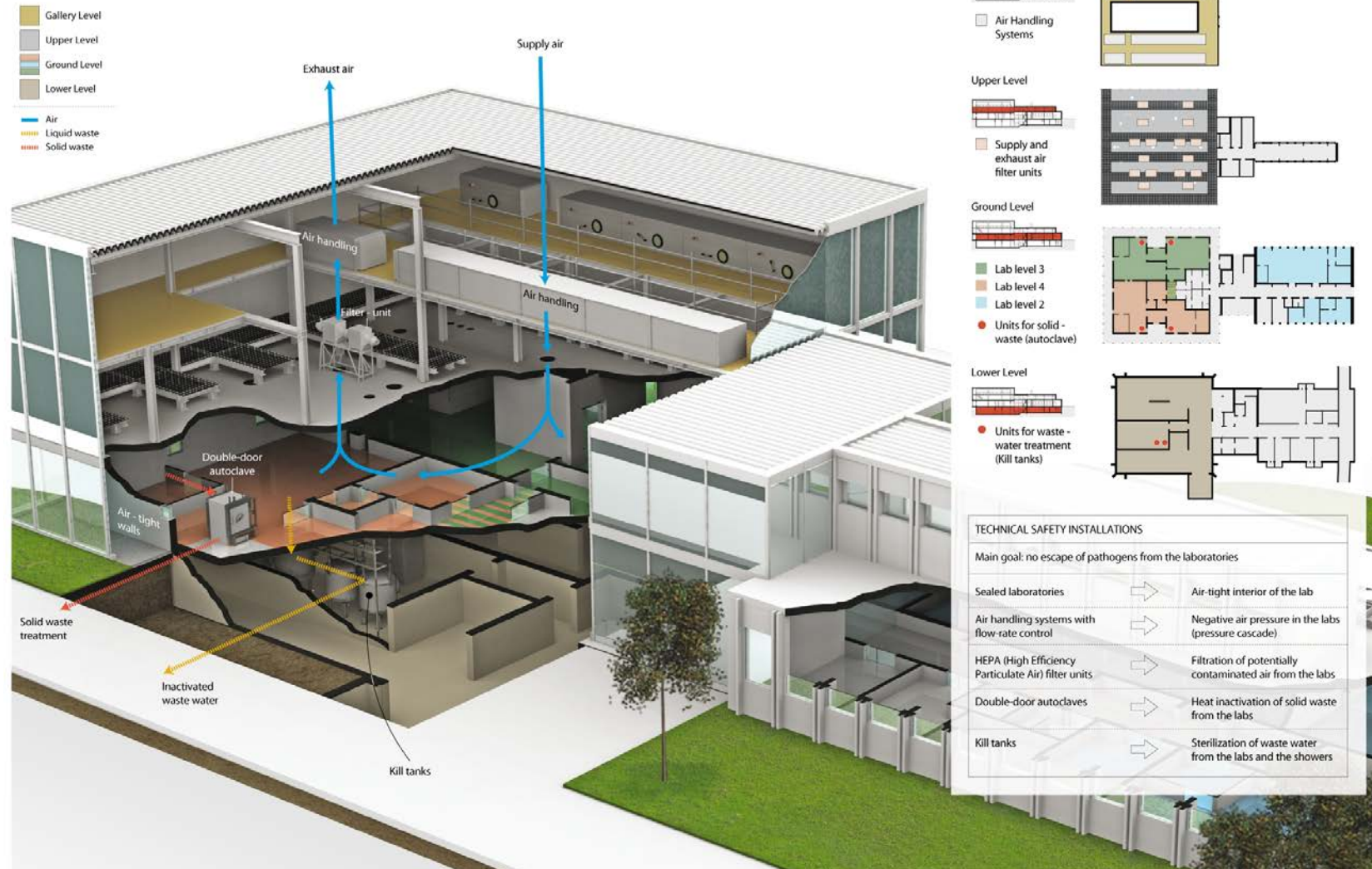
- Lab level 4
- Lab level 3
- Lab level 2



Set-up of Biosafety laboratories level 3 and 4



High Containment Laboratory - Technical safety installations



National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Nationales Referenzzentrum (National Reference Center)
Name of facility	Labor Spiez (Spiez Laboratory)
Affiliation	Bundesamt für Bevölkerungsschutz, Eidgenössisches Departement für Verteidigung, Bevölkerungsschutz und Sport (Federal Office for Civil Protection, Federal Department of Defence, Civil Protection and Sports)

This facility is declared in accordance with Form A, part 2 (iii) [➤ pages 28 to 35].

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Centre National de Référence (National Reference Center)
Name of facility	Centre National de Référence pour les Infections Virales Emergentes (National Reference Center for Emerging Viral Infections)
Affiliation	Laboratoire de Virologie, Hôpitaux Universitaires de Genève (Virological Laboratory, University Hospitals of Geneva)

2. *Where is it located (include both address and geographical location)?*

Location	Rue Gabrielle Perret-Gentil 4 CH-1205 Genève
Geographical location	N 46° 11' 37.20", E 6° 8' 59.92"

3. *Floor area of laboratory areas by containment level:*

BSL2	29 m ²
BSL3	39 m ²
BSL3Ag	0 m ²
BSL4	36 m ²
Total	104 m ²

Of note, the BSL4 unit is approved for diagnostic purposes only.

4. *The organizational structure of each facility.*

(i) *Total number of personnel*

5

(ii) *Division of personnel:*

Military	0
Civilian	5

(iii) *Division of personnel by category:*

Scientists	3
Engineers	0
Technicians	2
Administrative and support staff	0

(iv) *List the scientific disciplines represented in the scientific/engineering staff.*

Medicine, biology, microbiology, molecular biology, viral genetics, infectious diseases

(v) *Are contractor staff working in the facility? If so, provide an approximate number.*

0

(vi) *What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?*

Swiss Confederation (Federal Department of Home Affairs)

(vii) *What are the funding levels for the following programme areas:*

Research	2 %
Development	60 %
Test & Evaluation	15 %
Analysis / Diagnosis	15 %
Education & Training	1 %
Other activities	7 % (costs for maintenance and administration)

(viii) *Briefly describe the publication policy of the facility:*

Publication in open literature

(ix) *Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)*

List of publicly available papers and reports published in 2015:

Cordey S, Bel M, Petty TJ, Docquier M, Sacco L, Turin L, Cherpillod P, Emonet S, Louis-Simonet M, Zdobnov EM, Ambrosioni J, Kaiser L. Toscana virus meningitis case in Switzerland: an example of the ezVIR bioinformatics pipeline utility for the identification of emerging viruses. *Clin Microbiol Infect.* 2015 Apr;21(4):387

L'Huillier AG, Kaiser L, Petty TJ, Kilowoko M, Kyungu E, Hongoa P, Vieille G, Turin L, Genton B, D'Acromont V, Tapparel C. Molecular Epidemiology of Human Rhinoviruses and Enteroviruses Highlights Their Diversity in Sub-Saharan Africa. *Viruses.* 2015 Dec 8;7(12):6412-23.

Huttner A, Dayer JA, Yerly S, Combescure C, Auderset F, Desmeules J, Eickmann M, Finckh A, Goncalves AR, Hooper JW, Kaya G, Krähling V, Kwilas S, Lemaître B, Matthey A, Silvera P, Becker S, Fast PE, Moorthy V, Kieny MP, Kaiser L, Siegrist CA; VSV-Ebola Consortium. The effect of dose on the safety and immunogenicity of the VSV Ebola candidate vaccine: a randomised double-blind, placebo-controlled phase 1/2 trial. *Lancet Infect Dis.* 2015 Oct;15(10):1156-66.

Schibler M, Vetter P, Cherpillod P, Petty TJ, Cordey S, Vieille G, Yerly S, Siegrist CA, Samii K, Dayer JA, Docquier M, Zdobnov EM, Simpson AJ, Rees PS, Sarria FB, Gasche Y, Chappuis F, Iten A, Pittet D, Pugin J, Kaiser L. Clinical features and viral kinetics in a rapidly cured patient with Ebola virus disease: a case report. *Lancet Infect Dis.* 2015 Sep;15(9):1034-40.

Terczyńska-Dyla E, Bibert S, Duong FH, Krol I, Jørgensen S, Collinet E, Kutalik Z, Aubert V, Cerny A, Kaiser L, Malinverni R, Mangia A, Moradpour D, Müllhaupt B, Negro F, Santoro R, Semela D, Semmo N; Swiss Hepatitis C Cohort Study Group, Heim MH, Bochud PY, Hartmann R. Corrigendum: reduced IFN λ 4 activity is associated with improved HCV clearance and reduced expression of interferon-stimulated genes. *Nat Commun.* 2015 Jun 29;6:7280.

Müller L, Mack I, Tapparel C, Kaiser L, Alves MP, Kieninger E, Frey U, Regamey N, Latzin P. Human Rhinovirus Types and Association with Respiratory Symptoms During the First Year of Life. *Pediatr Infect Dis J.* 2015 Aug;34(8):907-9.

L'Huillier AG, Abed Y, Petty TJ, Cordey S, Thomas Y, Bouhy X, Schibler M, Simon A, Chalandon Y, van Delden C, Zdobnov E, Boquete-Suter P, Boivin G, Kaiser L. E119D Neuraminidase Mutation Conferring Pan-Resistance to Neuraminidase Inhibitors in an A(H1N1)pdm09 Isolate From a Stem-Cell Transplant Recipient. *J Infect Dis*. 2015 Dec 1;212(11):1726-34.

Pagani L, Thomas Y, Huttner B, Sauvan V, Notaridis G, Kaiser L, Iten A, Pittet D, Harbarth S. Transmission and effect of multiple clusters of seasonal influenza in a Swiss geriatric hospital. *J Am Geriatr Soc*. 2015 Apr;63(4):739-44.

Cosset É, Martinez Y, Preynat-Seauve O, Lobrinus JA, Tapparel C, Cordey S, Peterson H, Petty TJ, Colaianna M, Tieng V, Tirefort D, Dinnyes A, Dubois-Dauphin M, Kaiser L, Krause KH. Human three-dimensional engineered neural tissue reveals cellular and molecular events following cytomegalovirus infection. *Biomaterials*. 2015;53:296-308.

Agnandji ST, Huttner A, Zinser ME, Njuguna P, Dahlke C, Fernandes JF, Yerly S, Dayer JA, Kraehling V, Kasonta R, Adegnika AA, Altfeld M, Auderset F, Bache EB, Biedenkopf N, Borregaard S, Brosnahan JS, Burrow R, Combescure C, Desmeules J, Eickmann M, Fehling SK, Finckh A, Goncalves AR, Grobusch MP, Hooper J, Jambrecina A, Kabwende AL, Kaya G, Kimani D, Lell B, Lemaître B, Lohse AW, Massinga-Loembe M, Matthey A, Mordmüller B, Nolting A, Ogwang C, Ramharter M, Schmidt-Chanasit J, Schmiedel S, Silvera P, Stahl FR, Staines HM, Strecker T, Stubbe HC, Tsofa B, Zaki S, Fast P, Moorthy V, Kaiser L, Krishna S, Becker S, Kieny MP, Bejon P, Kremsner PG, Addo MM, Siegrist CA. Phase 1 Trials of rVSV Ebola Vaccine in Africa and Europe - Preliminary Report. *N Engl J Med*. 2015 Apr 1. [Epub ahead of print]

Kaiser L, Emonet S, Huttner A, Vetter P, Toutous Trelu L, Uriel Valladares Bickel P, Lecompte T. [Infections disease update: 2014 is viral]. *Rev Med Suisse*. 2015 Jan 14;11(456-457):72-7.

Ambrosioni J, Bridevaux PO, Aubert JD, Soccac P, Wagner G, Kaiser L. Role of rhinovirus load in the upper respiratory tract and severity of symptoms in lung transplant recipients. *J Clin Virol*. 2015 Mar;64:1-5.

Lupo J, Schuffenecker I, Morel-Baccard C, Bardet J, Payen V, Kaiser L, Constant S, Lobrinus JA, Lin-Marq N, Lina B, Morand P, Tapparel C. Disseminated rhinovirus C8 infection with infectious virus in blood and fatal outcome in a child with repeated episodes of bronchiolitis. *J Clin Microbiol*. 2015 May;53(5):1775-7.

5. *Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms⁹ and/or toxins studied, as well as outdoor studies of biological aerosols.*

The National Reference Center for Emerging Viral Infections is a federal reference laboratory by order of the Federal Office of Public Health. Its task is the detection of emerging and reemerging viruses of all biosafety levels, especially hemorrhagic fever viruses and variola virus. The BSL4 unit is approved for diagnostic purposes only, which does not allow any culturing or enrichment of such viruses. The National Reference Center for Emerging Viral Infections is part of the Virological Laboratory at the University Hospitals of Geneva. Besides its function as a reference laboratory it also carries out all other tasks related to the Regional Laboratory Network, such as the function of the Virological Laboratory acting as the Regional Competence Center for the primary analysis of virological samples suspicious of a bioterror-related background.

For further information please visit (website in French):

<http://www.hug-ge.ch/laboratoire-virologie>

⁹ Including viruses and prions.

