



OKINAWA INSTITUTE OF SCIENCE AND TECHNOLOGY GRADUATE UNIVERSITY
沖縄科学技術大学院大学

Emergency Contact

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Introduction: Basic Policies



◆ OIST Field Activities Manual ◆

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Definitions	
“Field Activities” means educational or research activities that take place in wildlands, forests, oceans, cities, and farms, etc.	“Participants” means those who participate in field activities conducted by the University or any employees or students of the University who participate in field activities conducted by any entity other than the University.
“Lead Investigator” means a person who has the primary responsibility for field activities. In principle, a faculty member or section leader from the faculty in question shall serve as the lead investigator.	“Supervisor” means a person who assists the lead investigator in order to ensure that field activities are conducted safely and properly. If the lead investigator is not on site, the supervisor shall lead the field activities.

- Field activities entail various unknown risks that don’t apply to indoor laboratory work.
- Health and safety, and management and accident prevention, are top priorities.
- Be prepared so that you can respond to any accidents that occur quickly and appropriately.
- Do what you can to protect wildlife.
- Depending on the country or region where field activities are conducted, different or additional laws may be imposed on the activities in question. Ensure compliance by making sure that all necessary procedures, such as license acquisition and documentation, have been completed before starting field activities.

Employees and students at OIST are involved in various educational and research activities in the field (hereinafter, “field activities”). These field activities can involve various unknown risks that don’ t apply to indoor laboratory work; in some cases, participants may be seriously injured or suffer life-threatening accidents. Such accidents are a danger not only to the immediate victim but also to other participants. Any OIST members who participate in field activities must work in a way that protects the health and safety of all participants and prevents accidents.

Faculty members have a duty to perform field activities safely and to prevent accidents, whether they are escorting their students in practical field training or whether the students are carrying out field work alone or as a group. Further, field work performed as part of doctoral research, etc., is still considered part of the curriculum even if it is done at the student’ s own expense, and even if the work is not supervised by the student’ s faculty advisor. As such, the faculty member still has a duty to protect the student’ s health and safety and to prevent accidents. Other participants and students also have a duty to take all the necessary precautions.

In the event of an accident, everyone involved should act calmly, take all appropriate measures to rescue others, and quickly report the situation to the Central Control Room (Bosai Center) or the Occupational Health and Safety (hereinafter “OHS”) Section. Immediately after receiving the report, the Central Control Room (Bosai Center) or the OHS Section should promptly contact the relevant parties, including the head of the unit or section to which the victim belongs, and respond quickly with measures that are appropriate to the scale of the accident.

The “OIST Graduate University Rules for Field Education/Research Activities” (hereinafter, the “Rules”) (see the end of this manual) describe the responsibilities of those involved in field activities, procedures that need to be taken before starting field activities, and measures for responding to accidents. Everyone who participates in field activities must follow these rules. This manual, based on the Rules as well as OIST Policies, Rules and Procedures (hereinafter “PRPs”), also incorporates various concrete examples and precautions related to field activities, and covers key health and safety issues as well as strategies for preventing or minimizing damage in the event of an accident.

This manual contains only the fundamentals that anyone carrying out field activities must keep in mind. For this reason, before actually starting field work, OIST personnel need to check for any other rules that apply to their activities, including other health and safety rules in place at OIST. National or local laws or rules must also be observed. It is important to keep in mind that each kind of activity entails its own risks and precautions.

Those who are going to collect biological resources in a foreign country, particularly in less developed ones, must be aware that regulations based on [the Convention on Biological Diversity](#) may apply to accessing genetic resources and sharing benefits arising from their use. The country that is home to the biological resources holds sovereign rights over their use, and for this reason it may be necessary to obtain prior informed consent (PIC) and to establish mutually agreed terms (MAT) in order exploit these resources commercially or even to access them.



Chapter I: Preparing for Field Activities



- Develop an appropriate fieldwork plan.
- A faculty member or section leader must be appointed as the lead investigator who is responsible for conducting the field activities.
- All participants must undergo the necessary education and training.
- All participants must obtain the necessary qualifications.
- Note that different types of site require different types of equipment. You must therefore make careful preparations in consultation with the lead investigator and/or experienced personnel.
- Before leaving for field activities, the lead investigator is to submit a General Field Activities Plan to the Occupational Health and Safety Section Leader.

1. Planning and Responsibility

1-1 Preparatory Study

- Gather enough information to understand the actual conditions on site, and thoroughly review potential risks and how to respond to them (see [Section 4](#) of this chapter, "Equipment and Precautions For Each Type of Site").
- New participants must first be accompanied by someone more experienced to learn how to perform the activities in question. In principle, no one is allowed to go alone without being accompanied by someone such as a local guide.
- Field activities demand more physical strength than is needed to carry out indoor experiments or research. You should gain the necessary level of physical fitness before embarking on fieldwork.
- You should be vaccinated against any infectious diseases that you may be exposed to (see [Chapter II, 1-6](#), and [Chapter IV, 1-1](#)).
- The lead investigator should try to gather information on any pre-existing health problems, such as chronic conditions, that participants have, and participants should volunteer any pertinent information that they feel comfortable giving.

1-2 Activity Plan

- Try not to include too many things to do. Instead, leave enough room to maneuver.
- Unexpected situations often arise on site that may prevent field activities from progressing as planned. In your plan, you should allocate enough time to accomplish a minimal number of priority tasks.
- For field activities that will go on for a long period of time, schedule in a suitable number of rest days.
- The lead investigator should draft a plan that reflects the skill level of the participants.
- Fill in a General Field Activities Plan (explained in detail in [2-1](#) below).
- The lead investigator must submit a General Field Activities Plan to the OHS Section Leader in advance (Rules, Article 5). The General Field Activities Plan should also be shared among member of the research unit or section so that they can respond quickly in the event of an accident.
- Work in consultation with more experienced personnel to create a list of equipment and procedures needed for the field activities in question, and run a well-designed simulation. See [Section 4](#) below for specific information on equipment.

1-3 Sharing the Field Activity Schedule Within Your Unit

- It is very important to share your actual work schedule with unit members, including information on who will participate in the field activities, where the activities will be conducted, and when participants will leave and return. This will allow unit members to quickly pick up on any irregularities, and enable OIST to respond immediately to help participants.

1-4 Responsibilities (Rules: Articles 6, 7 and 8)

1) Administrative Hierarchy

- Participants and lead investigators must keep in mind that their field activities are, in so far as they are done as part of their duties or under the curriculum, subject to the administrative hierarchy in place at OIST Graduate University, which descends from the President down to the Dean of Research/the Dean of the Graduate School/the Dean of Faculty Affairs, then the Faculty/Section Leader, and finally the faculty member/student. The entire University will be held responsible for the consequences of any accidents that occur as a result of flaws in OIST's safety and health management system.
- The Dean of Research is responsible for ensuring that all field activities carried out by OIST personnel are done appropriately, and may order that field activities be terminated if he or she finds that they pose a serious risk to human life or health, or a serious problem in terms of the protection of nature or wild animals and plants (Rules, Article 6).
- The OHS Section Leader is responsible for reviewing the General Field Activities Plan to confirm that the health and safety of participants is protected and that all relevant provisions, including laws and regulations and OIST rules, are complied with. If these conditions have not been met, he or she may recommend that the lead investigator revise the plan (Rules, Article 7).
- The Field Resources Section Leader is responsible for giving advice and technical assistance related to field activities, as well as for providing any specialized safety or technical training that is required. (Rules, Article 8).
- Participants have a duty to carry out field activities safely, abiding by all laws, regulations and rules, and following the Rules, the guidelines described in this manual, and the instructions given by lead investigators and supervisors.

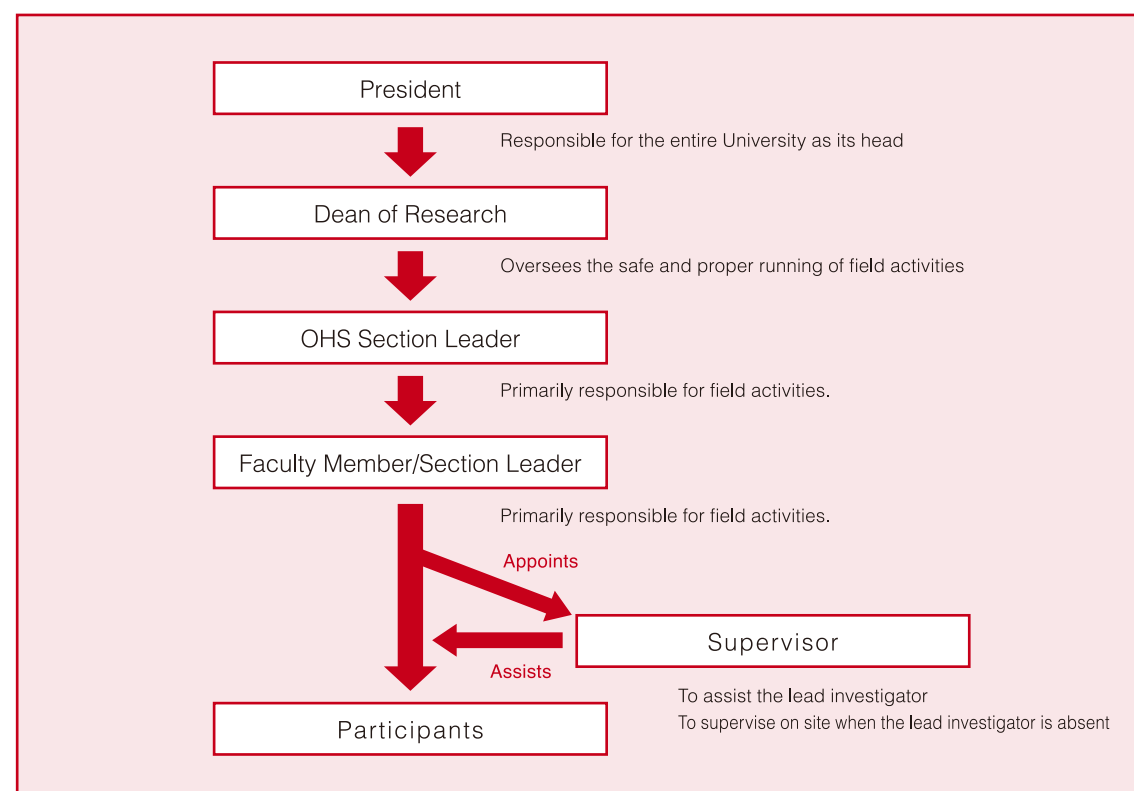
2) Responsibilities of Faculty Members and Section Leaders (Rules: Article 9)

- The faculty member or section leader in charge shall draft and file the General Field Activities Plan, and is responsible for managing health and safety for the field activities under her/his supervision.
- As a general rule, the lead investigator, as defined in the Rules, should be a faculty member or a section leader.
 - ▷ Where the faculty member is a guest researcher and cannot fulfill this responsibility, a group leader may be appointed as the lead investigator.
- In field activities where students are under the instruction of a supervising faculty advisor, that advisor shall be the lead investigator.



Chapter I: Preparing for Field Activities

OIST

**3) Supervisor (Rules: Article 9, Paragraph 4)**

- In order to better protect the on-site health and safety of participants, prevent accidents and ensure that field activities are run appropriately, the lead investigator may appoint a supervisor to assist him or her.
- Appointing a supervisor does not exempt the lead investigator from the responsibility to ensure that field activities are run in a way that protects the health and safety of participants, prevents accidents, and complies with all laws and regulations.
- During the field activities, the supervisor should work in close contact with the lead investigator to ensure that participants' health and safety is protected and that all laws and regulations are complied with.
- If the lead investigator will not participate in the field activities, he or she must select a supervisor from among the participants and have him or her work to maintain safety, health and compliance throughout the duration of the activities. This supervisor will keep in close contact with the lead investigator and direct the field activities on site, implementing the General Field Activities Plan and reporting any accidents or changes that arise.

