

# **Bioscience Activities: A Survey**

The enclosed questionnaire is intended to be filled out by bioscientists and laboratorians working in bioscience facilities. The survey contains 35 questions regarding information about the facility; research, diagnostic, and/or other work done in the laboratory; safety and security at the facility; and disease surveillance activities. This information will improve understanding of the bioscience work being conducted around the country, and biorisk management practices.

Completing the questionnaire will take approximately 15 – 20 minutes and is completely voluntary, though your participation is greatly appreciated. Responses are strictly confidential. Any identifying information is only for quality assurance and control in the survey administration (i.e. verifying your answers).

Thank you for taking the time to complete the questionnaire.

# Directions for the Completion of the Survey

Below is a questionnaire with 35 questions regarding your work at a bioscience facility. Please answer all questions honestly and to the best of your knowledge.

For most questions in the questionnaire, you are required to indicate your answer by placing an 'X' in the box next to the answer option you are selecting. The questionnaire was designed with plenty of space to clearly mark an X in the box next to the answer option you are selecting. Please clearly mark an X only within the box indicating the answer option you are selecting and be careful not make the marking go outside the box, in order to avoid confusion in interpreting the results.

Please see Example 1 below. This question is not part of the questionnaire. It is only being used as an example.

**Example 1. To the best of your knowledge, how often does this facility process samples from other areas of the country?**

Daily	
About once a week	
Several times a month	<b>X</b>
Other – please specify	
I don't know	
Refuse to answer	

If you do not know the answer to a question, indicate this by marking the 'I don't know' option. If you do not find the appropriate answer, mark 'Other – please specify' and then legibly write in the answer you wish to provide.

**Facility Name:** \_\_\_\_\_

**Facility Website:** \_\_\_\_\_

**Facility Address:**

Street Address	
District	
Province	

**Your name:** \_\_\_\_\_

**Your title:** \_\_\_\_\_

**How old are you?** \_\_\_\_\_

**Please indicate your gender.**

1	Male	
2	Female	

**Please identify the highest level of education you have received.**

1	Some secondary school	
2	Completed secondary school	
3	Post-secondary school certificate	
4	Some university	
5	Completed university (Bachelor's degree)	
6	Some graduate studies	
7	Master's degree	
8	Doctoral degree	

**1. Which of the following best characterizes the function(s) of your organization?** (mark all that apply)

1	Research and development	
2	Regulatory	
3	Academic / Educational	
4	University laboratory	
5	Veterinary hospital	
6	Hospital/Clinic	
7	Infectious disease diagnostic testing	
8	Vaccine production	
9	Drug development/discovery	
10	Pharmaceutical production	
11	Oversight	
12	Translational	
13	Epidemiology/surveillance	
14	Commercial testing	
97	Other – Please specify	
98	I don't know	
99	Refuse to answer	

**2. Which best describes your organization's affiliation?** (Choose one)

1	Academic University	
2	Non-governmental organization (NGO)	
3	Private	
4	Public	
5	International	
6	Hospital or clinic	
7	Military	
8	Government	
9	Mixed – Please specify	
97	Other – Please specify	
98	I don't know	
99	Refuse to answer	

3. To the best of your knowledge, how many of the following types of staff members are employed at this facility? If there are no staff at this facility who are of a particular specialization, please indicate this by marking '0' in the answer column.

	Type of Staff	Number of Staff at the Facility
1	Veterinarians	
2	Physicians	
3	Bacteriologists (only those with a MS or PhD)	
4	Virologists (only those with a MS or PhD)	
5	Parasitologists (only those with a MS or PhD)	
6	Laboratory technicians	
7	Equipment maintenance technicians	
8	Administrative personnel	
9	Security personnel	
97	Other (Please specify)	

- 4. To the best of your knowledge, does this laboratory conduct work on the following subjects?** Please mark 'No' if this facility does not conduct work on the subject. Please mark 'Yes' for all subjects on which your facility conducts work and then indicate the number of staff working on the subject, to the best of your knowledge.