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Nationales Referenzzentrum (National Reference Center)
Name of facility	Institut für Virologie und Immunologie (Institute of Virology and Immunology)
Affiliation	Bundesamt für Lebensmittelsicherheit und Veterinärwesen, Eidgenössisches Departement des Innern (Federal Food Safety and Veterinary Office, Federal Department of Home Affairs)

2. *Where is it located (include both address and geographical location)?*

Location	Sensemattstrasse 293 CH-3147 Mittelhäusern
Geographical location	N 46° 52' 50.20", E 7° 21' 46.81"

3. *Floor area of laboratory areas by containment level:*

BSL2	210 m ²
BSL3	44 m ²
BSL3Ag	10'446 m ²
BSL4	0 m ²
Total	10'700 m ²

Of note, BSL3Ag facilities have special features not comparable to standard BSL3 or BSL4 facilities. The shell is considered BSL4, whereas inside the containment area BSL1 and BSL2 space is common standard. All authorized personnel enters through a shower barrier, works inside the containment area in clothing suitable to BSL1 or BSL2, and showers out when leaving. Due to these special features of BSL3Ag facilities, the BSL3Ag area is not limited to laboratory units, but also includes technical space and animal units, which is all located within the containment area. Therefore all maintenance work can be done during operation – the facility has never been shut down so far. This also means that a direct comparison with BSL4 facilities is not practicable.

4. *The organizational structure of each facility.*

(i) *Total number of personnel*

55

(ii) *Division of personnel:*

Military	0
Civilian	55

(iii) *Division of personnel by category:*

Scientists	10
Engineers	10
Technicians	30
Administrative and support staff	5

(iv) *List the scientific disciplines represented in the scientific/engineering staff.*

Virology, immunology, vaccine control, diagnostics, development and validation of methods, biosafety, engineering, animal breeding

(v) *Are contractor staff working in the facility? If so, provide an approximate number.*

0

(vi) *What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?*

Swiss Confederation (Federal Department of Home Affairs)

(vii) *What are the funding levels for the following programme areas:*

Research	15 %
Development	10 %
Test & Evaluation	10 %
Analysis / Diagnosis	25 %
Education & Training	10 %
Other activities	30 % (costs for safety, infrastructure and administration)

(viii) *Briefly describe the publication policy of the facility:*

Publication in open literature

(ix) *Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)*

List of publicly available papers and reports published in 2015:

Aeschbacher S, Santschi E, Gerber V, Stalder HP, Zanoni RG. [Development of a real-time RT-PCR for the detection of equine influenza virus]. *Schweizer Archiv für Tierheilkunde*. 2015;157(4);191-201.

Balmer S, Hobet H, Nenniger C, Hadorn D, Schwermer H, Vögtlin A. Schmallenberg virus activity in cattle in Switzerland in 2013. *Veterinary Record* 19. 2015;177(11);289.

Beuret C, Signer J, Portmann ., Kümin D. Of a storm in a teacup and a gutter heater - practical aspects of VHP room fumigation. *Applied Biosafety*. 2015.

Bolz M, Kerber S, Zimmer G, Pluschke G. Use of recombinant virus replicon particles for vaccination against *Mycobacterium ulcerans* disease. *PLoS Neglected Tropical Diseases*. 2015;9(8);e0004011.

Braun U, Hilbe M, Janett F, Hässig M, Zanoni R, Frei S, Schweizer M. Transmission of border disease virus from a persistently infected calf to seronegative heifers in early pregnancy. *BMC Veterinary Research*. 2015;11;43.

Braun U, Frei S, Schweizer M, Zanoni R, Janett F. Transmission of border disease virus to seronegative cows inseminated with infected semen. *Research in Veterinary Science*. 2015;100;297-298.

Braun U, Hässig M, Previtali M, Franchini M, Vögtlin A, Storset AK, Ackermann M. Behandlung von Rindern mit bösartigem Katarrhalfieber mit Interleukin-2. *Schweizer Archiv für Tierheilkunde*. 2015;157(1);31-38.

de Wispelaere M, Ricklin M, Souque P, Frenkiel MP, Paulous S, Garcia-Nicolàs O, Summerfield A, Charneau P, Desprès P. A lentiviral vector expressing Japanese Encephalitis Virus-like particles elicits broad neutralizing antibody response in pigs. *PLoS neglected tropical diseases*. 2015;9(10);e0004081.

Démoulins T, Milona P, Englezou P, Ebensen T, Schulze K, Suter R, Pichon C, Midoux P, Guzmán CA, Ruggli N, McCullough KC. Polyethylenimine-based polyplex delivery of self-replicating RNA vaccines. *Nanomedicine*. 2015;pii:S1549-9634.

Englezou PC, Milona P, Démoulins T, Sapet C, Ebensen T, Guzmán CA, Zelphati O, Ruggli N, McCullough KC. Cationic lipids efficiently deliver self-amplifying Rep RNA for translation in DC and monocytes. *Journal of Vaccines & Vaccination*. 2015;6;47.

Halbherr SJ, Ludersdorfer TH, Ricklin M, Locher S, Berger Rentsch M, Summerfield A, Zimmer G. Biological and protective properties of immune sera directed to the influenza virus neuraminidase. *Journal of Virology*. 2015;89(3);1550-1563.

Hofmann MA, Mader M, Flückiger F, Renzullo S. Genetic stability of Schmallenberg virus in vivo during an epidemic, and in vitro, when passaged in the highly susceptible porcine SK-6 cell line. *Veterinary Microbiology*. 2015;176;97-108.

Klausmann S, Sydler T, Summerfield A, Lewis F, Weilenmann R, Sidler X, Brugnera E. T-cell reprogramming through targeted CD4-coreceptor and T-cell receptor expression on maturing thymocytes by latent Circoviridae family member porcine circovirus type 2 cell infections in the thymus. *Emerging Microbes & Infections*. 2015;4(3);e15.

Kuemin D, Portmann J, Signer J, Beuret C. Von Stürmen und Rinnenheizungen. *Contamination Control Report*. 2015;2;10-13.

Kuemin D, Portmann J, Signer J, Beuret C, Strasser M. The IndicatorSafe - a simple tool to confirm successful fumigation of a HEPA filter housing. *Applied Biosafety*. 2015;20;179-183.

McCullough KC, Milona P, Démoulins T, Englezou P, Ruggli N. Dendritic cell targets for self-replicating RNA vaccines. *Journal of blood and lymph*. 2015;5;e1000132.

Mielech AM, Deng X, Chen Y, Kindler E, Wheeler DL, Mesecar AD, Thiel V, Perlman S, Baker SC. Murine coronavirus ubiquitin-like domain is important for papain-like protease stability and viral pathogenesis. *Journal of Virology*. 2015;(9)89;4907-17.

Mine J, Tamura T, Mitsuhashi K, Okamoto M, Parchariyanon S, Pinyochon W, Ruggli N, Tratschin JD, Kida H, Sakoda Y. The N-terminal domain of Npro of classical swine fever virus determines its stability and regulates type I interferon production. *Journal of General Virology*. 2015;96;1746-56.

Muñoz-González S, Ruggli N, Rosell R, Josué Pérez L, Frías-Leuporeau MT, Fraile L, Montoya M, Córdoba L, Domingo M, Ehrensperger F, Summerfield A, Ganges L. Postnatal persistent infection with classical swine fever virus and its immunological implications. *PLoS One*. 2015;10;e0125692.

Muñoz-González S, Perez-Simó M, Muñoz M, Bohorquez JA, Rosell R, Summerfield A, Domingo M, Ruggli N, Ganges L. Efficacy of a live attenuated vaccine in classical swine fever virus postnatally persistently infected pigs. *Veterinary Research*. 2015;46:78.

Rappe J. "Ebola, est-tu là?" *VetsuisseNEWS*. 2015;1:12-3.

Stalder HP, Schweizer M, Bachofen C. Complete genome sequence of a bovine viral diarrhoea virus subgenotype 1e strain isolated in Switzerland. *Genome Announcements*. 2015;3(3);e00636-15.

Summerfield A, Auray G, Ricklin ME. Comparative dendritic cells biology of veterinary mammals. *Annual review of animal biosciences*. 2015;(3);533-57.

Summerfield A, Bertoni G, McCullough K. The importance of veterinary immunology. *VSH-Bulletin*. 2015;1/2;64-7.

Summerfield A, Meurens F, Ricklin ME. The immunology of the porcine skin and its value as a model for human skin molecular immunology. *Molecular Immunology*. 2015;66(1);14-21.

Summerfield A, Ruggli N. Immune responses against classical swine fever virus: between ignorance and lunacy. *Frontiers in veterinary science*. 2015;2;10.

Summerfield A, Zimmer G, Thiel V. Being prepared against viral zoonoses. *VSH-Bulletin*. 2015;1/2;55-8.

Tamura T, Ruggli N, Nagashima N, Okamatsu M, Igarashi M, Mine J, Hofmann MA, Liniger M, Summerfield A, Kida H, Sakoda Y. Intracellular membrane association of the N-terminal domain of classical swine fever virus NS4B determines viral genome replication and virulence. *Journal of General Virology*. 2015;96;2623-35.

V'kovski P, Al-Mulla H, Thiel V, Neuman BW. New insights on the role of paired membrane structures in coronavirus replication. *Virus Research*. 2015;16(202);33-40.

5. *Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms⁹ and/or toxins studied, as well as outdoor studies of biological aerosols.*

The Institute of Virology and Immunology (IVI), which is part of the Swiss Federal Food Safety and Veterinary Office, is the ISO 17025 accredited institute for the diagnosis, surveillance and control of highly contagious epizootics. In addition, the IVI pursues research both on these viruses and emerging viral diseases, as well as their potential transmission to man. The IVI is also the competent authority issuing the licenses required for the sale of veterinary immunobiological products. Basic research is carried out in the fields of immunology and virology, and involves influenza virus, foot-and-mouth disease virus, classical swine fever virus and porcine circovirus type 2. The development and diagnostics branches focus on assays and tests for classical and african swine fever, foot-and-mouth disease, avian influenza, bluetongue, and other highly contagious infectious diseases. In this domain, the IVI occupies a leading position internationally.

For further information please visit: <http://www.blv.admin.ch/ivi/index.html?lang=en>

⁹ Including viruses and prions.

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Centre Régional de Compétence – Laboratoire Régional Ouest (GE) (Regional Competence Center – Regional Laboratory West (GE))
Authority	Département du Territoire, Canton de Genève (Department of Territory, Canton of Geneva)
Name of facility	Laboratoire de Bactériologie (Bacteriological Laboratory)
Affiliation	Hôpitaux Universitaires de Genève (University Hospitals of Geneva)

2. *Where is it located (include both address and geographical location)?*

Location	Rue Gabrielle Perret-Gentil 4 CH-1211 Genève 14
Geographical location	N 46° 11' 37.20", E 6° 8' 59.92"

3. *Floor area of laboratory areas by containment level:*

BSL2	524 m ²
BSL3	80 m ²
BSL3Ag	0 m ²
BSL4	0 m ²
Total	604 m ²

4. *The organizational structure of each facility.*

(i) *Total number of personnel*

(ii) *Division of personnel:*

Military	0
Civilian	9

(iii) *Division of personnel by category:*

Scientists	7
Engineers	0
Technicians	2
Administrative and support staff	0

(iv) *List the scientific disciplines represented in the scientific/engineering staff.*

Medicine, biology, microbiology, molecular biology, bacterial genetics, infectious diseases

(v) *Are contractor staff working in the facility? If so, provide an approximate number.*

0

(vi) *What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?*

Cantons of Fribourg, Genève, Neuchâtel, Valais, Vaud

(vii) *What are the funding levels for the following programme areas:*

Research	0 %
Development	5 %
Test & Evaluation	40 %
Analysis / Diagnosis	40 %
Education & Training	13 %
Other activities	2 % (costs for maintenance and administration)

(viii) *Briefly describe the publication policy of the facility:*

Publication in open literature

(ix) *Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)*

List of publicly available papers and reports published in 2015:

Mombelli A, Cionca N, Almaghlouth A, Cherkaoui A, Schrenzel J, Giannopoulou C. Effect of Periodontal Therapy With Amoxicillin-Metronidazole on Pharyngeal Carriage of Penicillin- and Erythromycin-Resistant Viridans Streptococci. *J Periodontol.* 2015 Dec 14:1-13.

Andrey DO, Hinrikson H, Renzi G, Hibbs J, Adler D, Schrenzel J. Xpert(®) MTB/RIF assay sensitivity with different methods of CSF processing for the diagnosis of TB meningitis. *Int J Tuberc Lung Dis.* 2015 Dec;19(12):1555-6.

Von Dach E, Diene SM, Fankhauser C, Schrenzel J, Harbarth S, François P. Comparative Genomics of Community-Associated Methicillin-Resistant *Staphylococcus aureus* Shows the Emergence of Clone ST8-USA300 in Geneva, Switzerland. *J Infect Dis.* 2015 Oct 13. pii: jiv489.

Cherkaoui A, Emonet S, Renzi G, Schrenzel J. Characteristics of multidrug-resistant *Acinetobacter baumannii* strains isolated in Geneva during colonization or infection. *Ann Clin Microbiol Antimicrob.* 2015 Sep 11;14:42.

Vincent JL, Brealey D, Libert N, Abidi NE, O'Dwyer M, Zacharowski K, Mikaszewska-Sokolewicz M, Schrenzel J, Simon F, Wilks M, Picard-Maureau M, Chalfin DB, Ecker DJ, Sampath R, Singer M; Rapid Diagnosis of Infections in the Critically Ill Team. Rapid Diagnosis of Infection in the Critically Ill, a Multicenter Study of Molecular Detection in Bloodstream Infections, Pneumonia, and Sterile Site Infections. *Crit Care Med.* 2015 Nov;43(11):2283-91.

Marinic K, Manoil D, Filieri A, Wataha JC, Schrenzel J, Lange N, Bouillaguet S. Repeated exposures to blue light-activated eosin Y enhance inactivation of *E. faecalis* biofilms, in vitro. *Photodiagnosis Photodyn Ther.* 2015 Sep;12(3):393-400.

Cherkaoui A, Diene SM, Emonet S, Renzi G, Francois P, Schrenzel J. Ampicillin-resistant *Haemophilus influenzae* isolates in Geneva: serotype, antimicrobial susceptibility, and β -lactam resistance mechanisms. *Eur J Clin Microbiol Infect Dis.* 2015 Oct;34(10):1937-45.