2. General Field Activities Plan and Insurance**2-1 Submitting a General Field Activities Plan (Rules: Article 5)**

- A General Field Activities Plan needs to be submitted to inform the OHS Section about the field activities in order that they can confirm that the activities in the plan comply with the laws and regulations, and to facilitate a quick response in the event of an accident.
- Preparing the General Field Activities Plan helps to reduce risks and prevent accidents by providing an opportunity to gather essential information, study conditions on site, and run risk simulations.
- The General Field Activities Plan must include the activity site, the dates (or planned period), contact information for the accommodation, a summary of the field activities, details of how the activities conform to laws and regulations, emergency contact information (who to contact and by what means), and a list of participants. Where necessary, it is also preferable to include additional information, such as a detailed itinerary with maps; contact details for medical services, the police, and fire department; whether you are insured or not; contact details of the lead investigator (if he or she will remain at the University); and instructions on when to send out a search party (how long after losing contact). For field activities that will be done in a foreign country, in compliance with regulations that may exist in that country based on [the Convention on Biological Diversity](#) and [the Bonn Guidelines](#), the Plan may need to include permits such as PIC or MAT and details of other procedures needed to meet legal controls in that country. In many countries, regulations controlling access to genetic resources, and the sharing of benefits arising from their use, have been becoming stricter year by year. You should take note of the regulations of the country in question so as not to become involved in any violation of the law.

(Notes)

- A General Field Activities Plan must be submitted if the field activities are to take place at a site outside OIST premises (the Rules, Article 12). A General Field Activities Plan does not need to be submitted if the field activities are to take place within the premises of OIST or if the OHS Section Leader finds that submission is not necessary.
- As a basic rule, the Plan must be submitted at least once a year, and the submission will expire at the end of each fiscal year, on March 31. Notification is not necessarily required for minor changes, but notification needs to be given of any significant changes to the anticipated risks, relevant laws and regulations, or nature of the field activities.



Chapter I: Preparing for Field Activities

2-2 Insurance

- As a basic rule, students are required to take out a Disaster and Accident Insurance for Student Education and Research insurance policy.
 - Disaster and Accident Insurance for Student Education and Research is a disaster compensation system which provides compensation in the event that a student falls victim to a disaster or accident during educational and research activities. To be covered by this insurance, the field activities must be offered as part of the curriculum. This insurance is handled by the Student Support Section.
- Although members of faculty and staff are covered by workers compensation insurance, when they carry out field activities outside Japan they must purchase travelers insurance in accordance with the [OIST PRPs 29.2.9](#).
 - The workers compensation insurance system provides insurance compensation to individual workers for losses resulting from injury or sickness incurred at work or while commuting. Compensation is granted by the Labor Standards Inspection Office. Field activities may be covered by workers compensation insurance, but compensation will only be granted if it can be determined that the loss was incurred in the course of work. Completed paperwork for business trips or fieldwork may be used as evidence to prove that the activities in question constituted work. Because outdoor activities done for private purposes, such as scuba diving or mountain climbing on days off, are not usually considered to be work-related, any accidents that happen during these activities will not normally be covered by workers compensation insurance. If you ever find it necessary to conduct any work-related field activities in your private time, it is important to first contact your immediate supervisor by phone or email (the latter is recommended because it leaves evidence) to inform him or her that you are going to perform field activities as part of your work and to get his or her approval.
- To apply for insurance compensation, soon after the incident the applicant must submit the necessary documentation to the HR Management Section (for workers compensation insurance) or the Student Support Section (for Disaster and Accident Insurance for Student Education and Research).

2-3 Vaccinations

- Bear in mind that you may need to get vaccinations before embarking on your field activities. If you decide to get vaccinated, you will need to schedule the vaccination early enough in advance, bearing in mind that it can take a few weeks for your body to develop the antibodies. Even if your fieldwork will be in Japan, you should consider getting vaccinated against Japanese encephalitis or tetanus. If you will be conducting your field activities overseas, you should be aware that each country or area entails its own risks. You should therefore decide which vaccines you may need by referring to [Chapter IV 1-1](#) of this manual, as well as other sources such as [General Information on Hygienic and Medical Situations](#) provided by the Japanese Ministry of Foreign Affairs, and the WHO's guide to [International Travel and Health](#).

2-4 Qualifications and Compliance

- Any vehicles, motorcycles or boats that are used must only be driven by a licensed and experienced driver.
- If your survey requires you to go scuba diving, operate cranes or forklifts, or handle chainsaws, you will need to acquire a national qualification or undergo a safety training program (official training) designated under the Industrial Safety and Health Act. Do not perform these activities without first obtaining the required qualifications and meeting all the safety conditions prescribed under the Act.
 - Scuba diving: National qualification
 - Crane: National qualification
 - Forklift: Official training
 - Chainsaw: Official training

- See the [OHS Section webpage](#) for qualifications required under the Industrial Safety and Health Act.
- If there is any possibility that survey work done in a national park or a semi-national park may conflict with the provisions of the National Parks Act, you will need to complete the necessary formalities and obtain advance authorization from authorities including the Ministry of the Environment and the relevant park office. Also, before working in a national forest, you will need to submit the necessary documentation to the local forest office.
- Collecting aquatic animals in Japan may be subject to regulatory control under the Fisheries Act. Provisions set forth by local government may also impose additional controls.
- Before utilizing any genetic resources provided by a country that has established the relevant regulations in line with the Convention on Biological Diversity, you will need to apply to the national authorities to obtain prior informed consent (PIC) and to establish a contract defining mutually agreed terms (MAT). The [ABS Task Force Team for Academia of the National Institute of Genetics](#) recommends that researchers obtain documents resembling PIC and MAT even in countries that have not established the relevant regulations. If you are not sure what to do, try consulting with the ABS Task Force Team and/or the Research Grants and Agreements Section.



3. Safety Training

3-1 Safety Training Required for All Field Activities

- Basic Life Support Training and General Safety Training for Fields Activities Anyone who will participate in field activities must first complete the Basic Life Support Training and the General Safety Training for Field Activities.
- To enroll in the Basic Life Support Training you will need to submit an application to the OIST Health Center. The General Safety Training for Field Activities is available online.

3-2 Additional Qualifications and Safety Trainings for Field Activities in Marine and Other Aquatic Environments

- All OIST employees who will perform scuba diving in the course of their field activities must hold a national qualification called the Sensuishi License. This requirement does not apply to students.
- All participants who will perform scuba diving in the course of their field activities must also obtain a diving qualification (C-card) issued by the qualified agency.
- No additional mandatory safety trainings are required to perform field activities in marine and other aquatic environment. However, the Field Resources Section may, on request, provide safety and technical training for those who plan to perform coastal/water activities including sailing, snorkeling and diving.

3-3 Safety Training for Field Activities in Wildlands and Forests

- No additional mandatory safety trainings are required to perform field activities in wildlands or forests. Depending on the specific activities involved, where necessary, participants should complete a training program provided by an association such as the Mountaineering Association.

4. Equipment and Precautions For Each Type of Site

4-1 Basic Equipment

- You will need to prepare different equipment depending on the purpose and location of your field activities.
- It is recommended that you bring at least a minimum first-aid kit (see [Chapter V, "First Aid"](#)). You can modify its contents as needed.
- Bring your health insurance card or a copy thereof. If you have insurance coverage, bring a copy of the policy.
- Bring the General Field Activities Plan and the Emergency Communication Sheet. You should always bring these no matter what type of field activities you will do.
- Bring this manual or its abridged version and refer to it as needed.
- Mobile phones are an effective means of communication in case of emergency, but be aware that you may not be able to get a signal in some areas such as mountains and isolated islands. For field activities in this kind of location, it is important to first discuss what means of communication can be used. Consider bringing [satellite mobile phones](#), if necessary (you can rent them).
- Some pieces of equipment may have a designated lifespan or require periodical maintenance. Make sure that your equipment' s designated lifespan has not expired and have it is maintained at regular intervals.

4-2 Working in Mountains and Streams

- Wear a cap or hat (or a helmet around cliffs or rocky terrain), long-sleeved clothes, long pants, raingear, mountaineering boots (or trekking shoes if the mountain is not too steep; wading boots or other shoes with felt soles are preferable for working in mountain streams)
- Choose a sturdy bag that does not get in the way of your activities. Pack items including cotton work gloves, a compass (or a compass with an inclinometer for geological surveys), a map, a hammer, a field notebook, and a mobile phone containing GPS.
- Do not wear waist-high waders in rivers: if you accidentally fall in, water can get in the boots making it difficult for you to climb back into the boat.
- Bring any other items you may need, including water, food, a flashlight, and bug spray.
- If your work involves activities such as camping, climbing cliffs or snowshoeing, you will need to use more equipment and exercise greater caution in order to stay safe.



4-3 Working on the Coast or on Smaller Boats

- Always wear a cap or hat.
- Wear non-slippery shoes such as deck sneakers, sailor' s boots or rain boots. Never wear high-heels, open-toe sandals or waist-high waders.
- If the sun is strong, wear sunglasses and sunscreen.
- Wear long-sleeved shirts and long pants to avoid getting sunburnt or scratched by plants, animals or rocks.
- Keep your mobile phone on you to use in case of emergency.
- Wear gear that will keep you warm in chilly conditions at sea. Windbreakers are recommended.
- It is better to use water-resistant paper.
- Keep all mobile phones, cameras and GPS equipment in a waterproof bag or box.
- Use tide tables to familiarize yourself with the tides before embarking on your activities.
- Participants working on small boats must follow the instructions of the captain and must always wear life jackets.
- Keep your center of gravity low while on board. Never sit on or lean against the edge.
- If you fall overboard, stay calm and wait for rescue (you cannot sink as long as you are wearing a life jacket). If you see that someone has fallen overboard, shout "man overboard" to alert the captain and point out the person' s position.
- If you see a drowning person struggling in the water, help them by throwing something buoyant, or try to rescue them while remaining onshore. Do not swim toward the drowning person: they may cling to you and your own life may be put in danger.

4-4 Working on Large Research Vessels

Field activities that involve working on large academic research vessels or fisheries survey vessels are subject to safety rules specific to each type of vessel. However, here are some general precautions:

- Before going out to sea, verify where the life jackets are stored and how to use them. Prepare for accidents by verifying the escape routes and the location of nearby fire extinguishers.
- For observation work, wear appropriate workwear, shoes, helmets, gloves, professional life jackets, and, depending on the weather, raingear and warm coats. Avoid wearing loose clothing that could get caught in machinery such as winches.
- Participants involved in observation work are responsible for protecting themselves from any possible dangers on deck; in particular, be aware of the risk of getting caught up in winches, wires, or any ropes that are being used. Stay away from the area under the wire, which is particularly dangerous during observation work. Do not step on or over ropes that are being used. Never enter the danger zone around a turning roller.
- If there is a storm, take all the necessary safety measures, such as closing portholes, securing the observation equipment to the floor or wall, and holding onto the railing as you walk. Do not go out on deck unless it is absolutely necessary.
- Whenever possible, avoid going out on deck at night. If you absolutely need to do so, do not go alone: take someone with you to keep watch.
- If you see that someone has fallen overboard, shout "man overboard" to alert the people around you, throw the victim something buoyant such as a life ring, and inform the bridge crew of the incident.
- If you discover a fire, shout "fire" to alert the people around you, try to put it out with a fire extinguisher before it spreads, and inform the bridge crew.