	<b>Subjects</b>	<b>No</b>	<b>Yes</b>	<b>Number of Staff</b>
1	Antibiotics and/or antimicrobials			
2	Antibiotic resistance and/or antimicrobial resistance			
3	Bacteriology			
4	Bacterial toxins			
5	Clinical pathology (Hematology, biochemistry)			
6	Epidemiology			
7	Host immune response			
8	Immune evasion and resistance			
9	Pathology/necropsy			
10	Histopathology			
11	Vector control strategies			
12	Virology			
13	Serology			
14	Microbial genetics			
15	Molecular biology			
16	Parasitology			
17	Toxicology			
18	Mycology			
19	Vaccine efficacy			
20	Vaccine development and/or production			
21	Virology			
22	Quality control			
23	Food safety			
97	Other – please specify			

5. Please identify which of the following biological agents and toxins are HANDLED, STORED, or USED at your facility.

	Agent/Toxin	
1	African horse sickness virus	
2	African swine fever virus	
3	Akabane virus	
4	Avian influenza virus (highly pathogenic)	
5	Avian influenza virus (low pathogenic)	
6	<i>Bacillus anthracis</i>	
7	<i>Bacillus cereus</i>	
8	Bluetongue virus	
9	<i>Brucella abortus, melitensis or suis</i>	
10	<i>Burkholderia mallei</i>	
11	<i>Burkholderia pseudomallei</i>	
12	Camel pox virus	
13	<i>Campylobacter sp.</i>	
14	Classical swine fever virus	
15	<i>Clostridium botulinum</i>	
16	<i>Clostridium perfringens</i>	
17	<i>Coxiella burnetii</i>	
18	Crimean-Congo haemorrhagic fever virus	
19	Dengue fever virus	
20	Echinococcus	
21	Equine encephalitis viruses	
22	<i>Escherichia coli</i> O157:H7	
23	Filoviruses (Ebola or Marburg)	
24	Foot and mouth disease virus	
25	<i>Francisella tularensis</i>	
26	Hepatitis virus	

	Agent/Toxin	
27	Human Immunodeficiency virus (HIV)	
28	Leishmania	
29	Lumpy skin disease virus	
30	Maedi Visna virus	
31	Monkeypox virus	
32	<i>Mycobacterium bovis</i>	
33	<i>Mycobacterium spp.</i> - Drug resistant strains	
34	<i>Mycobacterium tuberculosis</i>	
35	<i>Mycoplasma capricolum</i> M.F38 M. <i>mycoides</i> Capri	
36	<i>Mycoplasma mycoides</i> subsp. <i>Mycoides</i>	
37	Newcastle disease virus	
38	Peste des petits ruminants virus	
39	<i>Plasmodium sp.</i>	
40	Polio virus	
41	Rabies virus	
42	Rift Valley fever virus	
43	Rinderpest virus	
44	<i>Salmonella enterica</i> serovar <i>typhi</i>	
45	<i>Salmonella sp.</i>	
46	Sheep pox virus	
47	<i>Shigella dysenteriae</i>	
48	Swine vesicular disease virus	
49	Vesicular stomatitis virus	
50	<i>Vibrio cholera</i>	
51	<i>Yersinia pestis</i>	
97	Other – please specify	

**6. What techniques does this laboratory use when conducting research or diagnoses? (please indicate all that apply)**

	Technique	
1	Antimicrobial sensitivity testing	
2	Agar gel immunodiffusion	
3	Bacterial culture	
4	Bacterial identification	
5	Direct microscopy	
6	DNA/RNA isolation	
7	Enzyme-linked immunosorbent assays (ELISA)	
8	Flow cytometry	
9	Foot and mouth disease virus subtyping	
10	Fungal culture	
11	Gel electrophoresis	
12	Histopathology	
13	Immunoblotting	
14	Immunohistochemistry	
15	Infection of live animals	
16	Influenza virus subtyping	
17	Mammalian cell culture	
18	Microscopy – please specify	

	Technique	
19	Milk ring test	
20	Multiplex PCR	
21	Northern blot analysis	
22	Pathogen identification by DNA/RNA sequencing	
23	Pathogenicity assays	
24	Polymerase chain reaction assays (PCR)	
25	Rapid antigen detection kits	
26	Real-time PCR	
27	Reverse transcription – PCR	
28	Restriction fragment length polymorphism (RFLP) analysis	
29	Sequence/genetic analysis	
30	Southern blot analysis	
31	Vaccine challenge testing	
32	Virus culture	
33	Western blot analysis	
97	Other – please specify	



**7. What types of problems does your laboratory TYPICALLY experience in conducting work on these infectious agents and/or toxins? Please mark all that apply.**