Anderson de la Llana R, Dubois-Ferriere V, Maggio A, Cherkaoui A, Manzano S, Renzi G, Hibbs J, Schrenzel J, Ceroni D. Oropharyngeal *Kingella kingae* carriage in children: characteristics and correlation with osteoarticular infections. *Pediatr Res*. 2015 Nov;78(5):574-9.

Riat A, Hinrikson H, Barras V, Fernandez J, Schrenzel J. Confident identification of filamentous fungi by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry without subculture-based sample preparation. *Int J Infect Dis*. 2015 Jun;35:43-5.

Riat A, Rentenaar RJ, van Drongelen AM, Barras V, Bertens LC, Vlek AL, Doppenberg E, Weersink AJ, Reinders E, Vlaminckx BJ, Overbeeke N, van Burgel ND, Peterse N, Bosboom R, Boekhout T, Schrenzel J, Kusters JG. Ground steel target plates in combination with direct transfer of clinical *Candida* isolates improves frequencies of species-level identification by matrix-assisted laser desorption ionization-time of flight mass spectrometry in comparison with polished steel target plates. *J Clin Microbiol*. 2015 Jun;53(6):1993-5.

Charretier Y, Köhler T, Cecchini T, Bardet C, Cherkaoui A, Llanes C, Bogaerts P, Chatellier S, Charrier JP, Schrenzel J. Label-free SRM-based relative quantification of antibiotic resistance mechanisms in *Pseudomonas aeruginosa* clinical isolates. *Front Microbiol*. 2015 Feb 10;6:81.

Stewardson AJ, Gaïa N, François P, Malhotra-Kumar S, Delémont C, Martinez de Tejada B, Schrenzel J, Harbarth S, Lazarevic V; SATURN WP1 and WP3 Study Groups. Collateral damage from oral ciprofloxacin versus nitrofurantoin in outpatients with urinary tract infections: a culture-free analysis of gut microbiota. *Clin Microbiol Infect*. 2015 Apr;21(4):344.e1-11.

Troccaz M, Gaïa N, Beccucci S, Schrenzel J, Cayeux I, Starkenmann C, Lazarevic V. Mapping axillary microbiota responsible for body odours using a culture-independent approach. *Microbiome*. 2015 Jan 24;3(1):3.

5. *Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms⁹ and/or toxins studied, as well as outdoor studies of biological aerosols.*

The Bacteriological Laboratory, which is part of the University Hospitals of Geneva, is the Regional Competence Center for the primary analysis of bacteriological samples suspicious of a bioterror-related background. Protocols for the detection of bacteria causing anthrax, plague, tularemia and brucellosis have been established in close collaboration with the National Reference Center for Anthrax. Furthermore, there is a strong link between the Bacteriological Laboratory and the Genomic Research Laboratory that is almost exclusively executing basic and applied research projects under joint leadership. Translational research is actively promoted through this channel of cooperation.

For further information please visit (website in French):

<http://www.hug-ge.ch/laboratoire-bacteriologie>

⁹ Including viruses and prions.

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Centre Régional de Compétence – Laboratoire Régional Ouest (GE) (Regional Competence Center – Regional Laboratory West (GE))
Authority	Département du Territoire, Canton de Genève (Department of Territory, Canton of Geneva)
Name of facility	Laboratoire de Virologie – Centre National de Référence pour les Infections Virales Emergentes (Virological Laboratory – National Reference Center for Emerging Viral Infections)
Affiliation	Hôpitaux Universitaires de Genève (University Hospitals of Geneva)

This facility is declared in accordance with Form A, part 2 (iii) [► pages 37 to 41].

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Centre Régional de Compétence – Laboratoire Régional Ouest (VD) (Regional Competence Center – Regional Laboratory West (VD))
Authority	Direction Générale de l'Environnement, Département du Territoire et de l'Environnement, Canton de Vaud (Office for Environment, Territory and Environment Department, Canton of Vaud)
Name of facility	Laboratoires de Diagnostic de l'Institut de Microbiologie (Diagnostic Laboratories of the Institute of Microbiology)
Affiliation	Département de Pathologie et Médecine de Laboratoire, Centre Hospitalier Universitaire Vaudois (Department of Pathology and Laboratory Medicine, University Hospital of Lausanne)

2. *Where is it located (include both address and geographical location)?*

Location	Rue du Bugnon 48 CH-1011 Lausanne
Geographical location	N 46° 31' 30.57", E 6° 38' 29.15"

3. *Floor area of laboratory areas by containment level:*

BSL2	0 m ²
BSL3	77 m ²
BSL3Ag	0 m ²
BSL4	0 m ²
Total	77 m ²

4. *The organizational structure of each facility.*

(i) *Total number of personnel*

11

(ii) *Division of personnel:*

Military	0
Civilian	11

(iii) *Division of personnel by category:*

Scientists	4
Engineers	0
Technicians	7
Administrative and support staff	0

(iv) *List the scientific disciplines represented in the scientific/engineering staff.*

Bacteriology, mycology, parasitology, virology

(v) *Are contractor staff working in the facility? If so, provide an approximate number.*

0

(vi) *What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?*

Cantons of Fribourg, Genève, Neuchâtel, Valais, Vaud

(vii) *What are the funding levels for the following programme areas:*

Research	0 %
Development	5 %
Test & Evaluation	5 %
Analysis / Diagnosis	80 %
Education & Training	10 %
Other activities	0 %

(viii) *Briefly describe the publication policy of the facility:*

Publication in open literature

(ix) *Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)*

List of publicly available papers and reports published in 2015:

Greub G, Sahli R, Brouillet R, Jatton K. Ten years of R&D and full automation in molecular diagnosis. *Future Microbiol.* 2016 Mar;11:403-25.

Tagini F, Jatton K, Manuel O, Greub G. Presence of Chlamydiales DNA in samples negative by broad-range bacterial 16S rRNA PCRs: new insights into chlamydial pathogenic role. *New Microbes New Infect.* 2016 Jan 22;11:32-3.

Hoffmann H, Kohl TA, Hofmann-Thiel S, Merker M, Beckert P, Jatton K, Nedialkova L, Sahalchik E, Rothe T, Keller PM, Niemann S. Delamanid and Bedaquiline Resistance in Mycobacterium tuberculosis Ancestral Beijing Genotype Causing Extensively Drug-Resistant Tuberculosis in a Tibetan Refugee. *Am J Respir Crit Care Med.* 2016 Feb 1;193(3):337-40.

Croxatto A, Prod'homme G, Faverjon F, Rochais Y, Greub G. Laboratory automation in clinical bacteriology: what system to choose? *Clin Microbiol Infect.* 2016 Mar;22(3):217-35.

Lina G, Greub G. Automation in bacteriology: a changing way to perform clinical diagnosis in infectious diseases. *Clin Microbiol Infect.* 2016 Mar;22(3):215-6.

Opota O, Prod'homme G, Andreutti-Zaugg C, Dessauges M, Merz L, Greub G, Chave JP, Jatton K. Diagnosis of Aerococcus urinae infections: Importance of matrix-assisted laser desorption ionization time-of-flight mass spectrometry and broad-range 16S rDNA PCR. *Clin Microbiol Infect.* 2016 Jan;22(1):e1-2.

Longo MV, Jatón K, Pilo P, Chabanel D, Erard V. Long-Lasting Fever and Lymphadenitis: Think about *F. tularensis*. *Case Rep Med*. 2015;2015:191406.

Gruber JR, Sarro R, Delaloye J, Surmely JF, Siniscalchi G, Tozzi P, Jaques C, Jatón K, Delabays A, Greub G, Rutz T. *Tropheryma whippelii* bivalvular endocarditis and polyarthralgia: a case report. *J Med Case Rep*. 2015 Nov 18;9:259.

Vouga M, Greub G. Emerging bacterial pathogens: the past and beyond. *Clin Microbiol Infect*. 2016 Jan;22(1):12-21.

Bizzini A, Péter O, Baud D, Edouard S, Meylan P, Greub G. Evaluation of a new serological test for the detection of anti-Coxiella and anti-Rickettsia antibodies. *Microbes Infect*. 2015 Nov-Dec;17(11-12):811-6.

Pilloux L, Aeby S, Gäumann R, Burri C, Beuret C, Greub G. The high prevalence and diversity of Chlamydiales DNA within *Ixodes ricinus* ticks suggest a role for ticks as reservoirs and vectors of Chlamydia-related bacteria. *Appl Environ Microbiol*. 2015 Dec;81(23):8177-82.

Prod'hom G, Durussel C, Blanc D, Croxatto A, Greub G. Early detection of extended-spectrum β -lactamase from blood culture positive for an Enterobacteriaceae using β LACTA test. *New Microbes New Infect*. 2015 Jun 9;8:1-3.

Opota O, Jatón K, Branley J, Vanrompay D, Erard V, Borel N, Longbottom D, Greub G. Improving the molecular diagnosis of *Chlamydia psittaci* and *Chlamydia abortus* infection with a species-specific duplex real-time PCR. *J Med Microbiol*. 2015 Oct;64(10):1174-85.

Tissot F, Prod'hom G, Manuel O, Greub G. Impact of round-the-clock CSF Gram stain on empirical therapy for suspected central nervous system infections. *Eur J Clin Microbiol Infect Dis*. 2015 Sep;34(9):1849-57.

Gallardo C, Williams-Smith J, Jatón K, Asner S, Cheseaux JJ, Troillet N, Manuel O, Berthod D. Leptospirosis in a family after whitewater rafting in Thailand. *Rev Med Suisse*. 2015 Apr 15;11(470):872-6.

Croxatto A, Dijkstra K, Prod'hom G, Greub G. Comparison of Inoculation with the Inoqula and WASP Automated Systems with Manual Inoculation. *J Clin Microbiol*. 2015 Jul;53(7):2298-307.

Dormond L, Jatón K, de Vallière S, Genton B, Greub G. Malaria real-time PCR: correlation with clinical presentation. *New Microbes New Infect*. 2015 Feb 28;5:10-2.

Bally F, Quach A, Greub G, Jatón K, Petignat C, Ambord C, Fellay J, Masserey E, Spencer B. Opportunistic testing for urogenital infection with *Chlamydia trachomatis* in south-western Switzerland, 2012: a feasibility study. *Euro Surveill*. 2015 Mar 5;20(9).

Opota O, Desgraz B, Kenfak A, Jatton K, Cavassini M, Greub G, Prod'hom G, Giulieri S. Cryptococcus neoformans meningitis with negative cryptococcal antigen: Evaluation of a new immunochromatographic detection assay. New Microbes New Infect. 2014 Dec 19;4:1-4.

Opota O, Croxatto A, Prod'hom G, Greub G. Blood culture-based diagnosis of bacteraemia: state of the art. Clin Microbiol Infect. 2015 Apr;21(4):313-22.

Opota O, Jatton K, Greub G. Microbial diagnosis of bloodstream infection: towards molecular diagnosis directly from blood. Clin Microbiol Infect. 2015 Apr;21(4):323-31.

5. *Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms⁹ and/or toxins studied, as well as outdoor studies of biological aerosols.*

The Diagnostic Laboratories of the Institute of Microbiology, which are part of the University Hospital of Lausanne, are the Regional Competence Center for the primary analysis of samples suspicious of a bioterror-related background. Due to its other diagnostic activities, it is able to cover the whole spectrum of microbiology.

For further information please visit:

http://www.chuv.ch/microbiologie/imu_home/imu-prestations.htm

⁹ Including viruses and prions.

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Regionales Kompetenzzentrum – Regionallabor Zentrum West (BE) (Regional Competence Center – Regional Laboratory West Central (BE))
Authority	Kantonales Laboratorium Bern, Gesundheits- und Fürsorgedirektion, Kanton Bern (Cantonal Laboratory of Berne, Directorate of Public Health and Welfare, Canton of Berne)
Name of facility	Labor Spiez (Spiez Laboratory)
Affiliation	Bundesamt für Bevölkerungsschutz, Eidgenössisches Departement für Verteidigung, Bevölkerungsschutz und Sport (Federal Office for Civil Protection, Federal Department of Defence, Civil Protection and Sports)

This facility is declared in accordance with Form A, part 2 (iii) [➤ pages 28 to 35].

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Regionales Kompetenzzentrum – Regionallabor Zentrum Ost (LU) (Regional Competence Center – Regional Laboratory East Central (LU))
Authority	Luzerner Kantonsspital, Kanton Luzern (Cantonal Hospital of Lucerne, Canton of Lucerne)
Name of facility	Institut für Medizinische Mikrobiologie (Department of Medical Microbiology)
Affiliation	Zentrum für LaborMedizin, Luzerner Kantonsspital (Center for Laboratory Medicine, Cantonal Hospital of Luzern)

2. *Where is it located (include both address and geographical location)?*

Location	Luzerner Kantonsspital Haus 47 Spitalstrasse CH-6000 Luzern 16
Geographical location	N 47° 3' 32.45", E 8° 18' 1.17"

3. *Floor area of laboratory areas by containment level:*

BSL2	716 m ²
BSL3	62 m ²
BSL3Ag	0 m ²
BSL4	0 m ²
Total	778 m ²

4. *The organizational structure of each facility.*

(i) *Total number of personnel*

(ii) *Division of personnel:*

Military	0
Civilian	8

(iii) *Division of personnel by category:*

Scientists	3
Engineers	0
Technicians	5
Administrative and support staff	0

(iv) *List the scientific disciplines represented in the scientific/engineering staff.*

Clinical microbiology (all disciplines; diagnostics and applied research)

(v) *Are contractor staff working in the facility? If so, provide an approximate number.*

0

(vi) *What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?*

Cantons of Luzern, Nidwalden, Obwalden, Schwyz, Uri

(vii) *What are the funding levels for the following programme areas:*

Research	0 %
Development	0 %
Test & Evaluation	15 %
Analysis / Diagnosis	75 %
Education & Training	10 %
Other activities	0 %

(viii) *Briefly describe the publication policy of the facility:*

Publication in open literature

(ix) *Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)*

No publicly available papers or reports published in 2015.