4-5 Working at Sea (Skin Diving and Scuba Diving)

- Bring a wetsuit, a mask, a snorkel, marine boots, fins, a BC jacket, dive knives, gloves, and water-resistant paper.
- For scuba diving, in addition to the above, bring a tank, a regulator, a weight belt, a compass and a float signal.
- Always use the buddy system when you dive.
- Set up a diving flag in the area where you will dive.
- When skin diving, you still need to wear appropriate gear to protect yourself from getting sunburnt and injured by plants, animals, or rocks. Never dive in just a bathing suit.
- Wear a dry suit in low temperature sea conditions.
- Before bringing survey tools into the sea, secure them with a strap or carabineer so as not to lose them.
- Use basic tools and instruments that are suitable for you. Before using rented tools, verify for yourself that they are working properly. Tools and instruments may deteriorate due to exposure to seawater, so be aware that before and after using them you need to verify their lifespan, and perform any necessary maintenance, checks and periodical inspections.
- Use tide tables to familiarize yourself with the tides before embarking on your activities.
- Always keep separate diving logs for each individual and each laboratory.
- Divers who perform scuba diving work must have a C-card and a national qualification called the Sensuishi License that is designated under the Industrial Safety and Health Act of Japan. It is essential to keep close track of participants' diving skills and health condition.
- If you find a panicked person drowning in the water, try to save them by throwing them something buoyant or by approaching them from behind and blowing air into their BC jacket. Remember that if the drowning person clings on to you tightly, your own life may be put in danger.

4-6 Working in Familiar Environments Such As Towns or Farming Villages

You may need to conduct field activities in towns or farming villages. Although these environments may be very familiar, there are still dangers such as the risk of traffic accidents. While the specific equipment you need may vary depending on the purpose of the survey and the situation on site, here are some general precautions to follow:

- Choice of outfit:
For example, choose comfortable walking shoes for survey work that involves walking around. If you are going to a site where you may get dirty, such as a construction site or a river bed, choose a comfortable outfit that you do not mind getting dirty. If, on the other hand, your fieldwork involves meeting and interviewing people, choose an outfit that will put the interviewee at ease. If you will be on a road at night, take safety precautions such as wearing brightly colored, high-visibility clothing (such as fluorescent yellow).
- Be conscious of the general public:
In any survey environment, there is always the possibility of coming into contact with members of the general public. Somebody could interfere with or maybe even steal your research equipment, or you could break somebody else's property. When installing research equipment on a sidewalk, be careful to set it up so that passersby won' t have to step out onto the road to avoid it and risk being hit by a car. Whenever you participate in field activities, be prepared for any possible risks, taking into account such factors as your own safety, the safety of others, theft prevention, and how to respond in the event of an emergency.



Chapter I: Preparing for Field Activities

4-7 Archaeological Excavations

Archaeological excavations are done in a great range of environments. For this reason, no one list of equipment and safety measures could ever apply to all excavation sites.

- For a typical excavation, you will need the same kinds of equipment and safety measures that you would for agriculture or gardening.
- In surveys carried out in urban settings, which are increasingly common, the working environment may not differ greatly from a building construction site. The equipment and gear that you use will be similar to that used on building construction sites: in other words, you will need to do more to ensure safety.
- If you will be working in a cave or underwater, you must take safety precautions suited to these environments. Circumstances will vary greatly from site to site, and you will need to prepare in a way that is adapted to the specific on-site environment and that puts the safety of survey workers first.

4-8 Surveys in Disaster Zones

1) Surveys at volcanoes

- As basic equipment, bring a portable GPS, as is also required under Chapter 4.2, "Working in Mountains and Streams". Wear a helmet if you are working around a volcanic vent, around cliffs or in rocky areas.
- When doing a survey in an area where volcanic gas is thought to be being emitted, such as the area around a volcanic vent, bring a gas mask, a gas detector, goggles, and radio equipment. Volcanic gas is heavier than air and often lingers along valleys or volcanic depressions: you should therefore try where possible not to cross such areas, especially when there is no wind. You must be extremely careful in areas where you find dead birds, small animals, or plants.
- If there is any possibility that survey work done in a national park or a semi-national park may conflict with the provisions of the National Parks Act, you will need to complete the necessary formalities and obtain advance authorization from authorities including the Ministry of the Environment and the relevant park office. Also, before working in a national forest, you will need to submit the necessary documentation to the local forest office.
- If you intend to conduct a survey in a restricted area, you must first apply to the local authorities requesting permission to enter the area. You must also gather enough information, including information on working in volcanic areas and weather conditions. Post members of your team outside the boundary of the restricted area, and alert them when you enter and leave, and at fixed intervals in between. Always wear a helmet inside the restricted area.

2) Surveys in earthquake and/or tsunami affected areas

- Bring the same basic equipment as is described in Chapter 4.2, "Working in Mountains and Streams". You should also bring some tools, a portable GPS, and radio equipment. While working, wear a helmet and work gloves (preferably leather). It is a good idea to wear rubber gloves when working with electricity. You can wear mountaineering boots, but safety shoes are better if you will be carrying anything heavy. Note that, as collapsed buildings and waste in disaster areas can contain sharp objects, you should bring a pair of safety shoes with iron-plated soles.
- If you are going to be surveying a disaster area overseas where there may be extremely unsanitary conditions, be sure to take preventive measures against endemic and infectious diseases.
- When needed, carry a satellite mobile phone.

Chapter II: Precautions During Field Activities

- Review and update the schedule and plan to reflect the weather, the health condition of participants, and how far the work has progressed.
- When updating the plan, give top priority to safety, health, and accident prevention.
- Establish communication channels with OIST, the police, emergency medical services and other emergency departments. Always carry the Emergency Communication Sheet.

1. Taking Precautions and Adapting to Conditions On Site

1-1 Weather

- Keep constant track of the weather and other conditions on site and adjust the schedule and plan accordingly.
- When a storm is forecast, postpone your fieldwork and wait for conditions to improve.
- If a storm breaks while you are out on a survey, evacuate to a safer place as soon as possible.
- After a storm, the wet ground/surface will be slippery: keep in mind that fallen rocks or landslides may have affected conditions on site.

1-2 Lightning

- In the event of a thunderstorm, evacuate immediately to a safer place. Once thunder has been heard there is already a danger of being struck by lightning.
- Standing in an open area with no taller objects around you puts you at high risk of being struck by lightening. Keep low and evacuate the area.
- You will be safe inside a sturdy building or a metal-encased vehicle such as an automobile, train or airplane. Power lines also act as conductors so the area under them is safe, but you should stay at least 2 meters away.
- Do not shelter under a tree, as it is very likely to be struck by lightning. Stay at least 2 meters away from tall trees, and squat down in a position where you can see the tip of the tree at 45 degrees.

1-3 Health Condition

- Pay attention to your health condition. If you do not feel well, you must have the courage to stop the survey and take a break.
- The lead investigator and supervisor should try to keep track of the health condition of participants and respond accordingly by, for example, changing the plan or giving a break to someone who is feeling unwell. Be aware that people participating in group activities tend to force themselves to keep going even when they are not in good condition.
- Avoid drinking too much and get enough sleep.
- If you have a health condition that is likely to affect your research activities, you should, as far as you feel comfortable, voluntarily share this information with the members of your team.

1-4 Changing the Schedule and Plan

- You should review your schedule and plan to adapt it to what is actually happening on site, taking into account factors such as those mentioned above.
- Groups that fall behind on their objectives tend to try to accomplish too much in the time remaining. However, if an accident happens, the entire survey will have been pointless. Giving top priority to safety, health and accident prevention, you should have the courage to review your schedule and plan, and even to review your objectives where necessary.
- Once you have updated the schedule and plan, report the changes to the lead investigator.



Chapter II: Precautions During Field Activities



1-5 Safety Communication

- Take every opportunity to share details of the plan with participants, and hold preparatory meetings to help ensure safety and prevent accidents. Even surveys that do not take place at dangerous locations and that do not involve particularly dangerous activities may involve other risks, such as the risk of traffic accidents or theft.
- Hold daily briefing with all participants, exchange information and opinions, and go over the plan.
- Private companies have been running KYT (an acronym for Kiken Yochi Training, which means "Risk Prediction Training" in Japanese) in their workplaces. Participants take turns announcing one risk involved in that day' s work (e.g., falling from a high place, getting fingers caught in a machine, etc.), and the group then discusses how precisely they would respond to that situation. Through simulating work-related risks, not only does this training increase safety awareness and give participants an opportunity to think about how to avoid danger, but it is also a particularly effective means of safety management as it prepares everyone involved to respond quickly to emergencies.

1-6 Special Precautions

- The environment in which you work may affect your health in various ways. For example, working in the hot sun may cause heatstroke, and working in cold climates may lead to hypothermia. Diving work can cause decompression sickness, so it is important that divers have their health closely monitored.
- You should also beware of diseases unique to certain regions, such as echinococcosis and tsutsugamushi disease (trombiculiasis). In addition, beware of, and be prepared to deal with, any dangerous plants or animals that exist in the region or environment you will be working in, such as hornets (yellow jackets), pit vipers (mamushi; Gloydius blomhoffii), habu (Protobothrops sp.), bears, and venomous jellyfish (Chironex yamaguchii) (see [Chapter V "First Aid"](#)).
- You must be very careful inside caves or volcanic depressions, as these areas often have low oxygen concentration or contain accumulated toxic gas.
- In the event of an unexpected disaster or situation, such as a big earthquake or terrorist attack, ensure your own safety before ensuring the safety of other participants, and then call the emergency contact number to notify the University as to whether you are safe.

1-7 Returning

- When you return from your field activities, report directly to the lead investigator or someone from your unit. Otherwise, the lead investigator and others will conclude that you may have had an accident.
- If you dealt with a minor accident or a near-miss situation during your field activities, report the incident straight after returning through [this web site](#).

2. Contacts

2-1 Local Emergency Contact Numbers

- In Japan, call 119 for an ambulance, 110 for the police, and 118 if there has been an accident at sea.
- Prepare any information you can on local hospitals, including their contact numbers, locations, and the facilities and equipment they have available.

2-2 Communication Channel with OIST

- Establish an emergency communication channel with OIST (i.e. establish who to call) that you can use to report back in the event of an accident.
- Emergency contact numbers at OIST:
 - ▷ The Central Control Room (Bosai Center): 098 966 8989Bilingual (Japanese and English) service is available around the clock. If necessary, information can be forwarded to the OHS Section and/or the victim's immediate supervisor.
 - ▷ OHS Section: 098 966 1395 (for reporting accidents); 090 6859 7005 (section leader)

2-3 Communication Channel Between Lead Investigator and Participants

- When staff or students are carrying out field activities alone, they and the lead investigator (the supervising faculty advisor) should maintain regular contact with each other, even when the activities are proceeding according to plan.