1	Burdensome security measures	
2	Delayed shipment of reagents and/or equipment	
3	Limited access to reagents	
4	Limited access to equipment	
5	Difficulty shipping any infectious agents for secondary analysis	
6	Excessive documentation	
7	Inadequate biosafety	
8	Inadequate biosecurity	
9	Lack of funding	
10	Lack of qualified staff	
11	Staff consistently leaving for new positions	
12	Limited access to infectious agents	
13	Limited access to scientific publications and text books	
14	Staff do not have adequate training	
15	Limited access to information on new technologies	
97	Other – please explain	
16	None - No limitations	

**8. Are you familiar with the concept of biosafety?**

1	Yes	
2	No	
99	Refuse to answer	

**9. To what extent is biosafety a priority at your facility?**

1	Biosafety is a high priority	
2	Biosafety is a somewhat high priority	
3	Biosafety is a somewhat low priority	
4	Biosafety is a very low priority	
98	I don't know	
99	Refuse to answer	

**10. How often do you receive training on laboratory biosafety?**

1	Never	
2	Upon being hired only	
3	Once every few years	
4	Annually	
5	Several times each year	
97	Other – Please specify	
98	I don't know	
99	Refuse to answer	

**11. To the best of your knowledge, at which biosafety level does your laboratory practice when working with infectious agents or toxins? If more than one biosafety level applies, please indicate all that apply.**

1	Biosafety level 1 (BSL1 or P1)	
2	Biosafety level 2 (BSL2 or P2)	
3	Biosafety level 3 (BSL3 or P3)	
4	Biosafety level 4 (BSL4 or P4)	
98	I don't know	
99	Refuse to answer	

12. To the best of your knowledge, please indicate which of the following features or capacities are available at your facility.

	Feature/Capacity	
1	Fire protection system (e.g. sprinklers, alarm system, etc.)	
2	Hand washing sink near lab exit	
3	Anteroom outside laboratory	
4	Shower	
5	Laboratory has a sealable room for decontamination	
6	Ability to monitor people by windows	
7	Ability to monitor people by closed-circuit television	
8	Two-way communication	
9	Standard building ventilation	
10	Inward flow in the laboratory	
11	Single pass room exhaust	
12	HEPA-filtered air exhaust	
13	Staff use a positive pressure unit	
14	An autoclave is present in, or in close proximity to the laboratory	
15	An autoclave is available through a pass-through door	
16	An autoclave is available away from the laboratory	
17	An incinerator is available	
18	Biosafety cabinet(s)	

**13. Which type of biosafety cabinet is used at your laboratory? Mark all types that are present in your laboratory.**

1	Not Applicable – No biosafety cabinet at my facility	
2	Class I	
3	Class IIA1	
4	Class IIA2	
5	Class IIB1	
6	Class IIB2	
7	Class III	
98	I don't know	
99	Refuse to answer	

**14. Which of the following practices are routinely followed at your facility when working with infectious agents?**

1	A single pair of latex or nitrile type gloves are worn	
2	Two pairs of latex or nitrile type gloves are worn	
3	Gowns or lab coats are worn over street clothes	
4	Personnel wear dedicated laboratory clothes	
5	Personnel wear safety glasses	
6	Personnel must wear closed toe shoes	
7	Shoe covers are worn over solid shoes	
8	Laboratory specific solid shoes are worn	
9	Personnel use masks	
10	Unknown samples are opened in a biosafety cabinet	

**15. Are specialized containers used for biological waste?**

1	Yes	
2	No	
98	I don't know	
99	Refuse to answer	

**16. To the best of your knowledge, how often is biological waste decontaminated prior to disposal?**

1	All of the time	
2	Most of the time	
3	Sometimes	
4	Never	
98	I don't know	
99	Refuse to answer	

**17. Are you familiar with the concept of biosecurity?**

1	Yes	
2	No	
99	Refuse to answer	

**18. When thinking about biosecurity and biosafety, would you say they are...**

1	Basically the same thing	
2	Different but complementary	
3	Different and non-complementary	
98	I don't know	
99	Refuse to answer	

**19. To what extent is biosecurity a priority at your facility?**

1	Biosecurity is a high priority	
2	Biosecurity is a somewhat high priority	
3	Biosecurity is a somewhat low priority	
4	Biosecurity is a very low priority	
98	I don't know	
99	Refuse to answer	

**20. How often do you receive training on laboratory biosecurity?**

1	Never	
2	Upon being hired only	
3	Once every few years	
4	Annually	
5	Several times each year	
97	Other – Please specify	
99	Refuse to answer	