5. *Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms⁹ and/or toxins studied, as well as outdoor studies of biological aerosols.*

The Department of Medical Microbiology, as part of the Zentrum für LaborMedizin, Luzerner Kantonsspital, is accredited (ISO / EN 17025) for clinical bacteriology, mycology, mycobacteriology, parasitology, molecular diagnostics, serology. The current focus of applied research activities is on specific bacteriological / molecular testing topics (e.g. MALDI-TOF versus sequencing). In addition, it is the Regional Competence Center for primary analyses of samples suspicious of a bioterror-related background.

For further information please visit (website in German):

<https://www.luks.ch/standorte/luzern/kliniken/zentrum-fuer-labormedizin/institut-fuer-medizinische-mikrobiologie.html>

⁹ Including viruses and prions.

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Regionales Kompetenzzentrum – Regionallabor Ost (ZH) (Regional Competence Center – Regional Laboratory East (ZH))
Authority	Amt für Abfall, Wasser, Energie und Luft, Baudirektion, Kanton Zürich (Office for Waste, Water, Energy and Air, Directorate of Construction, Canton of Zurich)
Name of facility	Institut für Medizinische Mikrobiologie (Institute of Medical Microbiology)
Affiliation	Medizinische Fakultät, Universität Zürich (Faculty of Medicine, University of Zurich)

2. *Where is it located (include both address and geographical location)?*

Location	Gloriastrasse 30/32 CH-8006 Zürich
Geographical location	N 47° 22' 36.20", E 8° 33' 11.18"

3. *Floor area of laboratory areas by containment level:*

BSL2	0 m ²
BSL3	20 m ²
BSL3Ag	0 m ²
BSL4	0 m ²
Total	20 m ²

4. *The organizational structure of each facility.*

(i) *Total number of personnel*

3

(ii) *Division of personnel:*

Military	0
Civilian	3

(iii) *Division of personnel by category:*

Scientists	2
Engineers	0
Technicians	1
Administrative and support staff	0

(iv) *List the scientific disciplines represented in the scientific/engineering staff.*

Microbiology (bacteriology / mycology)

(v) *Are contractor staff working in the facility? If so, provide an approximate number.*

0

(vi) *What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?*

Cantons of Appenzell Ausserrhoden, Appenzell Innerrhoden, Glarus, Graubünden, Sankt Gallen, Schaffhausen, Thurgau, Zug, Zürich, and the Principality of Liechtenstein

(vii) *What are the funding levels for the following programme areas:*

Research	0 %
Development	0 %
Test & Evaluation	10 %
Analysis / Diagnosis	80 %
Education & Training	10 %
Other activities	0 %

(viii) *Briefly describe the publication policy of the facility:*

Publication in open literature

(ix) *Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)*

List of publicly available papers and reports published in 2015:

Bruhn DF, Waidyarachchi SL, Madhura DB, Shcherbakov D, Zheng Z, Liu J, Abdelrahmand YM, Singh AP, Duscha S, Rathi C, Lee RB, Belland RJ, Meibohm B, Rosch JW, Böttger EC, Lee RE. Aminomethyl spectinomycins as novel therapeutics for drug resistant respiratory tract and sexually transmitted bacterial infections. *Science Translational Medicine*. 2015;7:288ra75.

Valesia G, Hombach M, Maurer FP, Courvalin P, Roos M, Böttger EC. The Resistant-Population Cutoff (RCOFF): a New Concept for Improved Characterization of Antimicrobial Susceptibility Patterns of Non-Wild-Type Bacterial Populations. *J Clin Microbiol*. 2015;3:1806-11.

Jeschke A, Zehethofer N, Lindner B, Krupp J, Schwudke D, Haneburger I, Jovic M, Backer JM, Balla T, Hilbi H and Haas A. Phosphatidylinositol 4-phosphate and phosphatidyl-inositol 3-phosphate regulate phagolysosome biogenesis. *Proc Natl Acad Sci USA*. 2015;112:4636-4641.

Harrison CF, Chiriano G, Finsel I, Manske C, Hoffmann C, Steiner B, Kranjc A, Pattey-Vuadens O, Kicka S, Trofimov V, Ouertatani-Sakouhi H, Soldati T, Scapozza L and Hilbi H. Amoebae-based screening reveals a novel family of compounds restricting intracellular Legionella. *ACS Infect Dis*. 2015;1:327-338.

Simon S, Schell U, Heuer N, Hager D, Albers MF, Matthias J, Fahrnbauer F, Trauner D, Eichinger L, Hedberg C and Hilbi H. Inter-kingdom signaling by the Legionella quorum sensing molecule LAI-1 inhibits cell migration through an IQGAP1/CDC42/ARHGEF9-dependent pathway. *PLoS Pathog*. 2015;11:e1005307.

Matsushita T, Chen W, Juskeviciene R, Youjin T, Shcherbakov D, Vasella A, Böttger EC, Crich D. Influence of 4'-O-glycoside constitution and configuration on ribosomal selectivity of paromomycin. *J Am Chem Soc*. 2015;137:7706-17.

Kato T, Yang G, Youjin T, Juskeviciene R, Perez-Fernandez D, Shinde HM, Salian S, Bernet B, Vasella A, Böttger EC, Crich D. Synthesis and antiribosomal activities of 4'-0-, 6'-0-, 4'',6''-0-derivatives in the kanamycin series reveal differing target selectivity patterns between the 4.5- and 4.6- series of disubstituted 2-deoxystreptamine classes of aminoglycoside antibiotics. *ACS Infect Dis*. 2015;1:479-486.

Bruhn DF, Schermann M, Liu J, Shcherbakov D, Meibohm B, Böttger EC, Lenaerts AJ, Lee RE. In vitro and in vivo evaluation of synergism between anti-tubercular spectinamides and non-classical tuberculosis antibiotics. *Sci Rep.* 2015;5:13985.

Mueller NJ, Tini GM, Weber A, Gaspert A, Husmann L, Bloemberg GV, Boehler A, Benden C. Hepatitis from *Spiroplasma* sp. in an immunocompromised patient. *Am J Transplant.* 2015;15:2511-6.

Keller P, Hömke R, Ritter C, Valsesia G, Bloemberg GV, Böttger EC. Determination of MIC distribution and epidemiological cut-off values for bedaquiline and delamanid in *Mycobacterium tuberculosis* using MGIT 960/ TB eXiST. *Antimicrob Agents Chemother.* 2015;59:4352-55.

Sahrman P, Manz A, Attin T, Zbinden R, Schmidlin PR. Effect of application of a PVP-iodine solution before and during subgingival ultrasonic instrumentation on post-treatment bacteremia: A randomized single-center placebo-controlled clinical trial. *J Clin Periodontol.* 2015;42:632-9.

Lanini S, Zumla A, Ioannidis JP, Caro AD, Krishna S, Gostin L, Girardi E, Pletschette M, Strada G, Baritussio A, Portella G, Apolone G, Cavuto S, Satolli R, Kremsner P, Vairo F, Ippolito G. Are adaptive randomised trials or non-randomised studies the best way to address the Ebola outbreak in West Africa? *Lancet Infect Dis.* 2015;15:738-45.

Kohler P, Kuster SP, Bloemberg GV, Schulthess B, Frank M, Tanner FC, Rössle M, Böni C, Falk V, Wilhelm MJ, Sommerstein R, Achermann Y, ten Oever J, Debast SB, Wolfhagen MJHM, Brandon Bravo Bruinsma GJ, Vos MC, Bogers A, Serr A, Beyersdorf F, Sax H, Böttger EC, Weber R, van Ingen J, Wagner D, Hasse B. Health-care associated prosthetic heart valve, aortic vascular graft, and disseminated *Mycobacterium chimaera* infections subsequent to open heart surgery. *Eur Heart J.* 2015;36:2745-53.

Bloemberg GV, Keller P, Stucki D, Trauner A, Borrell S, Latshang T, Coscolla N, Rothe T, Hömke R, Ritter C, Feldmann J, Schulthess B, Gagneux S, Böttger EC. Acquired resistance to bedaquiline and delamanid in therapy for tuberculosis. *N Engl J Med.* 2015;373:1986-8.

Zbinden A, Zbinden R, Berger C, Arlettaz R. Case series of *Bifidobacterium longum* bacteremia in three preterm infants on probiotic therapy. *Neonatology.* 2015;107:56-59.

Seidl K, Leimer N, Marques MP, Furrer A, Holzmann-Bürgel A, Senn G, Zbinden R, Zinkernagel AS. Clonality and antimicrobial susceptibility of methicillin-resistant *Staphylococcus aureus* at the University Hospital Zurich, Switzerland between 2012 and 2014. *Ann Clin Microb Antimicro.* 2015;14:1-7.

Hombach M, Maurer FP, Pfiffner T, Böttger EC, Furrer R. Standardization of operator-dependent variables affecting precision and accuracy of the disk diffusion method for antibiotic susceptibility testing. *J Clin Microbiol.* 2015;53:3864-9.

Hombach M, von Gunten B, Castelberg C, Bloemberg GV. Evaluation of the RAPIDEC® CARBA NP test for the detection of carbapenemases in Enterobacteriaceae. *J Clin Microbiol.* 2015;53:3828-33.

Bukowska MA, Hohl M, Geertsma ER, Hürlimann LM, Grütter MG, and Seeger MA. A Transporter Motor Taken Apart: Flexibility in the Nucleotide Binding Domains of a Heterodimeric ABC Exporter. *Biochemistry.* 2015;54:3086–99.

Harrison CF, Kicka S, Kranjc A, Finsel I, Chiriano G, Ouertatani-Sakouhi H, Soldati T, Scapozza L and Hilbi H. Adrenergic antagonists restrict replication of Legionella. *Microbiology.* 2015;161:1392-406.

Mandhapaty AR, Kato T, Matsushita T, Ksebati B, Vasella A, Böttger EC, Crich D. Fluorine-decoupled carbon spectroscopy for the determination of configuration at fully substituted, trifluoromethyl- and perfluoroalkyl-bearing carbons: comparison with (19)f-(1)h heteronuclear overhauser effect spectroscopy. *J Org Chem.* 2015;80:1754-63.

Marino J, Hohl M, Seeger MA, Zerbe O, Geertsma ER. Bicistronic mRNAs to enhance membrane protein overexpression. *J Mol Biol.* 2015;427:943-54.

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Oishi N, Duscha S, Boukari H, Meyer M, Xie J, Wei G, Roschitzki B, Böttger EC, Schacht J. XBP1 mitigates aminoglycoside-induced endoplasmic reticulum stress and neuronal cell death. *Cell Death and Disease.* 2015;6:e1763.

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Kaufmann S, Bloom B, Brosch R, Cardona P-J, Dockrell H, Fritzell B, Grode L, Hanekom W, Hokey D, Levin M, Martin C, Sander P, Scriba T, Shaligram U, Tameris M, von Reyn F, Walker B, Weiner J, White RG, Schrager L. Whole *Mycobacteria Cell Vaccines* for Tuberculosis Summary Group. *Vaccine.* 2015;33:3047-55.

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5. *Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms⁹ and/or toxins studied, as well as outdoor studies of biological aerosols.*

The Institute of Medical Microbiology at the University of Zurich is the Regional Competence Center for the primary analysis of bacteriological samples suspicious of a bioterror-related background. This represents an additional and not a continuous task of the diagnostics laboratory proficient in bacteriology, mycology and serology.

For further information please visit (website in German):

<http://www.imm.uzh.ch/index.html>

⁹ Including viruses and prions.

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Regionales Kompetenzzentrum – Regionallabor Ost (ZH) (Regional Competence Center – Regional Laboratory East (ZH))
Authority	Amt für Abfall, Wasser, Energie und Luft, Baudirektion, Kanton Zürich (Office for Waste, Water, Energy and Air, Directorate of Construction, Canton of Zurich)
Name of facility	Institut für Medizinische Virologie (Institute of Medical Virology)
Affiliation	Medizinische Fakultät, Universität Zürich (Faculty of Medicine, University of Zurich)

2. *Where is it located (include both address and geographical location)?*

Location	Winterthurerstrasse 190 CH-8057 Zürich
Geographical location	N 47° 23' 52.08", E 8° 33' 01.92"

3. *Floor area of laboratory areas by containment level:*

BSL2	0 m ²
BSL3	25 m ²
BSL3Ag	0 m ²
BSL4	0 m ²
Total	25 m ²

4. *The organizational structure of each facility.*

(i) *Total number of personnel*

2

(ii) *Division of personnel:*

Military	0
Civilian	2

(iii) *Division of personnel by category:*

Scientists	1
Engineers	0
Technicians	1
Administrative and support staff	0

(iv) *List the scientific disciplines represented in the scientific/engineering staff.*

Microbiology (virology)

(v) *Are contractor staff working in the facility? If so, provide an approximate number.*

0

(vi) *What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?*

Cantons of Appenzell Ausserrhoden, Appenzell Innerrhoden, Glarus, Graubünden, Sankt Gallen, Schaffhausen, Thurgau, Zug, Zürich, and the Principality of Liechtenstein

(vii) *What are the funding levels for the following programme areas:*

Research	0 %
Development	0 %
Test & Evaluation	10 %
Analysis / Diagnosis	80 %
Education & Training	10 %
Other activities	0 %

(viii) *Briefly describe the publication policy of the facility:*

Publication in open literature

(ix) *Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)*

List of publicly available papers and reports published in 2015:

Yang WL, Kouyos R, Scherrer AU, Böni J, Shah C, Yerly S, Klimkait T, Aubert V, Furrer H, Battegay M, Cavassini M, Bernasconi E, Vernazza P, Held L, Ledergerber B, Günthard HF; Swiss HIV Cohort Study. Assessing the Paradox Between Transmitted and Acquired HIV Type 1 Drug Resistance Mutations in the Swiss HIV Cohort Study From 1998 to 2012. *J Infect Dis.* 2015 Jul 1;212(1):28-38.