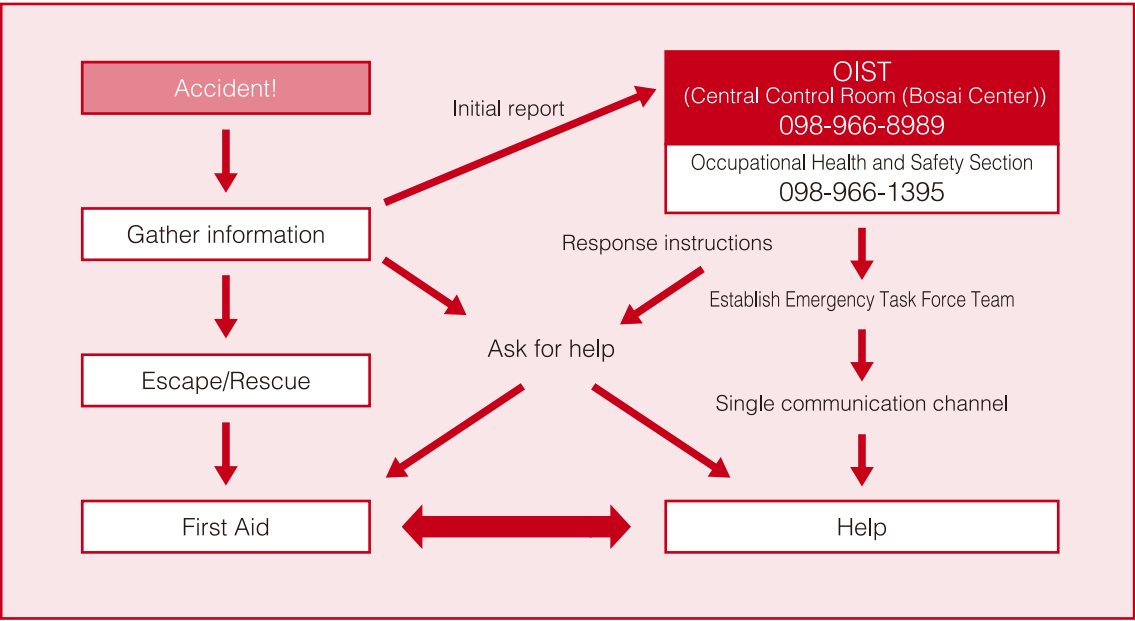
2-4 Communication by Phone

- Use a mobile phone. If the site is outside your mobile service area, arrange a means of communicating from the site before you go.
- However, if there is an accident, it is better to call from a landline than from a mobile phone, as this makes it easier to pinpoint the location of the phone. If you call from a mobile phone, be sure to accurately identify where the accident happened.
- When needed, use a [satellite mobile phone](#).
- Bring a spare battery pack in case the battery of your mobile phone runs out.

2-5 Response When Participants Don' t Return

- If participants have not reported their return by the time that their field activities had been scheduled to finish, members of their unit or section must check whether any of the participants has become involved in an emergency situation. If they cannot contact the participants, they must inform the OHS Section immediately.

Chapter III: Responding to Accidents



1. Response at the Scene of the Accident

1-1 Assess the Situation and Evacuate

- Stay calm and quickly assess the situation: ask yourself, “What has happened?”, “Why?”, and “How bad is the situation?”.
- Evacuate to a safe place. Eliminate the cause of the accident.
- If you get in an accident and you are not alone, explain the situation to your companions and call for help. If you are alone, you have to determine whether you can evacuate on your own or whether you can call for help.
- If a companion gets in an accident, before responding to the situation, verify whether helping the victim could give rise to any secondary harm, and whether you have the ability to rescue them on your own. If you decide that rescuing them is beyond your abilities, call for help straight away.
- The lead investigator or supervisor must make sure that all participants are safe and instruct them on what to do.

1-2 Rescue, Relocation and Transport

- Look around to make sure that the area is safe. Stay away from any danger.
- If the area is safe, you may start rescuing victims.
- If someone in your group is unconscious and not breathing, immediately perform 30 chest compressions. Four minutes after someone has gone into respiratory arrest, the chance of resuscitating them drops to 50%. Rescuers must act swiftly (see [Chapter V "First Aid"](#)).
- If the victim is breathing, try to stabilize the situation. Try to stop any bleeding. Splint any broken bones. If the victim's body temperature is low, keep them warm (see [Chapter V "First Aid"](#)).
- If the victim is breathing but unconscious, put them in the recovery position.
- Only move a victim if you need to move them from dangerous surroundings to a safe area. Do not struggle to move them. If necessary, call 119, give first aid, and wait for help. Somebody should stay with the victim throughout. That person should be carrying some cash and a mobile phone. If there is no need to call an ambulance, promptly bring the victim to a medical institution.

1-3 Making Calls and Reporting

- Always call an ambulance if the victim needs to be rescued or transported. Call 119 for an ambulance, 110 for the police, and 118 if there has been an accident at sea (in Japan).
- Give all the relevant information including the time and date of the accident, the location (if you cannot identify the location, describe the surrounding topography, nearby landmarks, and the route to the accident site), the victim's name, address and age, the cause of the accident, and details of the injury.
- It is better to call from a landline rather than a mobile phone, as this makes it easier to pinpoint the location of the phone. If you call from a mobile phone, be sure to accurately identify where the accident happened.
- If you are unable to ask for help because you do not speak the language, call the OIST Central Control Room (Bosai Center) for language support. The number is 098-966-8989.
- Contact OIST (the Central Control Room [Bosai Center] or the OHS Section Leader). Calmly and clearly report information on the accident, covering who, what, when, where, why and how. You must clearly state that this is an emergency call. Secure a communication channel between the participants and OIST by giving a telephone number for reaching the participants and the name and address of your accommodation (if you have enough people, appoint a contact person). From this point on, handle the situation rapidly in coordination with OIST. If necessary, you can request backup.
 - ▷ OIST Central Control Room (Bosai Center): 098 966 8989 Bilingual (Japanese and English) service is available around the clock. If necessary, information can be forwarded to the OHS Section and/or the victim's immediate supervisor.
 - ▷ OHS Section: 098 966 1395 (for reporting accidents); 090 6859 7005 (section leader)
- Contact family members, local authorities (if overseas, contact the embassy/consulate of your country or of Japan) and insurance companies.
- Appoint one person or more to record a timed sequence of events, including a description of the accident, subsequent responses, communications, and follow-up measures.

1-4 After an Accident

- The OIST Emergency Task Force will consider and make a determination on subsequent field activities.
- The OHS Section serves as the liaison between OIST and government offices.
- The Communication and Public Relations Division serves as the liaison between OIST and the mass media.



Chapter III: Responding to Accidents

2. OIST’ s Response to Accident Reports

2-1 Initial Report

- The person who receives the initial call reporting an accident should repeat it back and verify its accuracy.
- As per the pre-established emergency communication network, the person who receives the initial report must immediately pass it on to the Central Control Room (Bosai Center) or the OHS Section Leader.
- The OHS Section Leader will check the field activities plan and the list of participants, establish a communication channel with the participants, and assess the situation.

2-2 Establishing an Emergency Task Force

- Inform any related parties inside and outside OIST of the initial report (if the accident takes place overseas, the Japanese embassy or consulate should also be informed).
- If the accident is determined to be serious, an emergency task force is to be set up straight away. Quickly set up an administration and communication system appropriate to the scale of the accident.
- The emergency task force is to delegate roles to each of its members and members of the unit/section. It is also to appoint someone to keep detailed records of all activities.
- The task force is to decide whether or not a rescue team should be sent out.
- Following on from the initial report, keep the victims' families informed with detailed updates.
- Detailed information should be quickly shared with the media via a single channel, the Communication and Public Relations Division, which will be in charge of all communication with the media.
- Multiple communication channels with the accident site should be reduced to a single channel.

2-3 Rescue

- Secure funds for the rescue, prepare the necessary materials, and dispatch a rescue team to the accident site.
- Request support from any associates in the local area.

3. Considerations

- Someone who has experienced an accident may not want to make a big deal of it (perhaps they don't want to face the seriousness of the situation), and they may also believe that the accident should only be reported after all the details have been confirmed. This attitude can cause you to underestimate the seriousness of the accident and report it later than you should, delaying the response and exasperating the extent of the damage. You will never be criticized for quickly reporting and responding to an accident that turns out to have been minor. The worst-case scenario is that you delay in reporting and responding to an accident that turns out to have been more serious than anyone imagined.
- Even minor accidents must always be reported to the OHS Section. (Minor accidents can be reported at a later date. You also need to report any “near-miss” [hiyari-hatto], accidents. Minor accidents and near-misses should be reported via the OHS Section [website](#).



Chapter IV: Supplementary Information

1. Accident Prevention and Health and Safety Management Overseas

Field activities overseas often involve different risks than are encountered in Japan, including security issues, lack of hygiene, endemic diseases, and dangerous plants and animals. Gather as much information as you can on these risks before your departure, and pay more attention to protecting your personal health and safety and preventing accidents than you would in Japan. So far, we have looked at some general precautions for field activities and how to respond in the event of an accident. In this chapter, we will examine a few special points that apply to field activities in foreign countries.

1-1 Hygiene and Health

- You will be more exhausted physically and mentally than if you were doing field activities in Japan, and so you will need to pay greater attention to maintaining your personal health.
- If you are planning to stay overseas on business for 6 months or longer, you are required [by regulations](#) to be given a health examination in Japan before your departure and to bring any necessary medications with you. Bring extra doses of any prescription medication you are taking in case your return is delayed. Divide the doses into two sets: put one in your carry-on baggage, and the other in your checked baggage.
- Keep in mind that Japan is one of the world's safest countries in terms of hygiene.
- Visiting any country in Africa, South East Asia, the Middle East, or Latin America puts you at risk of contracting infectious diseases such as malaria, cholera, dysentery, tetanus, dengue fever, yellow fever, hepatitis and Japanese encephalitis. Before departure, gather information on and vaccinate yourself against any diseases that are endemic to the country you are visiting. If the vaccination you need is identified as recommended or essential on the website of [the Ministry of Foreign Affairs of Japan](#) or on [WHO International Travel and Health](#), you can have the cost covered as a business expense without filing an application. Other vaccinations may be covered as business expenses with the authorization of your immediate supervisor. Most vaccinations are delivered through a series of inoculations, so please do not delay in consulting with a quarantine station, with OIST Health Center, the Japanese Quarantine Association, or with hospital staff.
- Keep in mind that it is not safe to drink tap water in most parts of the world. Do not drink unboiled water. Buy and drink only bottled water with its seal intact.
- Avoid eating raw or uncooked food.
- Be careful of mosquito bites, as mosquitos can carry diseases such as malaria, yellow fever, and dengue fever. There has not been a case of rabies in Japan for the last fifty years, but the disease is still widespread almost all over the world. Those working in areas with poor sanitation should get vaccinated against rabies and stay away from feral or stray dogs.

1-2 Accidents and Crimes

- You will need to take out travel insurance, and if you are in an accident you will need to get any documentation required by the insurance company issued locally (e.g., medical certificates, receipts from medical treatment, a police certificate for stolen goods, etc.).
- Keep in mind that Japan is also one of the world' s safest counties in terms of public safety. Travelers often fall victim to crime. Stay away from dangerous areas. Do not go out alone. Do not leave valuables behind, and do not respond to invitations from strangers. Remember that you cannot be too careful when you are in a foreign country.
- Avoid any needless conflict or trouble with local people.
- Before departure, read up on risks associated with your destination at the [overseas security website of the Ministry of Foreign Affairs of Japan](#), [WHO International Travel and Health](#), and [the U.S. Department of State' s website on international travel](#).



Chapter IV: Supplementary Information

1-3 Communication

- Note the phone numbers of your country’s embassy or consulate, or that of Japan, in your destination country. Call them to ask for help if you get into trouble.
- Note the phone numbers of local emergency services, including police, ambulance, and fire services.
- Make sure that you always have details of someone to contact at OIST as well as a way of contacting them.

2. Accident Case Studies

Unfortunately, at many academic and research institutions, field activities have given rise to tragic accidents in which promising young researchers and students have lost their lives. Accidents always have a cause. Many could have been prevented, or the damage could have been minimized, had those involved been prepared or responded as directed by this manual. We can never recover the lives that have been lost, but we can learn from these unfortunate accidents to help better protect our health and safety and to prevent the same kinds of accidents from happening in the future.