**21. Please indicate whether your laboratory uses the following measures all the time, sometimes, rarely or never.**

Measure	Always	Sometimes	Rarely	Never
Access control devices				
Guard at the building entrance				
Intrusion sensors and alarms				
Lighted building at night				
Locked cabinets				
Locked doors to building				
Locked doors to laboratory room(s)				
Locked refrigerators				
Security patrols				
Self-closing doors				
Unobstructed views of entrance(s)				
Video monitors				
Background screening for potential employees				
Non-employees must have an escort through the building				
List of employees who have access to restricted areas is maintained				

Measure	Always	Sometimes	Rarely	Never
Photo identification badges are worn by all staff				
Records of key or keycard assignments are maintained				
Restricted access to laboratory area				
Computer/net work security maintained				
Computers and/or computer files are password protected				
Sensitive documentation is destroyed before being placed in the trash				
Storage of paper, tapes, and videos in secure container(s)				
Current inventory of infectious agents and/or toxins is maintained				
Infectious agents and/or toxins not in use are destroyed				

**22. Please indicate your degree of concern, if any, for the following scenarios regarding work at your laboratory. Are you very concerned, concerned, slightly concerned, or not concerned about the following...**

Scenario	Very Concerned	Concerned	Slightly Concerned	Not Concerned
Accidental infection of animals				
Accidental infection of people outside the laboratory				
Accidental infection of laboratory staff				
Accidental contamination of the environment outside the laboratory				
Agent or toxin could be used to intentionally cause harm				
Emerging infectious disease(s) discovered at this facility				
The lab being repurposed by the government to serve as public/animal health lab (e.g., diagnostics, vaccination, etc.) during an epidemic/epizootic				
Theft of samples by a laboratory employee who intends to cause harm				
Theft of samples by someone who doesn't work at the lab who intends to cause harm				

**23. To the best of your knowledge, has a sample, pathogen, or toxin ever been stolen from this facility by an employee?**

1	Yes	
2	No	
98	I don't know	
99	Refuse to answer	

**24. To the best of your knowledge, has a sample, pathogen, or toxin ever been stolen from this facility by someone who doesn't work here (i.e. a non-employee)?**

1	Yes	
2	No	
98	I don't know	
99	Refuse to answer	

**25. Does your facility transport or ship biological material domestically or internationally?**

1	Sends biological material domestically	
2	Receives biological material domestically	
3	Sends biological material internationally	
4	Receives biological material internationally	
98	I don't know	
99	Refuse to answer	

**26. What mode(s) of transport are used to ship and/or receive biological material?**

1	Air	
2	Ground transportation by courier	
3	Ground transportation by commercial carrier or postal service	
4	Ground transportation by public transportation	
5	Ground transportation by facility staff	
97	Other – please specify	
98	I don't know	
99	Refuse to answer	

**27. When shipping biological material, do you follow any particular packaging procedures?**

1	Yes, triple packaging is used for biological material	
2	Yes, other packaging process	
3	No special packaging process is used	
98	I don't know	
99	Refuse to answer	

**28. Does your facility participate in a passive surveillance program?**

1	Yes	
2	No	
98	I don't know	
99	Refuse to answer	

**29. On which diseases does this facility report as part of the passive surveillance program?**

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**30. To whom does the facility report?**

1	Provincial government	
2	National government	
3	International organization	
97	Other – Please specify	
97	Other – Please specify	
98	I don't know	
99	Refuse to answer	



**31. How often does this facility report disease information as part of the passive surveillance program?**

1	Weekly	
2	Monthly	
3	Every two months	
4	Quarterly	
5	Twice a year	
6	Annually	
97	Other – please specify	
98	I don't know	
99	Refuse to answer	

**32. Does your facility participate in a passive surveillance program?**

1	Yes	
2	No	
98	I don't know	
99	Refuse to answer	

**33. On which diseases does this facility report as part of the active surveillance program?**

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**34. To whom does the facility report?**

1	Provincial government	
2	National government	
3	International organization	
97	Other – Please specify	
97	Other – Please specify	
98	I don't know	
99	Refuse to answer	

**35. How often does this facility report disease information as part of the active surveillance program?**

1	Weekly	
2	Monthly	
3	Every two months	
4	Quarterly	
5	Twice a year	
6	Annually	
97	Other – please specify	
98	I don't know	
99	Refuse to answer	