Yang WL, Kouyos RD, Böni J, Yerly S, Klimkait T, Aubert V, Scherrer AU, Shilaih M, Hinkley T, Petropoulos C, Bonhoeffer S, Günthard HF; Swiss HIV Cohort Study (SHCS). Persistence of transmitted HIV-1 drug resistance mutations associated with fitness costs and viral genetic backgrounds. *PLoS Pathog.* 2015 Mar 23;11(3):e1004722.

Krengel A, Cattori V, Meli ML, Wachter B, Böni J, Bisset LR, Thalwitzer S, Melzheimer J, Jago M, Hofmann-Lehmann R, Hofer H, Lutz H. Gammaretrovirus-specific antibodies in free-ranging and captive Namibian cheetahs. *Clin Vaccine Immunol.* 2015 Jun;22(6):611-7.

Wandeler G, Schlauri M, Jaquier ME, Rohrbach J, Metzner KJ, Fehr J, Ambrosioni J, Cavassini M, Stöckle M, Schmid P, Bernasconi E, Keiser O, Salazar-Vizcaya L, Furrer H, Rauch A; Swiss HIV Cohort Study, Aubert V, Battegay M, Bernasconi E, Böni J, Bucher HC, Burton-Jeangros C, Calmy A, Cavassini M, Dollenmaier G, Egger M, Elzi L, Fehr J, Fellay J, Furrer H, Fux CA, Gorgievski M, Günthard H, Haerry D, Hasse B, Hirsch HH, Hoffmann M, Hösli I, Kahlert C, Kaiser L, Keiser O, Klimkait T, Kouyos R, Kovari H, Ledergerber B, Martinetti G, Martinez de Tejada B, Metzner K, Müller N, Nadal D, Nicca D, Pantaleo G, Rauch A, Regenass S, Rickenbach M, Rudin C, Schöni-Affolter F, Schmid P, Schüpbach J, Speck R, Tarr P, Telenti A, Trkola A, Vernazza P, Weber R, Yerly S. Incident Hepatitis C Virus Infections in the Swiss HIV Cohort Study: Changes in Treatment Uptake and Outcomes Between 1991 and 2013. *Open Forum Infect Dis.* 2015 Mar 25;2(1):ofv026.

Schaerer V, Haubitz S, Kovari H, Ledergerber B, Ambrosioni J, Cavassini M, Stöckle M, Schmid P, Decosterd L, Aouri M, Böni J, Günthard HF, Furrer H, Metzner KJ, Fehr J, Rauch A; Swiss HIV Cohort Study. Protease inhibitors to treat hepatitis C in the Swiss HIV Cohort Study: high efficacy but low treatment uptake. *HIV Med.* 2015 Nov;16(10):599-607.

Braun DL, Rauch A, Aouri M, Durisch N, Eberhard N, Anagnostopoulos A, Ledergerber B, Müllhaupt B, Metzner KJ, Decosterd L, Böni J, Weber R, Fehr J; Swiss HIV Cohort Study. A Lead-In with Silibinin Prior to Triple-Therapy Translates into Favorable Treatment Outcomes in Difficult-To-Treat HIV/Hepatitis C Coinfected Patients. *PLoS One*. 2015 Jul 15;10(7):e0133028.

Kouyos RD, Hasse B, Calmy A, Cavassini M, Furrer H, Stöckle M, Vernazza PL, Bernasconi E, Weber R, Günthard HF; Swiss HIV Cohort Study, Aubert V, Battegay M, Bernasconi E, Böni J, Bucher HC, Burton-Jeangros C, Calmy A, Cavassini M, Dollenmaier G, Egger M, Elzi L, Fehr J, Fellay J, Furrer H, Fux CA, Gorgievski M, Günthard H, Haerry D, Hasse B, Hirsch HH, Hoffmann M, Hösli I, Kahlert C, Kaiser L, Keiser O, Klimkait T, Kouyos R, Kovari H, Ledergerber B, Martinetti G, de Tejada BM, Metzner K, Müller N, Nadal D, Nicca D, Pantaleo G, Rauch A, Regenass S, Rickenbach M, Rudin C, Schöni-Affolter F, Schmid P, Schüpbach J, Speck R, Tarr P, Trkola A, Vernazza P, Weber R, Yerly S. Increases in Condomless Sex in the Swiss HIV Cohort Study. *Open Forum Infect Dis*. 2015 Jun 3;2(2):ofv077.

Hasse B, Tarr PE, Marques-Vidal P, Waeber G, Preisig M, Mooser V, Valeri F, Djalali S, Andri R, Bernasconi E, Calmy A, Cavassini M, Vernazza P, Battegay M, Weber R, Senn O, Vollenweider P, Ledergerber B; CoLaus Cohort, FIRE and the Swiss HIV Cohort Study, Aubert V, Barth J, Battegay M, Bernasconi E, Böni J, Bucher HC, Burton-Jeangros C, Calmy A, Cavassini M, Egger M, Elzi L, Fehr J, Fellay J, Furrer H, Fux CA, Gorgievski M, Günthard H, Haerry D, Hasse B, Hirsch HH, Hösli I, Kahlert C, Kaiser L, Keiser O, Klimkait T, Kouyos R, Kovari H, Ledergerber B, Martinetti G, Martinez de Tejada B, Metzner K, Müller N, Nadal D, Pantaleo G, Rauch A, Regenass S, Rickenbach M, Rudin C, Schöni-Affolter F, Schmid P, Schultze D, Schüpbach J, Speck R, Staehelin C, Tarr P, Telenti A, Trkola A, Vernazza P, Weber R, Yerly S, Jean-Michel A, Murielle B, Jean Michel G, Christoph H, Thomas L, Pedro MV, Vincent M, Fred P, Martin P, Peter V, Roland VK, Aidacic V, Gerard W, Jürg B, Markus B, Heinz B, Martin B, Hans-Ulrich B, Ivo B, Reto C, Isabelle C, Corinne C, Sima D, Peter D, Simone E, Andrea F, Markus F, Claudius F, Jakob F, Ali GM, Matthias G, Denis H, Marcel H, Walter H, Simon H, Felix H, Paul H, Eva K, Vladimir K, Daniel K, Stephan K, Beat K, Benedict K, Heidi K, Vesna L, Giovanni L, Werner LH, Phillippe L, Severin L, Christoph M, Jürgen M, Damian M, Werner M, Titus M, Valentina N, Jakob R, Thomas R, Hana S, Frank S, Georg S, Oliver S, Pietro S, Jacques S, Alfred S, Alois S, Claudia S, Othmar S, Phuoc TT, Marco V, Alessandro V, René VA, Hans W, Fritz W, Johanna WS, Joseph W, Marco Z. Strong Impact of Smoking on Multimorbidity and Cardiovascular Risk Among Human Immunodeficiency Virus-Infected Individuals in Comparison With the General Population. *Open Forum Infect Dis*. 2015 Jul 8;2(3):ofv108.

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Yang WL, Kouyos RD, Scherrer AU, Böni J, Shah C, Yerly S, Klimkait T, Aubert V, Hirzel C, Battegay M, Cavassini M, Bernasconi E, Vernazza P, Held L, Ledergerber B, Günthard HF; Swiss HIV Cohort Study (SHCS); Swiss HIV Cohort Study SHCS. Assessing efficacy of different nucleos(t)ide backbones in NNRTI-containing regimens in the Swiss HIV Cohort Study. *J Antimicrob Chemother*. 2015 Dec;70(12):3323-31.

Marzel A, Shilaih M, Yang WL, Böni J, Yerly S, Klimkait T, Aubert V, Braun DL, Calmy A, Furrer H, Cavassini M, Battegay M, Vernazza PL, Bernasconi E, Günthard HF, Kouyos RD; Swiss HIV Cohort Study. HIV-1 Transmission During Recent Infection and During Treatment Interruptions as Major Drivers of New Infections in the Swiss HIV Cohort Study. *Clin Infect Dis*. 2016 Jan 1;62(1):115-22.

Vetter BN, Orłowski V, Schüpbach J, Böni J, Rühle B, Huder JB. Resolution of plasma sample mix-ups through comparison of patient antibody patterns to *E. coli*. *J Immunol Methods*. 2015 Dec;427:130-3.

5. *Briefly describe the biological defence work carried out at the facility, including type(s) of microorganisms⁹ and/or toxins studied, as well as outdoor studies of biological aerosols.*

The Institute of Medical Virology at the University of Zurich is the Regional Competence Center for the primary analysis of viral samples suspicious of a bioterror-related background. This represents an additional and not a continuous task of the viral diagnostics laboratory.

For further information please visit: http://www.virology.uzh.ch/index_en.html

⁹ Including viruses and prions.

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Regionales Kompetenzzentrum – Regionallabor Nord (BS) (Regional Competence Center – Regional Laboratory North (BS))
Authority	Kantonales Laboratorium Basel-Stadt, Kanton Basel-Stadt (Cantonal Laboratory of Basel-Stadt, Canton of Basel-Stadt)
Name of facility	Kantonales Laboratorium Basel-Stadt (Cantonal Laboratory of Basel-Stadt)
Affiliation	Bereich Gesundheitsschutz, Gesundheitsdepartement, Kanton Basel-Stadt (Health Protection Division, Public Health Department, Canton of Basel-Stadt)

2. *Where is it located (include both address and geographical location)?*

Location	Kannenfeldstrasse 2 CH-4056 Basel
Geographical location	N 47° 33' 43.48", E 7° 34' 26.85"

3. *Floor area of laboratory areas by containment level:*

BSL2	14 m ²
BSL3	36 m ²
BSL3Ag	0 m ²
BSL4	0 m ²
Total	50 m ²

4. *The organizational structure of each facility.*

(i) *Total number of personnel*

4

(ii) *Division of personnel:*

Military	0
Civilian	4

(iii) *Division of personnel by category:*

Scientists	2
Engineers	0
Technicians	2
Administrative and support staff	0

(iv) *List the scientific disciplines represented in the scientific/engineering staff.*

Microbiology, molecular biology, chemistry, inspection

(v) *Are contractor staff working in the facility? If so, provide an approximate number.*

0

(vi) *What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?*

Cantons of Aargau, Basel-Landschaft, Basel-Stadt, Solothurn

(vii) *What are the funding levels for the following programme areas:*

Research	0 %
Development	15 %
Test & Evaluation	40 %
Analysis / Diagnosis	40 %
Education & Training	5 %
Other activities	0 %

(viii) *Briefly describe the publication policy of the facility:*

Publication in open literature

(ix) *Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)*

List of publicly available papers and reports published in 2015:

Schulze J, Brodmann P, Oehen B, Bagutti C. Low level impurities in imported wheat are a likely source of feral transgenic oilseed rape (*Brassica napus* L.) in Switzerland. *Environ Sci Pollut Res Int.* 2015 Nov;22(21):16936-42.

5. *Briefly describe the biological defence work carried out at the facility, including type(s) of microorganisms⁹ and/or toxins studied, as well as outdoor studies of biological aerosols.*

The Cantonal Laboratory of Basel-Stadt is the Regional Competence Center for the primary analysis of samples suspicious of a bioterror-related background. The Regional Laboratory North is also appointed reference laboratory by the Federal Office of Environment for the two following fields of activities: Analysis of samples taken in and around laboratories subjected to the Containment Ordinance, and analysis of samples taken in the environment for the surveillance of the Release Ordinance. Microbiological and molecular biological methods have been established for the identification of a wide range of microorganisms in environmental samples, including relevant pathogens such as *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Bacillus anthracis*, as well as adenoviruses and lentiviruses. Further methods for the detection of bioterror agents have been implemented according to the Regional Laboratory Network.

For further information please visit (website in German):

<http://www.kantonslabor.bs.ch/>

⁹ Including viruses and prions.

National biological defence research and development programmes – Facilities

1. *What is the name of the facility?*

Title / Function	Centro Regionale di Competenza – Laboratorio Regionale Sud (TI) (Regional Competence Center – Regional Laboratory South (TI))
Authority	Laboratorio Microbiologia Applicata, Scuola Universitaria Professionale della Svizzera Italiana (Laboratory of Applied Microbiology, University of Applied Sciences of Southern Switzerland)
Name of facility	Laboratorio Microbiologia Applicata (Laboratory of Applied Microbiology)
Affiliation	Dipartimento Ambiente Costruzioni e Design, Scuola Universitaria Professionale della Svizzera Italiana (Department for Environment, Constructions and Design, University of Applied Sciences of Southern Switzerland)

2. *Where is it located (include both address and geographical location)?*

Location	Via Mirasole 22A CH-6500 Bellinzona
Geographical location	N46° 11' 53.50", E9° 1' 10.25"

3. *Floor area of laboratory areas by containment level:*

BSL2	185 m ²
BSL3	38 m ²
BSL3Ag	0 m ²
BSL4	0 m ²
Total	223 m ²

4. *The organizational structure of each facility.*

(i) *Total number of personnel*

4

(ii) *Division of personnel:*

Military	0
Civilian	4

(iii) *Division of personnel by category:*

Scientists	3
Engineers	0
Technicians	1
Administrative and support staff	0

(iv) *List the scientific disciplines represented in the scientific/engineering staff.*

Bacteriology, mycology, molecular microbiology, entomology, microbial ecology

(v) *Are contractor staff working in the facility? If so, provide an approximate number.*

0

(vi) *What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?*

Canton of Ticino

(vii) *What are the funding levels for the following programme areas:*

Research	10 %
Development	10 %
Test & Evaluation	40 %
Analysis / Diagnosis	40 %
Education & Training	0 %
Other activities	0 %

(viii) *Briefly describe the publication policy of the facility:*

Publication in open literature

(ix) *Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)*

List of publicly available papers and reports published in 2015:

Suter T, Flacio E, Feijoó Fariña B, Engeler L, Tonolla M, and Müller P. First report of the invasive mosquito species *Aedes koreicus* in the Swiss-Italian border region. *Parasites & Vectors*. 2015; 8:402.