1) Drowning during a scuba survey

This accident occurred during a scuba survey that was being done by a team of four people, including a professor, a research fellow and two graduate students, at a depth of 16 meters in the sea around the Hachijojima Island. Immediately after they started diving, the research fellow signaled the professor that he would go up alone to remove water from his mask. He subsequently went missing. The group requested a search and he was found two hours and a half later on the seabed not far from the survey site. His body was taken up to the surface where he was pronounced dead.

Problems: First, the group did not follow the basic rule for diving surveys: always dive with a buddy. If anything goes wrong, divers must return to the surface with their diving buddy. Second, the other team members did not have a good grasp of the victim's level of diving skill. Third, despite the fact that the Industrial Safety and Health Act requires that scuba survey researchers obtain a diver's qualification, neither the victim nor the professor had the required qualification. Accordingly, the professor and the university were accused of violating the Act and the case was sent to the public prosecutor's office.

2) Car falls off the road during a survey in the mountains

Two graduate students were killed when they drove off a mountain road during a botanical survey. After leaving the university the day before, the students had been taking turns driving and sleeping, and the accident occurred on the second day. However, their laboratory did not realize that anything had happened until seven days later, when the two had not returned as scheduled. A major search was launched but it took another ten days for the search team to find their bodies.

Problems: The students had not submitted a written activity plan, and had not maintained regular contact with their laboratory. This may have delayed launching the search. Their tight schedule, which involved driving through the night and taking turns sleeping, may have been overly demanding. There was obviously no system in place to review the field activities schedule.

3) Drowning in a mountain stream

A student fell into a mountain stream while he was collecting samples on the rocky shore during a university fieldwork trip. He was unable to get out on his own and drowned.

Problems: The victim was wearing waist-high waders. However, waders are more of a danger than a protection, as they can get filled with water if the person falls in. It is imperative to choose equipment that is appropriate to the activity.

4) Bitten by habu in the mountains

This incident occurred at night during an ecological survey of frogs and toads in the Amami Islands. The victim had been carrying out survey work by a stream running alongside a forest road (ecological surveys of frogs and toads have to be done at night). He grabbed a tree while trying to climb back up the steep slope, and felt something bite his hand. He spent several minutes searching the area unsuccessfully in an attempt to determine whether he had been bitten by a habu (*Protobothrops flavoviridis*) or a Himehabu (*Ovophis okinavensis*) (it is necessary to identify the animal to get the right treatment). He then went straight back to his car, drove down the mountain, and called an ambulance as soon as he got a signal on his mobile phone. While he was waiting, he tied his wrist with adhesive tape from his kit and sucked the wound. He had also brought a poison remover for sucking venom from snake or insect bites, but was unable to apply it since the wound was at the base of his finger. This is a common problem and these devices are generally of very limited or no value. He arrived at the hospital about 45 minutes after being bitten, where the doctor cut open the wound and diagnosed it as a probable habu bite. His symptoms were mild and he was released from hospital three days later.

The victim of this snakebite incident was well prepared. He had checked where to go to use his mobile phone, and knew a lot about treating bites. He also responded to the incident in a calm and appropriate way, which was more important than the first aid measures he took.



Chapter V: First Aid



1. Giving First Aid: The Basic Principles

Whenever you conduct educational and research activities in the field, there is always the risk of an unfortunate accident resulting in injury or even death. Be ready to deal with such situations, keeping in mind the following principles.

1) Stay calm

Whether you are a victim or a bystander, the first step is to try to act calmly. Acting hastily increases the risk of a secondary accident. An overreaction from bystanders could also make the victim panic, and possibly cause them to enter respiratory distress.

2) Assess the situation

Symptoms requiring immediate hospitalization

1. Unconscious or semi-conscious (little response to hearing their name called loudly)
2. Convulsive seizures which continue for a prolonged period
3. Shallow breathing or breathing that is too rough and fast
4. Violent coughing
5. Severe nausea
6. Vomiting blood or blood in feces
7. Abnormal facial expression (e.g., one side of the face is frozen)
8. Sudden severe headaches
9. Sudden high fever
10. Facial pallor and cold sweats
11. Yawning
12. Heavy bleeding (doesn't stop when compression dressing is applied)
13. Paralyzed extremities (impaired mobility)
14. Suspected broken or dislocated bone(s)
15. Extensive burns (entire limb, half of a leg or more, a quarter of the torso or more)
16. Facial burns from fire

Observe the victim's condition. You have to decide, for example, whether they need to be brought to hospital for immediate medical attention, or whether they should be given time to calm down before going to hospital.

3) Moving victims

As long as they are not in a dangerous area, you should not try to move any victims who are not able to move on their own. Moving victims may aggravate their symptoms. In particular, clumsily moving victims with broken bones or spinal cord damage may exasperate the nerve damage and lead to permanent paralysis. As a rule, only personnel with the right expertise should try to move seriously injured victims. Whenever possible, wait for the paramedics to arrive.

4) Get as much help as you can from bystanders

Never try to deal with the situation alone, and get as much help as you can from the people around you. Allocate tasks: for example, appoint someone to give first aid, someone to prevent the damage spreading, and someone to communicate with hospitals and other organizations. Also, when many people are helping to deal with the accident, there needs to be one person who acts as the leader to oversee everything and give instructions.

2. Recommended First-aid Kit

- a. Iodoform antiseptics (Isodine antiseptic)
- b. Hydrogen peroxide antiseptics (Oxyfull antiseptic, Pyrozone antiseptic, etc.)
- c. Clean gauze (make sure that the seal is not broken)
- d. Bandage tapes (include different sizes)
- e. Bandage rolls
- f. Elastic bandage rolls (for fixing sprained joints)
- g. Rubber gloves, plastic gloves (to be worn when attending to a bleeding victim, etc.)
- h. Thermometers
- i. Compresses, anti-inflammatory ointments
- j. Antihistamine ointments (for insect bites, etc.)
- k. Steroidal ointments (for rashes, etc.)
- l. Plastic bags (large and small)
It is better to have the following items if they are available:
- m. Sterile distilled water (for sterilizing wounds)
- n. Fabric for slings (for treating broken or dislocated shoulder and arm bones, etc.)
You will need the following items for field activities in areas where there is a risk of encountering harmful or poisonous animals such as bees and snakes:
- o. Poison removers (for treating bee bites, snake bites, etc.)
- p. If you have allergies, ask your doctor to prescribe you some self-injectable epinephrine to bring with you (EpiPen; for anaphylactic shock caused by snake bites, etc.).

3. Dealing with Wounds

3-1 Assessing the wound and deciding whether to get medical attention

When assessing a wound, check the following three points:

- 1. Does the wound reach under the skin (to the subcutaneous adipose tissues)?
- 2. Is there heavy bleeding?
- 3. Is there any foreign material left in the wound such as soil or pieces of broken glass?

Make sure that the wound is only superficial and does not go under the skin, that it doesn't contain any foreign material such as soil or pieces of broken glass, and that the bleeding can be stopped simply by applying a bandage or gauze. If this is the case, you can rinse the wound with clean water, disinfect it with antiseptic, and then wait and see. However, you will need to get medical attention if the pain is persistent, becomes more acute, or if the border of the wound becomes red and swollen, as this may indicate a bacterial infection.

On the other hand, if the cut appears to have penetrated under the skin, if there is heavy bleeding, or if any foreign material is left in the wound, you will need to get medical attention as soon as possible.

In addition, if the arm or hand is cut deeply with a knife or broken glass, there may be damage to the nerves as well as the arteries. In this case, the victim will need to see a specialist, as there is a risk that the fingers could be permanently paralyzed.



3-2 Disinfection

Wounds should be rinsed with clean water wherever possible. This is a particularly important step when the wound is contaminated with soil or other dirt. Use copious amounts of water to try to rinse out any foreign material such as soil. However, refrain from rinsing wounds if there is heavy bleeding, such as bleeding from an artery, as it can make the bleeding worse.

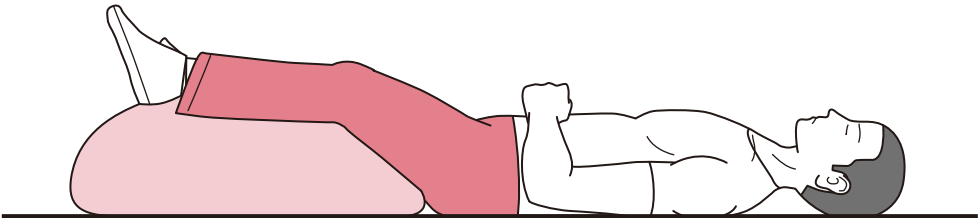
3-3 How To Stop Bleeding

To stop bleeding, apply direct pressure, indirect pressure (pressure to pressure points), and a tourniquet, in that order.

1) Direct pressure

Apply pressure directly by holding some gauze or a handkerchief firmly against the bleeding wound. Avoid direct contact with the blood by using gloves or a plastic bag as a barrier between the bleeding and your skin. Applying direct pressure will generally stop the bleeding. If the bleeding is from an artery, you may need to keep applying pressure for about 30 minutes. If necessary, use both hands and your body weight to apply pressure.

In addition, symptoms such as facial pallor, partial loss of consciousness, and yawning may indicate that the bleeding person has gone into hemorrhagic shock. If this is the case, position the victim's head lower than their trunk and elevate their legs (shock position). This helps to increase blood flow to the brain.



The shock position
(helps to increase blood flow to the brain)

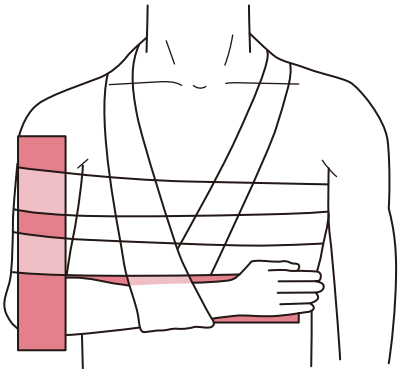


4. Dealing with Fractures, Dislocations and Sprains

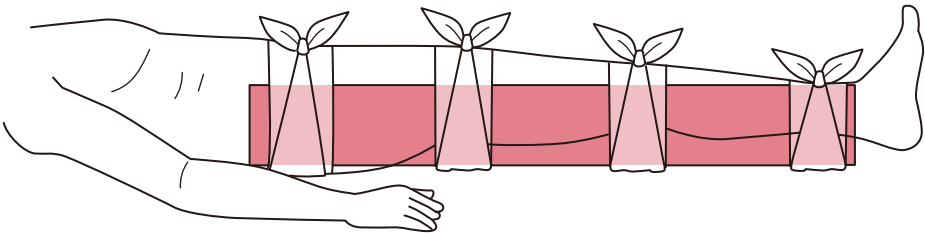
4-1 Fractures

Bone fractures can be divided into two categories: open fractures where the fractured bone is exposed or the wound communicates with the fracture, and closed fractures where the wound does not communicate with the fracture. For open fractures, the wound needs to be cleaned at a hospital as soon as possible (within 8 hours). Otherwise, the bone could get infected (osteomyelitis) and treatment could get held back. Open fractures are also especially likely to be accompanied by heavy bleeding and nerve damage. You will need to stop any bleeding as directed in Chapter 3-3, "How To Stop Bleeding". In addition, some closed fractures, especially pelvic and femur fractures, can cause extensive internal bleeding that may lead to hemorrhagic shock. If you know or suspect that a bone is broken, do not move the injured part unnecessarily. Doing so will not only cause the victim more pain, but may also damage their blood vessels and nerves, possibly permanently. If there is no prospect of help from paramedics or if you are in dangerous surroundings, you may move the victim from the scene while keeping the injured part immobilized. If you can use a splint (a tree branch, a flat plate, etc.) to immobilize the injured part, use external fixation as illustrated below:

Upper arm fracture

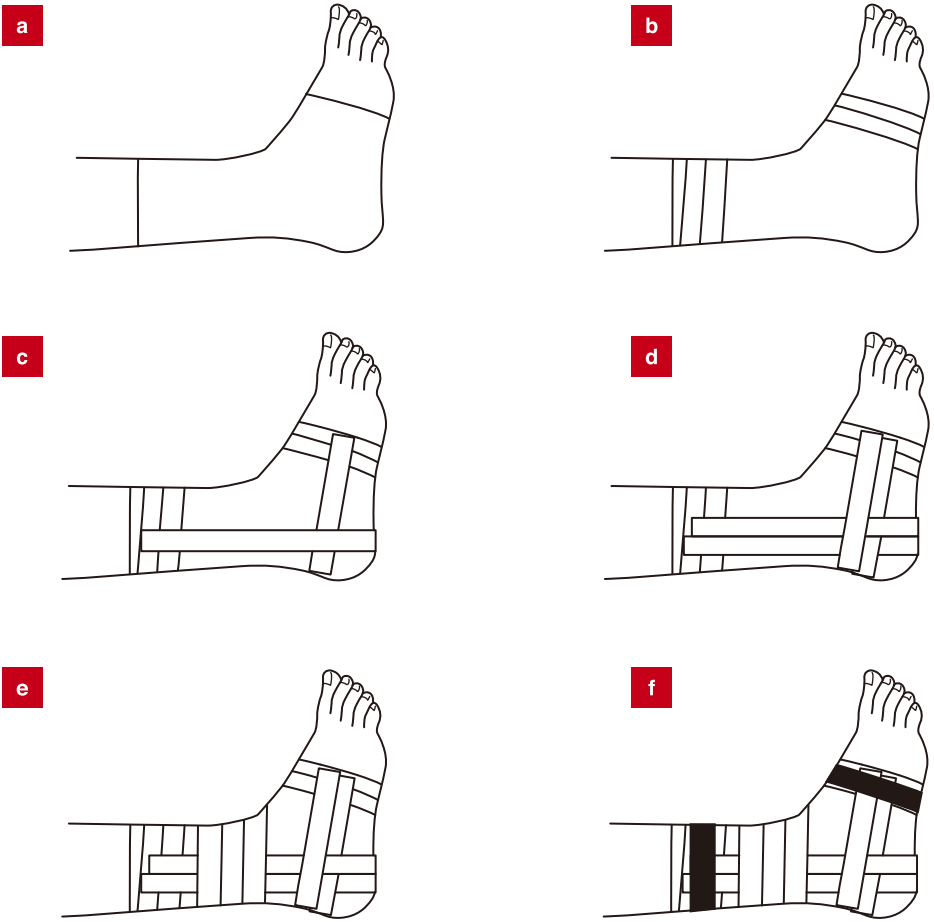


Femoral fracture



4-2 Dislocations and Sprains

Dislocations or sprains occur when a joint is forced to overstretch or bend to an abnormal degree. A dislocation is where the bone is displaced from the joint, and a sprain is where a bone that was about to dislocate has returned to its normal position. Dislocations can also cause a fracture around the joint (dislocation fracture). Victims are generally unable to move a dislocated joint on their own, but because after a sprain the bones remain in their normal position, victims can move a sprained joint on their own even if it is painful. Never try to reinsert a dislocated bone. Instead, immobilize the injured part as much as possible and bring the victim directly to hospital. Keep in mind that dislocations can also cause blood vessels or nerves to be overstretched and injured leading to long-term damage. Sprains can generally be healed by applying ice or an elastic compress. However, as sprains can involve damage to the ligaments around the joint, you should avoid moving the injured joint forcefully. Ligament damage is often accompanied by swelling and internal bleeding around the injured part. If there is a possibility that a ligament has been damaged, the victim will need to be treated at a hospital. Finally, the following illustrations show how to temporarily stabilize a sprained ankle in an emergency situation using tape or an elastic dressing.



How to stabilize a sprained ankle using tape



Chapter V: First Aid

5. Dealing with Heat-Induced Conditions (Sunstroke)

Heat-induced conditions are disorders that are caused by high temperatures. You should take the following precautions to prevent these conditions:

- 1. Refrain from working in hot, poorly-ventilated environments, or take as many breaks as you need;
- 2. Stay hydrated and consume enough salt;
- 3. Wear loose clothing and a cap or hat; and
- 4. Take a day off if you are sleep deprived, hung-over or fatigued.

Depending on the symptoms, heat-induced conditions can be classified into heat cramps, heat exhaustion and heatstroke.

5-1 Heat cramps

Heat cramps occur when a person does manual labor in a hot environment and loses a lot of salt through sweating. You are at particular risk if you only drink water and fail to consume salt after sweating profusely. The cramps are abrupt and usually affect the arm and leg muscles. You can provide relief to someone with these symptoms by bringing them to a cool, well-ventilated place, keeping them calm, and having them drink salted water (or a commercial sports drink, etc.). However, if the victim has severe, generalized cramping, their life may be in danger and they should be brought straight to hospital.

5-2 Heat exhaustion

Heat exhaustion occurs when a person becomes dehydrated through excessive sweating, causing reduced blood flow to the brain. Symptoms may include headache, nausea and vomiting, dizziness, and weakness. There may also be a drop in blood pressure, facial pallor, and an accelerated heart rate. Body temperature usually remains normal but the skin will be damp. In severe cases, the victim may become confused or lose consciousness. Cool the victim down by having them rest in a cool, well-ventilated environment. Consuming lightly salted water (or a commercial sports drink, etc.) is usually an effective way to treat heat exhaustion. Seek medical attention if the victim is unconscious or severely exhausted.

5-3 Heatstroke

Heatstroke is the most serious heat-induced condition. It occurs when a person becomes dehydrated after sweating in hot and humid conditions and their skin is unable to dissipate body heat well, impeding the central nervous system's ability to regulate body temperature. The body temperature often rises extremely high (often to 40 °C or higher), sweating stops, and the skin becomes dry. Symptoms include headache, nausea, dizziness, a red face (or purple-red in severe cases) and/or rapid breathing. Further, victims suffering severe heatstroke may experience impaired consciousness, seizures, and rigid extension in the arms and legs.

Bring the victim to a cool, well-ventilated environment, fan them with air, and wet their body with water (continue until their body temperature has dropped to 38 °C or lower). In severe cases, the victim should be sent to hospital as soon as possible. If treatment is delayed the victim's muscle fibers could start to break down (rhabdomyolysis), causing systemic dysfunction such as kidney failure and possibly death.

6. Dealing with Burns

To treat a burn, you should generally start by cooling the affected area under running water for at least 15 minutes (at least 30 minutes if possible). Cold tap water is the right temperature (the ideal water temperature is 10 °C to 15 °C).

Refrain from using ice cubes or other means to forcefully cool the burn.

If the burn covers a large area of the body (one quarter or more), do not apply cold water for more than 10 minutes, as this can cause the victim's body temperature to drop and they may go into shock. For large burns, start by splashing or showering water over the affected area to reduce heat, and then cover the area with a clean towel or sheet and seek medical attention as soon as possible.

The severity of a burn is determined by its depth, size, and location. Burns are categorized by depth into first, second, and third degree.

First-degree burns are the least serious: the injured skin is red but not blistered. Most first degree burns can be treated by cooling the skin with running water before applying a commercially available anti-inflammatory ointment and waiting for it to take effect.

In second-degree burns, the surface of the skin (epidermis) peels and becomes blistered. Most burns caused by hot water are second-degree burns. The victim must seek medical attention to have the wound disinfected and dressed. Refrain from bursting blisters, as they act as barriers against infection. The burn will usually heal within one to two weeks as new skin starts to grow. However, be careful to avoid bacterial infection, which can cause the wound to become deeper and more difficult to heal.

Third-degree burns occur when heat damages all layers of the skin and even the tissue under the skin. The skin may appear white and may not feel painful. The injured and dead skin will need to be surgically removed at a hospital, and in many cases a skin graft will be required. Third-degree burns to joints in the arms and legs and to the hands may lead to impaired motility that persists after the wound has healed.

The standard procedure for treating second- or third-degree burns is to cool the affected area with running water and then seek medical attention straight away. Do not apply zinc oil without medical supervision. In addition, you should not try to remove clothing from a fire burn, since the fabric may have adhered to the skin.



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OIST

7. Dealing with Frostbite

As the first symptoms of frostbite, you may feel a tingling or burning sensation and your skin may become red. Do not rush to warm the affected area. Instead, treat yourself by simply warming up your whole body with a blanket and applying a warm hand to the affected area. You can also soak the frostbitten area in warm water (38 °C to 40 °C; around the temperature of a mildly warm bath) for around 30 minutes. Applying overly hot water will not only be painful, but could actually aggravate the wound. Mild frostbite only turns your skin red, and will heal itself if the area is simply kept warm.

Severe frostbite can cause your skin to harden and turn purple-red, black, or white. You may also experience a prickling feeling or numbness. Victims of severe frostbite will need to undergo surgery at hospital.

As first aid, quickly move the victim to a warm environment, remove any wet clothing, and call for help. If you expect paramedics to arrive shortly, and if the area is likely to freeze again, do not rewarm it. Remove any accessories and place sterile gauze between the fingers. Make sure the victim doesn't consume alcohol or tobacco. Also, do not apply a pocket warmer directly to the affected area as this can cause a low temperature burn.

8. Dealing with Altitude Sickness

Altitude sickness may occur when the body fails to adapt to a low-oxygen, high-altitude environment, such as altitudes of 2000 meters or more where the air is thin. You may get altitude sickness if you ascend too high in too short a period of time. It can also be caused by changes in temperature, dehydration, and fatigue.

Symptoms include headache, dizziness, nausea, and shortness of breath, and, in more severe cases, coughing, swelling of the face or feet, and pulmonary edema (a condition caused by excess fluid in the lungs). Victims with pulmonary edema breathe rapidly due to restricted respiration, cough up a large amount of watery, thin sputum, and their face, trunk and limbs may develop a dark purplish tinge (cyanosis).

To help someone with altitude sickness, start by keeping them calm and warm and making sure they drink enough water. If you have a portable oxygen bag, have the victim inhale oxygen. Victims with possible pulmonary edema will need to be rescued by helicopter or other means and brought to a hospital straight away.

9. Dealing with Snow Blindness

When you are working on snowy ground, UV rays reflecting off the snow may cause eye inflammation. Symptoms don't usually develop immediately after exposure: they may take 3 to 8 hours to set in. The symptoms include eye pain, the sensation of having something in your eye, and watering and red eyes.

Snow blindness will generally heal itself within one or two days, but you can help the healing process by using anti-inflammatory or antibiotic eye drops. If symptoms persist you should go to see an eye doctor.

You can prevent snow blindness by always wearing UV-blocking sunglasses when working on snowy ground, even if the weather is cloudy.

10. Dealing with the Bends

When diving or scuba diving at depths of 10 meters or more, the increased water pressure can cause the body to absorb more than the usual amount of nitrogen from the compressed air you inhale. If you then ascend rapidly to the surface, the extra nitrogen in the body will form bubbles, which then block the blood vessels and give rise to a blood circulation disorder (decompression sickness).

Typical symptoms include severe pain in the shoulders, elbows, wrists, knees and other joints, numbness, dizziness, brain dysfunction, and, in very severe cases, loss of consciousness. The disruption to circulation can also cause the bones in the arms and thighs to break or die.