Flacio E, Engeler L, Tonolla M, Lüthy P and Patocchi N. Strategies of a thirteen year surveillance programme on *Aedes albopictus* (*Stegomyia albopicta*) in southern Switzerland. *Parasites & Vectors* 2015; 8:208.

Ziegler D, Pothier JF, Ardley J, Kouakou Fossou R, Pflüger V, de Meyer S, Vogel G, Tonolla M, Howieson J, Reeve W and Perret X. Ribosomal protein biomarkers provide root nodule bacterial identification by MALDI-TOF MS. *Appl Microbiol Biotechnol*. 2015; 99:5547-62.

5. *Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms⁹ and/or toxins studied, as well as outdoor studies of biological aerosols.*

The Laboratory of Applied Microbiology is the Regional Competence Center South of the Alps responsible for the primary analysis of samples suspicious of a bioterror-related background.

For further information please visit (website in Italian): <http://www.supsi.ch/lma>

⁹ Including viruses and prions.

Exchange of information on outbreaks of infectious diseases and similar occurrences caused by toxins

At the Third Review Conference it was agreed that States Parties continue to implement the following:

Exchange of information on outbreaks of infectious diseases and similar occurrences caused by toxins, and on all such events that seem to deviate from the normal pattern as regards type, development, place, or time of occurrence. The information provided on events that deviate from the norm will include, as soon as it is available, data on the type of disease, approximate area affected, and number of cases.

The Seventh Review Conference agreed the following:

No universal standards exist for what might constitute a deviation from the normal pattern.

Modalities

The Third Review Conference agreed on the following, later amended by the Seventh Review Conference:

1. *Exchange of data on outbreaks that seem to deviate from the normal pattern is considered particularly important in the following cases:*

- *When the cause of the outbreak cannot be readily determined or the causative agent¹⁰ is difficult to diagnose,*
- *When the disease may be caused by organisms which meet the criteria for risk groups III or IV, according to the classification in the latest edition of the WHO Laboratory Biosafety Manual,*
- *When the causative agent is exotic to a given geographical region,*
- *When the disease follows an unusual pattern of development,*
- *When the disease occurs in the vicinity of research centres and laboratories subject to exchange of data under item A,*
- *When suspicions arise of the possible occurrence of a new disease.*

¹⁰ It is understood that this may include organisms made pathogenic by molecular biology techniques, such as genetic engineering.

2. *In order to enhance confidence, an initial report of an outbreak of an infectious disease or a similar occurrence that seems to deviate from the normal pattern should be given promptly after cognizance of the outbreak and should be followed up by annual reports. To enable States Parties to follow a standardized procedure, the Conference has agreed that Form B should be used, to the extent information is known and/or applicable, for the exchange of annual information.*

3. *The declaration of electronic links to national websites or to websites of international, regional or other organizations which provide information on disease outbreaks (notably outbreaks of infectious diseases and similar occurrences caused by toxins that seem to deviate from the normal pattern) may also satisfy the declaration requirement under Form B.*

4. *In order to improve international cooperation in the field of peaceful bacteriological (biological) activities and in order to prevent or reduce the occurrence of ambiguities, doubts and suspicions, States Parties are encouraged to invite experts from other States Parties to assist in the handling of an outbreak, and to respond favourably to such invitations, respecting applicable national legislation and relevant international instruments.*

Exchange of information on outbreaks of infectious diseases and similar occurrences caused by toxins

Human diseases

The Swiss Federal Office of Public Health (FOPH) is responsible for the surveillance and reporting of human diseases. A nationwide notification system is regulated by the Ordinance on the Declaration of Observations of Communicable Human Diseases (*RS 818.101.126 Ordonnance du DFI du 1 décembre 2015 sur la déclaration d'observations en rapport avec les maladies transmissibles de l'homme*), which is based on the Federal Act on the Control of Communicable Human Diseases (*RS 818.101 Loi fédérale du 28 septembre 2012 sur la lutte contre les maladies transmissibles de l'homme*). Every medical practitioner and laboratory is obliged to report the occurrence or identification of certain notifiable diseases. The current situation is accessible online (http://www.bag.admin.ch/k_m_meldesystem/00733/00804/index.html?lang=fr) and data is transmitted to the World Health Organization (WHO).

Animal diseases

The Swiss Federal Food Safety and Veterinary Office (FSVO) is responsible for the surveillance and reporting of animal diseases. According to the Federal Law on Animal Epidemics (*RS 916.40 Loi du 1er juillet 1966 sur les épizooties*) and the corresponding ordinance (*RS 916.401 Ordonnance du 27 juin 1995 sur les épizooties*), notifiable animal diseases have to be reported to the FSVO, which in turn is responsible for the reporting to the World Organization for Animal Health (OIE). The current situation (<http://www.infosm.blv.admin.ch/public/bulletin/aktuell>) is accessible online.

Plant diseases and pests

The Swiss Federal Plant Protection Service (FPPS) is responsible for any kind of phytosanitary measures in order to prevent the introduction and spread of particularly harmful pests and diseases that affect plants and plant products. The FPPS is run jointly by the Swiss Federal Office for Agriculture (FOAG) and the Swiss Federal Office for the Environment (FOEN). The FOAG is responsible for the sector of agricultural and horticultural crops, whereas the FOEN is responsible for forest plants, wood and wood products, including invasive plants. According to the Federal Law on Agriculture (*RS 910.1 Loi fédérale du 29 avril 1998 sur l'agriculture*) and the corresponding ordinance (*RS 916.20 Ordonnance du 27 octobre 2010 sur la protection des végétaux*), notifiable plant diseases and pests are reported to either the FOAG or the FOEN that transmit reports to the European and Mediterranean Plant Protection Organization (EPPO). Reporting of invasive plants to the FOEN, which then communicates with the EPPO, is primarily regulated in the Ordinance on the Release of Organisms into the Environment (*RS 814.911 Ordonnance du 10 septembre 2008 sur l'utilisation d'organismes dans l'environnement*).

Information on outbreaks of infectious diseases
and similar occurrences that seem to deviate
from the normal pattern¹¹

Human diseases

No outbreaks of infectious diseases or similar occurrences that seemed to deviate from the normal pattern in terms of human diseases were observed during the reporting period.

¹¹ See paragraph 2 of the chapeau to Confidence-Building Measure B.

Information on outbreaks of infectious diseases
and similar occurrences that seem to deviate
from the normal pattern¹¹

Animal diseases

No outbreaks of infectious diseases or similar occurrences that seemed to deviate from the normal pattern in terms of animal diseases were observed during the reporting period.

¹¹ See paragraph 2 of the chapeau to Confidence-Building Measure B.

Information on outbreaks of infectious diseases and similar occurrences that seem to deviate from the normal pattern¹¹

Plant diseases and pests

Information on outbreaks of infectious diseases and similar occurrences that seem to deviate from the normal pattern in terms of plant diseases and pests that occurred during the reporting period is provided as follows:

1. *Dothistroma pini* and *Dothistroma septosporum*. First record of the causative agents for red band needle blight in pine trees on the shore of lake Walensee.
Report to the European and Mediterranean Plant Protection Organisation (EPPO):
<http://archives.eppo.int/EPPORreporting/2015/Rse-1503.pdf>, entry 2015/054
2. *Pseudomonas syringae* pv. *actinidiae*. First findings in the cantons of Vaud and Thurgau.
Report to the European and Mediterranean Plant Protection Organisation (EPPO):
<http://archives.eppo.int/EPPORreporting/2015/Rse-1507.pdf>, entry 2015/132
3. *Xylella fastidiosa*. Interception of *Coffea* spp. plants imported into Switzerland.
Report to the European and Mediterranean Plant Protection Organisation (EPPO):
<http://archives.eppo.int/EPPORreporting/2015/Rse-1510.pdf>, entry 2015/181
4. *Anoplophora glabripennis*. New outbreak detected in Berikon, canton of Aargau.
Report to the European and Mediterranean Plant Protection Organisation (EPPO):
<http://archives.eppo.int/EPPORreporting/2015/Rse-1510.pdf>, entry 2015/185

¹¹ See paragraph 2 of the chapeau to Confidence-Building Measure B.

Encouragement of publication of results and promotion of use of knowledge

At the Third Review Conference it was agreed that States parties continue to implement the following:

Encouragement of publication of results of biological research directly related to the Convention, in scientific journals generally available to States parties, as well as promotion of use for permitted purposes of knowledge gained in this research.

Modalities

The Third Review Conference agreed on the following:

- 1. It is recommended that basic research in biosciences, and particularly that directly related to the Convention should generally be unclassified and that applied research to the extent possible, without infringing on national and commercial interests, should also be unclassified.*
- 2. States parties are encouraged to provide information on their policy as regards publication of results of biological research, indicating, inter alia, their policies as regards publication of results of research carried out in research centres and laboratories subject to exchange of information under item A and publication of research on outbreaks of diseases covered by item B, and to provide information on relevant scientific journals and other relevant scientific publications generally available to States parties.*
- 3. The Third Review Conference discussed the question of cooperation and assistance as regards the safe handling of biological material covered by the Convention. It concluded that other international forums were engaged in this field and expressed its support for efforts aimed at enhancing such cooperation.*

Encouragement of publication of results and promotion of use of knowledge

Switzerland does not impose any restrictions on the publication of basic and applied research in biosciences related to the Convention:

- CBM "A": No restrictions implemented on the publication of research carried out within the frameworks of the National Biological Defense Program and the Regional Laboratory Network as well as their contractors.
- CBM "B": No restrictions implemented on the publication of research. Full cooperation with international organizations (WHO, OIE, EPPO) in their respective frameworks.
- CBM "G": Public institutions (universities, institutes, hospitals, state-run facilities): No restrictions implemented on the publication of research.
Private companies: Publication of research is encouraged, however, companies are responsible for their own publication policy that are in line with the protection of any commercial interests.

Publishers of scientific and medical journals and other publications based in Switzerland:

Birkhäuser Verlag AG, Basel	http://www.springer.com/birkhauser
EMH Schweizerischer Ärzteverlag AG, MuttENZ	http://www.emh.ch/
MDPI AG, Basel	http://www.mdpi.com/
S. Karger AG, Basel	http://www.karger.com/
WHO Press, Genève	http://apps.who.int/bookorders

Declaration of legislation, regulations and other measures

At the Third Review Conference the States parties agreed to implement the following, later amended by the Seventh Review Conference:

As an indication of the measures which they have taken to implement the Convention, States parties shall declare whether they have legislation, regulations or other measures:

- (a) To prohibit and prevent the development, production, stockpiling, acquisition or retention of the agents, toxins, weapons, equipment and means of delivery specified in Article I of the Convention, within their territory or anywhere under their jurisdiction or under their control anywhere;*
- (b) In relation to the export or import of micro-organisms pathogenic to man, animals and plants or of toxins in accordance with the Convention;*
- (c) In relation to biosafety and biosecurity.*

States parties shall complete the attached form (Form E) and shall be prepared to submit copies of the legislation or regulations, or written details of other measures on request to the Implementation Support Unit (ISU) within the United Nations Office for Disarmament Affairs or to an individual State party. On an annual basis States parties shall indicate, also on the attached form, whether or not there has been any amendment to their legislation, regulations or other measures.

Declaration of legislation, regulations and other measures

Switzerland adheres to a monistic system, i.e. treaties of international law become effective upon ratification and are part of the Swiss Federal Legislation. This fact is reflected as follows:

Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (RS 0.515.07 *Convention du 10 avril 1972 sur l'interdiction de la mise au point, de la fabrication et du stockage des armes bactériologiques (biologiques) ou à toxines et sur leur destruction*)

<http://www.admin.ch/opc/fr/classified-compilation/19720074>

Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare (RS 0.515.105 *Protocole du 17 juin 1925 concernant la prohibition d'emploi à la guerre de gaz asphyxiants, toxiques ou similaires et de moyens bactériologiques*)

<http://www.admin.ch/opc/fr/classified-compilation/19250020>

Declaration of legislation, regulations and other measures

The current status of the further implementation of the Convention into the Swiss Federal Legislation as well as by other measures is as follows:

Relating to	Legislation	Regulations	Other measures ¹²	Amended since last year
a) Development, production, stockpiling, acquisition or retention of microbial or other biological agents, or toxins, weapons, equipment and means of delivery specified in Article I	Yes ^a	Yes ^b	Yes	Yes
b) Exports of micro-organisms ¹³ and toxins	Yes ^c	Yes ^d	Yes	Yes
c) Imports of micro-organisms ¹³ and toxins	Yes ^e	Yes ^f	Yes	Yes
d) Biosafety ¹⁴ and biosecurity ¹⁵	Yes ^g	Yes ^h	Yes	Yes

¹² Including guidelines.

¹³ Micro-organisms pathogenic to man, animals and plants in accordance with the Convention.

¹⁴ In accordance with the latest version of the WHO Laboratory Biosafety Manual or equivalent national or international guidance.

¹⁵ In accordance with the latest version of the WHO Laboratory Biosecurity Guidance or equivalent national or international guidance.

Declaration of legislation, regulations and other measures

Legislation and regulations concerned with the implementation of the Convention in Switzerland is detailed as follows:

^{a,g} Federal Constitution of the Swiss Confederation (RS 101 *Constitution fédérale de la Confédération suisse du 18 avril 1999*)

<http://www.admin.ch/opc/fr/classified-compilation/19995395>

^a Federal Act on Measures Ensuring Homeland Security (RS 120 *Loi fédérale du 21 mars 1997 instituant des mesures visant au maintien de la sûreté intérieure*)

<http://www.admin.ch/opc/fr/classified-compilation/19970117>

^b Ordinance on the Intelligence Service of the Confederation (RS 121.1 *Ordonnance du 4 décembre 2009 sur le Service de renseignement de la Confédération*)

<http://www.admin.ch/opc/fr/classified-compilation/20091819>

^b Ordinance on Information Systems of the Intelligence Service of the Confederation (RS 121.2 *Ordonnance du 8 octobre 2014 sur les systèmes d'information du Service de renseignement de la Confédération*)

<http://www.admin.ch/opc/fr/classified-compilation/20140980>

^{a,c} Federal Act on the Prohibition of « al-Qaeda » and « Islamic State » Groups and related Organizations (RS 122 *Loi fédérale du 12 décembre 2014 interdisant les groupes « Al-Qaïda » et « État islamique » et les organisations apparentées*)

<http://www.admin.ch/opc/fr/classified-compilation/20142993>

^{b,h} Ordinance on the Federal Expert Commission for Biosafety (RS 172.327.8 *Ordonnance du 20 novembre 1996 sur la Commission fédérale d'experts pour la sécurité biologique*)

<http://www.admin.ch/opc/fr/classified-compilation/19960584>

Establishes the roles of the Federal Commission of Experts for Biological Security to ensure the protection of the Swiss population against transmissible diseases, the health of workers, and the protection of animals and plants and their environments.

^a Swiss Criminal Code (RS 311.0 *Code pénal suisse du 21 décembre 1937*)

<http://www.admin.ch/opc/fr/classified-compilation/19370083>

^a Swiss Code of Criminal Procedure (RS 312.0 *Code de procédure pénale suisse du 5 octobre 2007*)

<http://www.admin.ch/opc/fr/classified-compilation/20052319>

- ^b Ordinance on the Communication of Penal Decisions Taken by Cantonal Authorities (RS 312.3 *Ordonnance du 10 novembre 2004 réglant la communication des décisions pénales prises par les autorités cantonales*)
<http://www.admin.ch/opc/fr/classified-compilation/20041752>
- ^a Military Criminal Code (RS 321.0 *Code pénal militaire du 13 juin 1927*)
<http://www.admin.ch/opc/fr/classified-compilation/19270018>
- ^a Federal Act on International Legal Aid in Criminal Cases (RS 351.1 *Loi fédérale du 20 mars 1981 sur l'entraide internationale en matière pénale*)
<http://www.admin.ch/opc/fr/classified-compilation/19810037>
- ^a Federal Act on Main Offices of Criminal Investigation Departments of the Confederation (RS 360 *Loi fédérale du 7 octobre 1994 sur les Offices centraux de police criminelle de la Confédération*)
<http://www.admin.ch/opc/fr/classified-compilation/19940242>
- ^b Ordinance on the Information System of the Federal Criminal Police (RS 360.2 *Ordonnance du 15 octobre 2008 sur le système informatisé de la Police judiciaire fédérale*)
<http://www.admin.ch/opc/fr/classified-compilation/20081753>
- ^b Ordinance on the National Central Bureau Interpol Bern (RS 366.1 *Ordonnance du 21 juin 2013 concernant le Bureau central national Interpol Bern*)
<http://www.admin.ch/opc/fr/classified-compilation/20130208>
- ^b Ordinance on the Coordinated Medical Service (RS 501.31 *Ordonnance du 27 avril 2005 sur le Service sanitaire coordonné*)
<http://www.admin.ch/opc/fr/classified-compilation/20041336>
- ^a Federal Act on the Army and the Military Administration (RS 510.10 *Loi fédérale du 3 février 1995 sur l'armée et l'administration militaire*)
<http://www.admin.ch/opc/fr/classified-compilation/19950010>
- ^b Ordinance on Measures Taken by the Army against Human and Animal Epidemics (RS 510.35 *Ordonnance du 25 octobre 1955 concernant les mesures à prendre par l'armée contre les épidémies et épizooties*)
<http://www.admin.ch/opc/fr/classified-compilation/19550188>
- ^b Ordinance on Domestic Disaster Management by the Army (RS 513.75 *Ordonnance du 29 octobre 2003 sur l'aide militaire en cas de catastrophe dans le pays*)
<http://www.admin.ch/opc/fr/classified-compilation/20031556>

^a Federal Act on War Material (RS 514.51 *Loi fédérale du 13 décembre 1996 sur le matériel de guerre*)
<http://www.admin.ch/opc/fr/classified-compilation/19960753>

Prohibits the development, production, indirect transfer, acquisition, import, export, transit and stockpiling of nuclear, biological or chemical weapons under Article 7. It prohibits any action committed by any person who has any connection to the acquisition of WMD. This article also applies to offences committed abroad if they are in violation of international law which is binding on Switzerland.

^{b,d,f} Ordinance on War Material (RS 514.511 *Ordonnance du 25 février 1998 sur le matériel de guerre*)
<http://www.admin.ch/opc/fr/classified-compilation/19980112>

Regulates the initial authorisation and the specific authorisations that are required for the manufacture, the brokerage, the import, the export and the transit of war materials, as well as the conclusion of contracts to transfer incorporeal property, including know-how and the concession of related rights. Applies in Switzerland customs area, to Swiss customs warehouses and Swiss customs enclaves.

^a Federal Act on the Protection of the Population and Civil Protection (RS 520.1 *Loi fédérale du 4 octobre 2002 sur la protection de la population et sur la protection civile*)
<http://www.admin.ch/opc/fr/classified-compilation/20011872>

^b Ordinance on the Organization of Deployments in case of NBC Incidents and Natural Incidents (RS 520.17 *Ordonnance du 20 octobre 2010 sur l'organisation des interventions en cas d'événement ABC et d'événement naturel*)
<http://www.admin.ch/opc/fr/classified-compilation/20090306>

^b Ordinance on the National Emergency Operations Centre (RS 520.18 *Ordonnance du 17 octobre 2007 sur la Centrale nationale d'alarme*)
<http://www.admin.ch/opc/fr/classified-compilation/20063371>

^a Federal Act on Customs (RS 631.0 *Loi du 18 mars 2005 sur les douanes*)
<http://www.admin.ch/opc/fr/classified-compilation/20030370>

^{b,d,f} Ordinance on Customs (RS 631.01 *Ordonnance du 1er novembre 2006 sur les douanes*)
<http://www.admin.ch/opc/fr/classified-compilation/20052713>

^b Ordinance on Competencies of the Federal Customs Administration in Criminal Matters (RS 631.09 *Ordonnance du 4 avril 2007 réglant les compétences de l'Administration fédérale des douanes en matière pénale*)
<http://www.admin.ch/opc/fr/classified-compilation/20070458>

- ^{b,h} Ordinance on the Transportation of Hazardous Goods on the Road (RS 741.621 *Ordonnance du 29 novembre 2002 relative au transport des marchandises dangereuses par route*)
<http://www.admin.ch/opc/fr/classified-compilation/20022136>
Regulates the transport of dangerous materials by automobiles or other mediums of transport on roads open to those same vehicles.
- ^{b,h} Ordinance on Hazardous Goods Representatives for the Transportation of Hazardous Goods on the Road, by Air or by Sea (RS 741.622 *Ordonnance du 15 juin 2001 sur les conseillers à la sécurité pour le transport de marchandises dangereuses par route, par rail ou par voie navigable*)
<http://www.admin.ch/opc/fr/classified-compilation/20001699>
Determines the appointment, tasks, training and examination of persons charged with reducing risks to people, property and the environment during transportation of hazardous goods or packaging operations, shipment or loading and unloading associated with this transport.
- ^{b,h} Ordinance on the Transportation of Hazardous Goods by Railway and Aerial Railway (RS 742.412 *Ordonnance du 31 octobre 2012 sur le transport de marchandises dangereuses par chemin de fer et par installation à câbles*)
<http://www.admin.ch/opc/fr/classified-compilation/20121700>
- ^a Federal Act on Surveillance of Postal Mail and Telecommunications (RS 780.1 *Loi fédérale du 6 octobre 2000 sur la surveillance de la correspondance par poste et télécommunication*)
<http://www.admin.ch/opc/fr/classified-compilation/20002162>
- ^b Ordinance on Surveillance of Postal Mail and Telecommunications (RS 780.11 *Ordonnance du 31 octobre 2001 sur la surveillance de la correspondance par poste et télécommunication*)
<http://www.admin.ch/opc/fr/classified-compilation/20002506>
- ^{b,h} Ordinance on the Transplantation of Organs, Tissues and Cells of Animal Origin (RS 810.213 *Ordonnance du 16 mars 2007 sur la transplantation d'organes, de tissus et de cellules d'origine animale*)
<http://www.admin.ch/opc/fr/classified-compilation/20051808>
- ^{b,h} Ordinance on Clinical Trials with Therapeutic Products (RS 810.305 *Ordonnance du 20 septembre 2013 sur les essais cliniques dans le cadre de la recherche sur l'être humain*)
<http://www.admin.ch/opc/fr/classified-compilation/20121176>
- ^{b,f,h} Ordinance on Pharmaceuticals (RS 812.212.21 *Ordonnance du 17 octobre 2001 sur les médicaments*)
<http://www.admin.ch/opc/fr/classified-compilation/20011787>
Regulates: a. authorization of medicines on the market ready for use, b. authorization processes of surface treatment of labile blood products, c. classification criteria for categories of delivery, d. distribution restrictions, e. authorization of mail order drugs, f. market surveillance and vigilance.

- ^{a,g} Federal Act on the Protection against Dangerous Substances and Preparations (RS 813.1 *Loi fédérale du 15 décembre 2000 sur la protection contre les substances et les préparations dangereuses*)
<http://www.admin.ch/opc/fr/classified-compilation/19995887>
Protects the lives and health of human beings from the harmful effects of substances or preparations.
- ^{b,h} Ordinance on Good Laboratory Practice (RS 813.112.1 *Ordonnance du 18 mai 2005 sur les bonnes pratiques de laboratoire*)
<http://www.admin.ch/opc/fr/classified-compilation/20031589>
Fixes the principles of good laboratory practices, guarantees the quality of studies and regulates the verification of these requirements.
- ^{b,f,h} Ordinance on Marketing and Handling Biocidal Products (RS 813.12 *Ordonnance du 18 mai 2005 concernant la mise sur le marché et l'utilisation des produits biocides*)
<http://www.admin.ch/opc/fr/classified-compilation/20021524>
Regulates marketing of biocidal products and their active substances, particularly the various types and licensing procedures, the use of data from previous requests for the benefit of new applicants, and the classification of packaging, labelling and safety data sheets.
- ^{a,g} Federal Act on the Protection of the Environment (RS 814.01 *Loi fédérale du 7 octobre 1983 sur la protection de l'environnement*)
<http://www.admin.ch/opc/fr/classified-compilation/19830267>
- ^{b,d,f,h} Ordinance on the Protection against Major Accidents (RS 814.012 *Ordonnance du 27 février 1991 sur la protection contre les accidents majeurs*)
<http://www.admin.ch/opc/fr/classified-compilation/19910033>
Covers activities involving the contained use of genetically modified organisms and pathogenic organisms in laboratories, production facilities, greenhouses and premises housing animals.
- ^{b,h} Ordinance on Waste Management (RS 814.600 *Ordonnance du 4 décembre 2015 sur la limitation et l'élimination des déchets*)
<https://www.admin.ch/opc/fr/classified-compilation/20141858>
- ^{a,g} Federal Act on non-Human Genetic Engineering (RS 814.91 *Loi fédérale du 21 mars 2003 sur l'application du génie génétique au domaine non humain*)
<http://www.admin.ch/opc/fr/classified-compilation/19996136>
Protects humans, animals and the environment against the abuse of genetic engineering, and ensures that applications of genetic engineering serve humans, animals and the environment.