Victims of decompression sickness must be hospitalized immediately and given hyperbaric oxygen treatment. To prevent decompression sickness, make sure that your dive duration is appropriate relative to the depth you are diving at, and return to the surface slowly. In addition, be particularly careful if you will be taking a plane or moving to a higher altitude after scuba diving, as this puts you at greater risk of experiencing decompression sickness.

Finally, aside from decompression sickness, rapidly rising to the surface while holding your breath can cause the air in your lungs to expand too quickly causing an injury such as a burst lung.

11. Dealing with Drowning

When a person is drowning, water enters the lungs and airways and causes them to suffocate. Even if the person does not take in a lot of water, the throat may go into severe spasms in response to the water being taken in and the victim's feeling of panic, causing suffocation. In the sea, the intake of salt water into the lungs increases osmotic pressure, often resulting in pulmonary edema (see altitude sickness). In fresh water, on the other hand, water of lower osmotic pressure enters and is absorbed into the body, increasing blood flow and decreasing the concentration of electrolytes such as Na and Cl.

Any victim who has taken in a large amount of water should therefore be taken to hospital, even if their condition does not look serious.

If the victim is not breathing, perform CPR. There is no need to force the victim to cough up the water. You should also bear in mind that victims who have been in the water a long time will often have a low body temperature. This may impede efforts to resuscitate the victim after cardiopulmonary arrest, so it is essential to keep the body warm while performing CPR.

12. Dealing with Injuries from Venomous Animals

In this section, we will introduce some animals in Japan that are particularly venomous. Many kinds of venomous species exist around the world, so if you are carrying out field activities overseas, you will need to read up on venomous animals local to your research site.



12-1 Snakes

Japan's venomous snakes include the habu (habitat: Okinawa Prefecture, the Amami Islands), the pit viper (Agkistrodon halys pallas; habitat: all over Japan excluding Okinawa Prefecture) and the tiger keelback (Rhabdophis tigrinus; habitat: all over Japan excluding Hokkaido and Okinawa Prefecture).

The venom of the habu causes bleeding and is capable of breaking down proteins in the body. A habu bite instantly produces severe pain and bleeding from the wound. In some cases, the skin and muscle around the bite may die and form a deep ulcer; in severe cases, the breaking down of muscle tissue can lead to kidney failure. Habu bites used to kill several people every year, but in recent years fatalities have been more or less eliminated thanks to the availability of an effective antiserum.

The pit viper's venom prevents blood from clotting, and their bite causes widespread subcutaneous bleeding as well as symptoms such as dizziness and lightheadedness. However, people rarely die from pit viper bites. You should bear in mind that pit vipers tend to try to bite their victim multiple times, so if you are bitten you should get away from the snake as soon as you can.

The venom of the tiger keelback also prevents blood from clotting, but it is more toxic and deadly than that of the pit viper. Victims may only experience slight pain and swelling in the direct aftermath of the attack, but after a few hours, or after forty-eight hours at most, their gums and nose may start to bleed and blood may appear in their stools and urine. In some cases, the victim may suffer a brain hemorrhage.

If you are bitten by a venomous snake, the first step is to suck the venom out from the wound using a poison remover. Poison removers can be bought at outdoor equipment stores, or you can rent one from the OIST Health Center for short-term use. If you don't have a poison remover, go directly to hospital to be administered an antiserum. Be sure to make your way to the hospital at a calm pace, as running could cause the venom to circulate around your body.

The tiger keelback's venom fangs are located in the back of its oral cavity, so if you are bitten by its front fangs you will not develop any symptoms. After a bite from a tiger keelback you should therefore keep calm and see how it goes for a few hours; if there is no bleeding from any part of your body, you may not need to rush to hospital. If you have no symptoms within two days, you are safe.



Habu
(Photo by the Okinawa Prefectural Institute of Health and Environment)



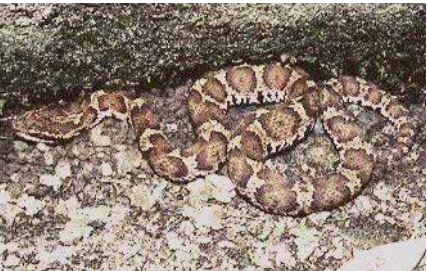
Sakishimahabu
(Photo by the Okinawa Prefectural Institute of Health and Environment)



Himehabu
(Photo by the Okinawa Prefectural Institute of Health and Environment)



Taiwanhabu
(Photo by the Okinawa Prefectural Institute of Health and Environment)



Pit viper (Agkistrodon halys pallas)
(Photo by the Center for Natural Environment Education,
Nara University of Education)



Tiger keelback (Rhabdophis tigrinus)
(Photo by the Center for Natural Environment Education,
Nara University of Education)

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12-2 Bees

The hornet's (yellow jacket's) venom causes a more severe reaction compared to other wasps and bees, producing severe pain and swelling. However, symptoms do not usually spread beyond the stung area. Wasp and bee stings can be dangerous when they trigger a potentially life-threatening symptom called anaphylactic shock, which will be discussed in detail in the next section.

You can treat stings by using a poison remover to suck the venom from the wound. If one is not available, you can suck the venom out with your mouth, squeezing the wound with your front teeth. Follow up with an anti-histamine ointment. It is a common myth that applying ammonia can heal wasp and bee stings: do not apply ammonia. Remember that wasps and bees are attracted to the color black, so you should wear a white outfit when working in areas where you are at risk of getting stung.



Hornet
(Photo by Takatoshi Ueno, Professor, Institute of Biological Control,
Faculty of Agriculture, Kyushu University)

12-3 Land Leeches

Land leeches can be found all over Japan excluding Hokkaido. The land leech's venom is called hirudin, and prevents blood from clotting. You may experience severe bleeding when you remove a land leech that has bitten you, and will need to keep the wound covered and under firm pressure to stop the bleeding.

You can easily remove a land leech by pour a stimulating fluid such as alcohol or menthol on it, or by scorching it with a lighter. Remember that land leeches release pain-suppressing substances, so you may not notice one sucking blood from your body.



Land leech
(Photo by Yamabiru Kenkyukai)



Land leech
(Photo by Yamabiru Kenkyukai)

12-4 Chiggers

Chiggers can be found in bushes on dry riverbeds all over Japan excluding Hokkaido. Some particularly well-known chigger habitats include regions such as the Omono River Basin in Akita Prefecture, the Mogami River Basin in Yamagata Prefecture, the Shinano and Agano River Basins in Niigata Prefecture, and the Miyako Islands in Okinawa Prefecture.

Chigger bites are not painful. They often bite soft areas of the body, such as the armpits, the skin around the breasts, and the lower abdomen. After about 10 days, scabs or ulcers will develop around the bite. You may also develop a fever in the range of 38 °C, a generalized rash, general malaise, headaches, chills, joint pain, etc.

Some victims may die if they don't go to hospital and get administered the right antibiotics. If you develop any of the above symptoms a week or two after your fieldwork (especially if you were working around a river basin), don't just assume you have a cold. Be sure to seek medical attention.



Chigger
(Photo by Miyako Public Welfare and Health Center,
Okinawa Prefecture)

12-5 Echinococcus

The Echinococcus is a parasitic worm that lives in host animals such as the Ezo red fox in Hokkaido. The worm lays eggs that are excreted with the stool. These eggs can contaminate water or food, and when ingested by humans the larvae can pass into the human body through the intestine. Echinococcus was once thought to live only in Hokkaido, but in recent years more than ten people who had never been to Hokkaido have developed echinococcosis in other parts of Japan. There is concern that the disease has spread all over the country.

Once the parasite's eggs have entered the human body, they produce planula larvae that settle in the liver, where they eventually cause liver function disorders after a gestation period that often lasts 10 years or longer. Some patients may die of liver failure caused by progressive jaundice.

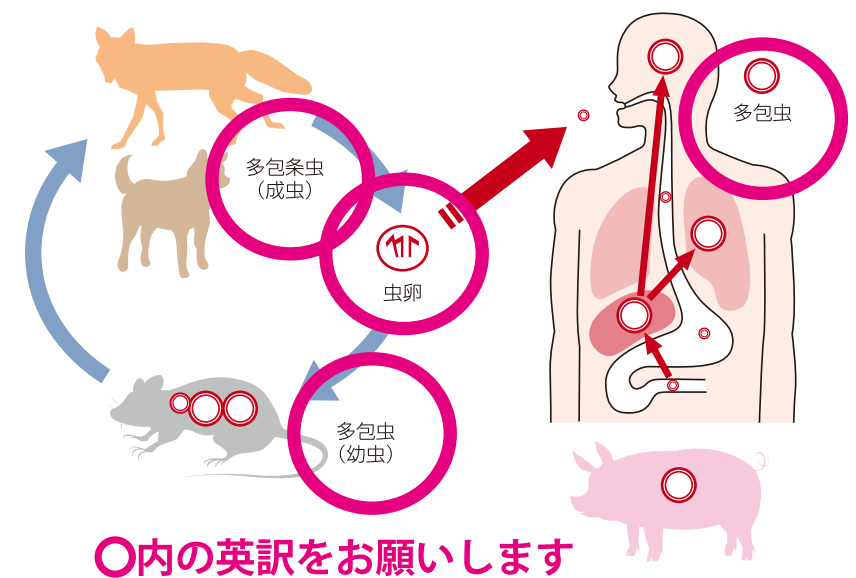
To prevent echinococcosis, never drink unboiled water or eat wild berries that have not been properly cleaned, especially in Hokkaido. In addition, after cleaning dishes with water in the field, sterilize them with boiled water.



Egg of Echinococcus



Alveolar hydatid disease in the liver





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12-6 Venomous Marine Animals

There are also many dangerous animals in the sea. In this manual, we will mainly discuss animals living in Japanese coastal waters whose venom causes systemic harm in the human body. Some cause paralysis and severe pain which can leave the victim unable to swim and may result in drowning, so if you are bitten or stung in the water, be sure to get out straight away. You should also keep in mind that animals such as venomous sea anemone live in relatively shallow coastal areas, and you could get injured if you walk in such areas barefoot or in open-toe sandals. Okinawa Prefecture’s website provides illustrated information on venomous marine animals. Keep in mind that different first aid measures will be required depending on the animal involved:

http://www.pref.okinawa.jp/site/hoken/yakumu/yakumu/documents/leaflet_english.pdf

Fish and Reptiles

◆ Rabbitfish (*Siganus fuscescens*):

The rabbitfish lives in reefs and coral reefs, and its back fins, pelvic fins and tail fins are venomous. Stings cause sudden severe pain and marked swelling, and, in severe cases, symptoms can include general paralysis, difficulty breathing, and/or disturbed consciousness.



Rabbitfish
(Photo by WEB Sakana Zukan (Fish Encyclopedia))

◆ Stingray:

The stingray lives in coastal areas south of central Honshu, the main island of Japan. During the warm seasons they gather in shallow, sandy ocean surf. The stingray’s venom is contained in the long spine that runs along the back of its tail, and its sting can penetrate deep inside the body. The wound causes severe pain and the victim may develop symptoms such as fever, nausea, diarrhea, seizures and disturbed consciousness. In the worst cases, the victim may die.



Stingray
(Photo by WEB Sakana Zukan (Fish Encyclopedia))

◆ Stonefish (*Synanceia verrucosa*):

The stonefish lives in reefs and coral reefs south of the Ogasawara Islands, Amami Islands and Okinawa. They have venomous back fins, which may sting you if you step on them. The sting causes severe pain and reddish-purple swelling, and the victim may develop symptoms such as fever, headache, dizziness, vomiting and joint pain, and, in some cases, seizure. There has been a case where a victim drowned after being unable to continue swimming because of the severe pain.