- ^{b,h} Ordinance on the Release of Organisms into the Environment (RS 814.911 *Ordonnance du 10 septembre 2008 sur l'utilisation d'organismes dans l'environnement*)
<http://www.admin.ch/opc/fr/classified-compilation/20062651>
Protects humans, animals and the environment, as well as biodiversity and sustainable use of its components against the dangers and outrages associated with the use of organisms, their metabolites and their waste.
- ^{b,h} Ordinance on the Contained Use of Organisms (RS 814.912 *Ordonnance du 9 mai 2012 sur l'utilisation des organismes en milieu confiné*)
<http://www.admin.ch/opc/fr/classified-compilation/20100803>
Protects people and the environment and in particular communities of animals and plants and their habitats, against harmful effects or nuisances of the contained use of organisms. Contributes to the maintenance of biodiversity and soil fertility. Regulates the contained use of organisms, in particular genetically modified or pathogenic organisms.
- ^{b,h} Ordinance on Transborder Traffic of Genetically Modified Organisms (RS 814.912.21 *Ordonnance du 3 novembre 2004 sur les mouvements transfrontières des organismes génétiquement modifiés*)
<http://www.admin.ch/opc/fr/classified-compilation/20031535>
Regulates the transborder transport of GMOs. Does not apply to medicines for human use which contain GMOs.
- ^a Federal Act on Foods and Commodities (RS 817.0 *Loi fédérale du 9 octobre 1992 sur les denrées alimentaires et les objets usuels*)
<http://www.admin.ch/opc/fr/classified-compilation/19920257>
- ^{b,h} Ordinance on Foods and Commodities (RS 817.02 *Ordonnance du 23 novembre 2005 sur les denrées alimentaires et les objets usuels*)
<http://www.admin.ch/opc/fr/classified-compilation/20050153>
- ^b Ordinance on Impurities and Ingredients in Foods (RS 817.021.23 *Ordonnance du DFI du 26 juin 1995 sur les substances étrangères et les composants dans les denrées alimentaires*)
<http://www.admin.ch/opc/fr/classified-compilation/19950193>
- ^{b,h} Ordinance on Genetically Modified Foods (RS 817.022.51 *Ordonnance du DFI du 23 novembre 2005 sur les denrées alimentaires génétiquement modifiées*)
<http://www.admin.ch/opc/fr/classified-compilation/20050176>
- ^{b,h} Ordinance on Hygiene (RS 817.024.1 *Ordonnance du DFI du 23 novembre 2005 sur l'hygiène*)
<http://www.admin.ch/opc/fr/classified-compilation/20050160>

^{b,h} Ordinance on the Enforcement of the Legislation on Foods (RS 817.025.21 *Ordonnance du DFI du 23 novembre 2005 sur l'exécution de la législation sur les denrées alimentaires*)

<http://www.admin.ch/opc/fr/classified-compilation/20050163>

^{b,h} Ordinance on Animal Slaughter and Meat Control (RS 817.190 *Ordonnance du 23 novembre 2005 concernant l'abattage d'animaux et le contrôle des viandes*)

<http://www.admin.ch/opc/fr/classified-compilation/20051437>

^{b,h} Ordinance on Animal Slaughter Hygiene (RS 817.190.1 *Ordonnance du DFI du 23 novembre 2005 concernant l'hygiène lors de l'abattage d'animaux*)

<http://www.admin.ch/opc/fr/classified-compilation/20051438>

^{a,c,e,g} Federal Act on the Control of Communicable Human Diseases (RS 818.101 *Loi fédérale du 28 septembre 2012 sur la lutte contre les maladies transmissibles de l'homme*)

<https://www.admin.ch/opc/fr/classified-compilation/20071012>

Regulates fight against diseases transmissible to man by stating that the Confederation and the cantons take the necessary measures, including biosafety precautions, to protect human beings against pathogens including those genetically modified. Regulates identification of laboratories through permits delivered by the Swiss Institute of Therapeutic Products. Regulates the trade in pathogenic agents and requires an authorisation from every person disseminating pathogens for research or commerce. Entitles the Federal Council to regulate the transport, importation, exportation and the transit of pathogens, to limit or to ban the use of certain pathogens, to fix the conditions for persons using pathogens. Outlines the provisions for quarantine, vaccination, and disease surveillance and reporting requirements. Provides for imprisonment or fines anyone who intentionally or by negligence does not respect the prescriptions of the Federal Act.

^{b,d,f,h} Ordinance on the Control of Communicable Human Diseases (RS 818.101.1 *Ordonnance du 29 avril 2015 sur la lutte contre les maladies transmissibles de l'homme*)

<https://www.admin.ch/opc/fr/classified-compilation/20133212>

^{b,h} Ordinance on the Declaration of Observations of Communicable Human Diseases (RS 818.101.126 *Ordonnance du DFI du 1 décembre 2015 sur la déclaration d'observations en rapport avec les maladies transmissibles de l'homme*)

<https://www.admin.ch/opc/fr/classified-compilation/20151622>

^{b,h} Ordinance on Microbiological Laboratories (RS 818.101.32 *Ordonnance du 29 avril 2015 sur les laboratoires de microbiologie*)

<https://www.admin.ch/opc/fr/classified-compilation/20143116>

^{b,h} Ordinance Relating to the Act of Labour (RS 822.114 *Ordonnance 4 du 18 août 1993 relative à la loi sur le travail*)

<http://www.admin.ch/opc/fr/classified-compilation/19930255>

^{b,h} Ordinance on the Protection of Workforce against Microbiological Risks (RS 832.321 *Ordonnance du 25 août 1999 sur la protection des travailleurs contre les risques liés aux micro-organismes*)

<http://www.admin.ch/opc/fr/classified-compilation/19994946>

Defines micro-organisms and genetically modified micro-organisms and techniques for genetic modification. Requires the regular identification and evaluation of the risks to which workers are exposed and the notification of the "Bureau de Biotechnologie de la Confédération" by employers. Defines general security measures for the protection of the workers by employers. Covers activities involving the contained use of genetically modified organisms and pathogenic organisms in laboratories, production facilities, greenhouses and premises housing animals.

^{a,c,e,g} Federal Act on Agriculture (RS 910.1 *Loi fédérale du 29 avril 1998 sur l'agriculture*)

<http://www.admin.ch/opc/fr/classified-compilation/19983407>

^b Ordinance on the Coordination of Controls on Agricultural Farms (RS 910.15 *Ordonnance du 23 octobre 2013 sur la coordination des contrôles dans les exploitations agricoles*)

<http://www.admin.ch/opc/fr/classified-compilation/20130217>

^{b,h} Ordinance on Primary Production (RS 916.020 *Ordonnance du 23 novembre 2005 sur la production primaire*)

<http://www.admin.ch/opc/fr/classified-compilation/20051718>

^{b,h} Ordinance on the Release of Phytopharmaceutical Products (RS 916.161 *Ordonnance du 12 mai 2010 sur la mise en circulation des produits phytosanitaires*)

<http://www.admin.ch/opc/fr/classified-compilation/20100203>

Ensures that plant protection products lend themselves well in their intended use and as those are used in accordance with the requirements preventing unacceptable side effects on the health of humans, animals and the environment.

^{b,f,h} Ordinance on Plant Protection (RS 916.20 *Ordonnance du 27 octobre 2010 sur la protection des végétaux*)

<http://www.admin.ch/opc/fr/classified-compilation/20101847>

Protects plants of all sorts against the nuisances of dangerous organisms, and protects agriculture and horticulture fields from the same organisms.

^b Ordinance on the Control of Milk (RS 916.351.0 *Ordonnance du 20 octobre 2010 sur le contrôle du lait*)

<http://www.admin.ch/opc/fr/classified-compilation/20100941>

^{b,h} Ordinance on the Milk Production Hygiene (RS 916.351.021.1 *Ordonnance du DFI du 23 novembre 2005 réglant l'hygiène dans la production laitière*)

<http://www.admin.ch/opc/fr/classified-compilation/20051436>

^{a,c,e,g} Federal Act on Animal Diseases (RS 916.40 *Loi du 1er juillet 1966 sur les épizooties*)

<http://www.admin.ch/opc/fr/classified-compilation/19660145>

^{b,d,f,h} Ordinance on the Control of Animal Diseases (RS 916.401 *Ordonnance du 27 juin 1995 sur les épizooties*)

<http://www.admin.ch/opc/fr/classified-compilation/19950206>

Designates new contagious animal diseases and defines the measures of control of and the organization of the fight against animal diseases, as well as the compensation of animal keepers.

^{b,h} Ordinance on the Disposal of Animal Side Products (RS 916.441.22 *Ordonnance du 25 mai 2011 concernant l'élimination des sous-produits animaux*)

<http://www.admin.ch/opc/fr/classified-compilation/20101486>

Ensures that animal by-products do not endanger human and animal health and do not harm the environment. Allows as much as possible the recovery of animal by-products. Ensures that the infrastructure for the disposal of animal by-products is available.

^{b,d,f} Ordinance on Import, Transit and Export of Animals and Animal Products Exchanged with Third Countries (RS 916.443.10 *Ordonnance du 18 novembre 2015 réglant les échanges d'importation, de transit et d'exportation d'animaux et de produits animaux avec les pays tiers*)

<https://www.admin.ch/opc/fr/classified-compilation/20151237>

Regulates the import, transit and export of animals, animal by-products and animal products.

^{b,d,f} Ordinance on Import, Transit and Export of Animals and Animal Products Exchanged with EU Member States, Iceland and Norway (RS 916.443.11 *Ordonnance du 18 novembre 2015 réglant les échanges d'importation, de transit et d'exportation d'animaux et de produits animaux avec les Etats membres de l'UE, l'Islande et la Norvège*)

<https://www.admin.ch/opc/fr/classified-compilation/20151238>

Regulates the import, transit and export of animals, animal by-products and animal products.

^{a,c,e,g} Federal Act on the Control of Goods Suitable for Civilian and Military Purposes and Specific Military Goods (RS 946.202 *Loi fédérale du 13 décembre 1996 sur le contrôle des biens utilisables à des fins civiles et militaires et des biens militaires spécifiques*)

<http://www.admin.ch/opc/fr/classified-compilation/19960740>

Regulates, inter alia, the import, export and transit of microorganisms and toxins. Applies to dual-use goods and specific military goods which are the subject of international agreements. Also outlines the responsibilities of the Federal Council in this regard including licensing and reporting requirements and surveillance measures for import, export, transit, production, storage, transfer and use of goods.

^{b,d,f} Ordinance on the Export, Import and Transit of Goods Suitable for Civilian and Military Purposes and Specific Military Goods (RS 946.202.1 *Ordonnance du 25 juin 1997 sur l'exportation, l'importation et le transit des biens utilisables à des fins civiles et militaires et des biens militaires spécifiques*)

<http://www.admin.ch/opc/fr/classified-compilation/19970295>

Regulates the export, import and transit of goods usable for civilian and military purposes and specific military goods which are the subject of international control measures not binding pursuant to international law. Applies in Swiss customs area to Swiss customs warehouses and Swiss customs enclaves.

^{b,d,f} Ordinance on the Control of Chemicals Suitable for Civilian and Military Purposes (RS 946.202.21 *Ordonnance du 21 août 2013 sur le contrôle des produits chimiques utilisables à des fins civiles et militaires*)

<http://www.admin.ch/opc/fr/classified-compilation/20121582>

^{b,d} Ordinance Establishing Measures against Persons and Entities Linked to Osama bin Laden, the al-Qaeda Group or the Taliban (RS 946.203 *Ordonnance du 2 octobre 2000 instituant des mesures à l'encontre de personnes et entités liées à Oussama ben Laden, au groupe «Al-Qaïda» ou aux Taliban*)

<http://www.admin.ch/opc/fr/classified-compilation/19996052>

^{a,c} Federal Act on Sanctions on Trade with Foreign Countries (RS 946.231 *Loi fédérale du 22 mars 2002 sur l'application de sanctions internationales*)

<http://www.admin.ch/opc/fr/classified-compilation/20000358>

^{b,d} Ordinance on Measures against the Democratic People's Republic of Korea (RS 946.231.127.6 *Ordonnance du 25 octobre 2006 instituant des mesures à l'encontre de la République populaire démocratique de Corée*)

<http://www.admin.ch/opc/fr/classified-compilation/20062706>

^b Ordinance of the Swiss Financial Market Supervisory Authority on Combatting Money Laundering and Financing of Terrorism in the Financial Sector (RS 955.033.0 *Ordonnance de l'Autorité fédérale de surveillance des marchés financiers du 3 juin 2015 sur la lutte contre le blanchiment d'argent et le financement du terrorisme dans le secteur financier*)

<https://www.admin.ch/opc/fr/classified-compilation/20143112>

^b Ordinance on the Reporting Bureau in Matters of Money Laundering (RS 955.23 *Ordonnance du 25 août 2004 sur le Bureau de communication en matière de blanchiment d'argent*)

<http://www.admin.ch/opc/fr/classified-compilation/20031873>

Switzerland

Form E

Titles in English are unofficial translations that are provided for information purposes only and have no legal force. To access legal documents please consult the Swiss Federal Legislation in either French (links above), German or Italian. Some additional information may also be obtained in the framework of UNSCR 1540 at: <http://www.un.org/en/sc/1540/national-implementation/national-reports.shtml>

Declaration of past activities in offensive and/or defensive biological research and development programmes

In the interest of increasing transparency and openness, States parties shall declare whether or not they conducted any offensive and/or defensive biological research and development programmes since 1 January 1946.

If so, States parties shall provide information on such programmes, in accordance with Form F.

Declaration of past activities in offensive and/or defensive biological research and development programmes

1. *Date of entry into force of the Convention for the State Party*

4 May 1976

2. *Past offensive biological research and development programmes*

No

Period of activities

n/a

Summary of the research and development activities indicating whether work was performed concerning production, test and evaluation, weaponization, stockpiling of biological agents, the destruction programme of such agents and weapons, and other related research.

n/a

3. *Past defensive biological research and development programmes*

Yes

Period of activities

1997 to present

Summary of the research and development activities indicating whether or not work was conducted in the following areas: prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination, and other related research, with location if possible.

Please refer to Form A, part 2 (ii) [➤ pages 14 to 26] as well as past CBM declarations.

Declaration of vaccine production facilities

To further increase the transparency of biological research and development related to the Convention and to broaden scientific and technical knowledge as agreed in Article X, each State party will declare all facilities, both governmental and non-governmental, within its territory or under its jurisdiction or control anywhere, producing vaccines licensed by the State party for the protection of humans. Information shall be provided on Form G attached.

Declaration of vaccine production facilities

Name of company / facility **Janssen Vaccines AG**

Location of production facility Rehhagstrasse 79
CH-3018 Bern

Geographical location N 46° 56' 06.79", E 7° 23' 09.50"

Disease(s) targeted	Name of vaccine	Trial phase	Licensed
1. Ebola virus disease	Ad26.ZEBOV	<input checked="" type="checkbox"/> Phase 2: BF, UG	<input type="checkbox"/>

Note: Abbreviations are according to ISO 3166-1 "Codes for the representation of names of countries and their subdivisions – Part 1: Country codes".

Declaration of vaccine production facilities

Name of company / facility **PaxVax Berna GmbH**

Location of production facility Oberriedstrasse 68
CH-3174 Thörishaus

Geographical location N 46° 53' 25.95", E 7° 21' 24.23"

Disease(s) targeted	Name of vaccine	Trial phase	Licensed
1. Typhoid fever	Vivotif	<input type="checkbox"/>	<input checked="" type="checkbox"/>