Stonefish
(Photo by the Health and Medical Department, Okinawa Prefecture)

◆ Japanese eel catfish (*Plotosus japonicus*):

The Japanese eel catfish lives in relatively shallow coastal areas south of central Honshu, the main island of Japan. It has a venomous sting on its back, and, if you are stung, the tissues around the injury may die and become ulcerous. Never touch a Japanese eel catfish with your bare hands.



Japanese eel catfish
(Photo by the Health and Medical Department, Okinawa Prefecture)

◆ Banded sea snakes (*Hydrophis cyanocinctus*):

Banded sea snakes live in coral reefs off the coast of Japan’s Southeast Islands. Their bite does not cause immediate pain, but muscular pain or rigidity can set in after anywhere between 10 minutes to several hours. Victims may also develop trismus (lockjaw), difficulty swallowing, or difficulty moving extremities. If there is extensive breaking down of skeletal muscle, it may result in kidney failure. Some victims may die due to respiratory disorder or heart failure.

First aid treatment: Squeeze out the venom and seek immediate medical attention.



Banded sea snake
(Photo by the Health and Medical Department, Okinawa Prefecture)

◆ Luna lionfish (*Pterois lunulata*):

The Luna lionfish lives in reefs and coral reefs in the sea south of Southern Hokkaido. Its back fins are venomous. Victims often get stung after being tempted to reach out and touch this beautiful fish. Stings cause severe, persistent pain, and may cause fever, vomiting and swollen lymph glands. In severe cases, the victim may experience symptoms such as paralysis in the extremities and respiratory disorder.

First aid treatment: Remove visible stings and soak the affected part in warm water (40 to 50 °C).



Luna lionfish
(Photo by the Health and Medical Department, Okinawa Prefecture)

Invertebrates

◆ Killer snails (*Conus geographus*):

The killer snail is a species of cone snail that lives in shallow waters south of the Kii Peninsula (on the southern coast of Wakayama Prefecture). It shoots a sting (a harpoon-like tooth) containing neurotoxic venom from its beak. The sting causes motor paralysis after 5 to 10 minutes, and victims may have difficulty standing up, walking, speaking, breathing, etc. In some cases the victim may die.



Killer snail
(Photo by the Health and Medical Department, Okinawa Prefecture)

◆ *Phyllodiscus semoni*:

The *Phyllodiscus semoni* is a highly venomous species of sea anemone that lives in coastal areas off Japan’s Southwest Islands. Its body is covered with many highly venomous nematocysts. Stings cause severe pain with chills and/or headaches. The wound doesn’t heal easily and the surrounding tissue often dies. Some victims develop kidney or liver failure.



Phyllodiscus semoni
(Photo by the Health and Medical Department, Okinawa Prefecture)

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◆ Crown-of-thorns starfish (Acanthaster planci):

The crown-of-thorns starfish lives in coral reef areas south of central Honshu, the main island of Japan, where it occasionally over-multiplies. Its body is covered with orange-colored sharp venomous stings. The sting causes severe pain as well as swelling in the stung area and lymph nodes, fever, vomiting, dizziness, etc. The wound doesn't heal easily and can develop ulcers.



Crown-of-thorns starfish
(Photo by the Health and Medical Department, Okinawa Prefecture)

◆ Diadema setosum:

Diadema setosum is a species of long-spined sea urchin. Its stings are fragile and cause severe pain. Victims should seek medical attention, as broken stings can get left behind in the body.



Diadema setosum
(Photo by the Health and Medical Department, Okinawa Prefecture)

◆ Bluebottle (Physalia physalis)

The bluebottle is a species of jellyfish that lives in warm seas south of Honshu, the main island of Japan. It has a long tentacle containing venomous cnidocysts. Its sting causes severe pain that feels like an electric shock as well as reddish-purple swelling. Some victims may die due to breathing difficulty.

First aid treatment: Wash off cnidocysts and tentacles with seawater, and cool down with ice or cool fresh water. **Never use vinegar.**



Blue bottle
(Photo by the Health and Medical Department, Okinawa Prefecture)

◆ Box Jellyfish

Box jellyfish (class Cubozoa) are a class of jellyfish, some species of which — namely, Chironex fleckeri, Carukia barnesi and Malo kingi — produce extremely potent venom. Stings from these species, and a few other species in the class, are extremely painful and can be fatal to humans.

The Chironex yamaguchii, known as the "habu kurage" in Japanese, is one species of box jellyfish that lives in coastal areas around Okinawa. Its sting causes severe pain and leaves a welt on the affected area. In some cases, the victim can suffer difficulty breathing that can lead to death.

First aid treatment (Chironex yamaguchii):

- (1) If the victim's respiration or heartbeat stops, immediately perform CPR and chest compressions;
- (2) The victim must get out of the water immediately. Don't rub the affected area;
- (3) Pour a lot of vinegar over the affected area;
- (4) Gently remove the tentacles with your fingers; and
- (5) If painful, cool the affected area with ice or cool fresh water.

Each tentacle contains many cnidocysts, not all of which will have been released on first contact. Rubbing the tentacle against your skin will stimulate it to release the remaining cnidocysts and could cause the wound to spread. You should therefore be careful not to rub the wound. Vinegar will prevent the nematocysts from being released, but only in stings from Chironex yamaguchii; it may actually stimulate the tentacles of the Portuguese man o' war or Phyllodiscus semoni to release the remaining nematocysts. You must therefore be careful about using vinegar.

◆ Blue-ringed octopus (genus Hapalochlaena)

The blue-ringed octopus lives in reefs and coral reefs south of the Boso Peninsula (Chiba Prefecture). Its venom contains tetrodotoxin, the same toxin that is found in the fugu fish. A few minutes after being bitten, the victim will experience dizziness and develop impaired speech, impaired vision and difficulty swallowing. In more advanced cases, the victim may experience weakness and develop paralysis in the respiratory muscles, potentially leading to death.

First aid treatment: The venom is extremely powerful: never use your mouth to suck it out. Keep squeezing the wound to remove the venom and seek immediate medical attention.



(Photo by the Health and Medical Department, Okinawa Prefecture)

◆ Flower urchin (Toxopneustes pileolus)

The flower urchin lives in reefs and coral reefs south of the Boso Peninsula (Chiba Prefecture). Symptoms vary from person to person, but in some severe cases stings may cause a drop in blood pressure, impaired speech, motor paralysis and/or respiratory arrest.



(Photo by Kushimoto Marine Park)

12-7 Other Venomous Animals

There are many other venomous animals in addition to those listed above, including tussock moths, ticks, horseflies and spiders. However, injuries inflicted by most of these animals do not tend to spread beyond the immediately affected area. You can deal with these wounds by disinfecting them and applying anti-histaminic ointment if the area is swollen. Remove any insect stings that remain lodged in the skin with a tool such as tweezers. There are also some sea animals, such as long-spine porcupine fish and moray eels, that are not venomous but that leave large bite wounds. Bee and wasp stings may cause anaphylactic shock (explained below), so you should familiarize yourself with the symptoms. You should also remember that, in addition to bee and wasp venom, anaphylactic shock can also be caused by exposure to other plant and animal toxins.

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13. Anaphylactic Shock

Anaphylactic shock is an excessive allergic reaction to animal toxins such as bee venom or substances produced by plants. It causes low blood pressure and/or difficulty breathing, and is often life threatening. Many victims also develop skin redness, a swollen rash (wheal reaction), and an accelerated pulse and heartbeat. The most typical cause of death is suffocation due to swelling in the throat. Symptoms sometimes develop immediately, but in other cases they develop gradually, preceded by difficulty breathing and hoarseness.

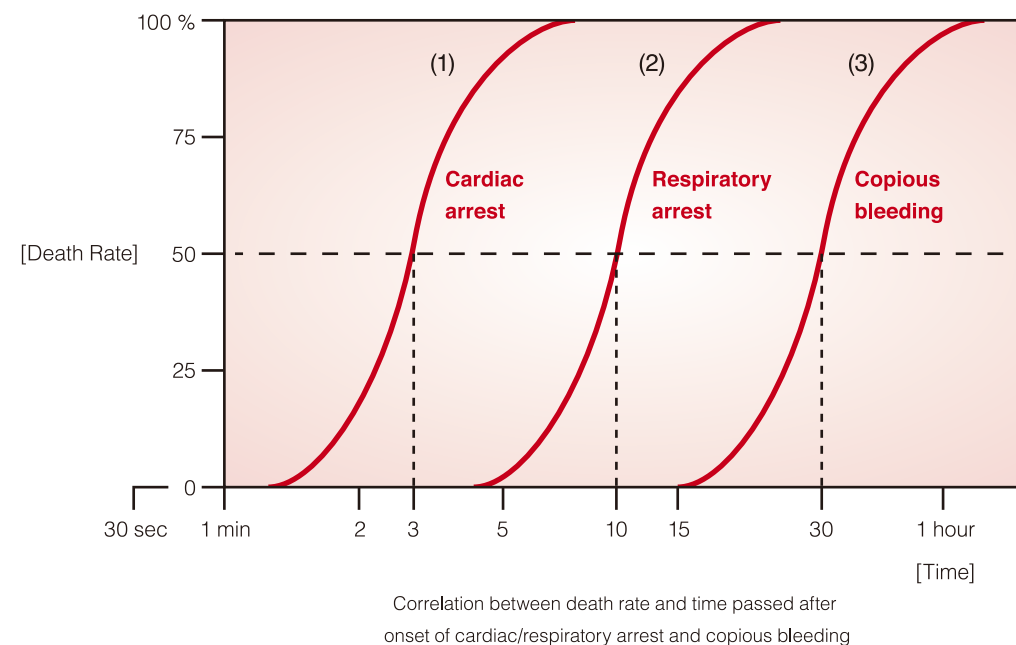
Someone who has gone into anaphylactic shock needs immediate medical attention, but the first step in treatment is to be injected with an epinephrine solution as soon as possible. Self-injectable epinephrine (EpiPen) is now available on a prescription basis. If you have ever suffered by being stung or bitten by venomous animals such as a wasp and had an unusual reaction to the bite or sting, or if you are allergic to any wild plants, ask your doctor to prescribe you self-injectable epinephrine to bring with you on your fieldwork. However, be careful not to bring medication that has passed its expiry date.

Also, if you have ever suffered complications after being attacked by a venomous animal such as a bee or wasp, you can have a skin test done at hospital to check if you are at risk of having an allergic reaction to these toxins (i.e., if you are at risk of going into anaphylactic shock).

14. Cardiopulmonary Resuscitation

Cardiopulmonary resuscitation is an emergency procedure in which we intervene externally to try to save the life of a victim whose breathing and heartbeat have stopped or nearly stopped.

The survival rate drops to 50 % three minutes after the onset of cardiac arrest, ten minutes after the onset of respiratory arrest, and thirty minutes after the onset of copious bleeding. In order to save the life of a victim who has gone into cardiac or respiratory arrest or who is bleeding copiously, someone at the scene needs to start first aid straight away.



An illustrated guide to performing CPR (cardiopulmonary resuscitation technique) is presented below. However, this is only meant as an introduction: you will need to attend a training session before actually performing CPR, such as the basic life support training provided by the Japanese Red Cross Society, the Fire Department or the OIST Health Center. You can ask at a nearby fire station or at the OIST Health Center to find out about the training sessions they run. Also, if you wish to undergo training as a group of a certain size (for example, the group could include all the members of a department or laboratory), you can request that an instructor visit your workplace and lead a training session using a life-sized doll and other equipment.

Cardiopulmonary resuscitation technique basically consists of steps C→A→B.

C: Circulation

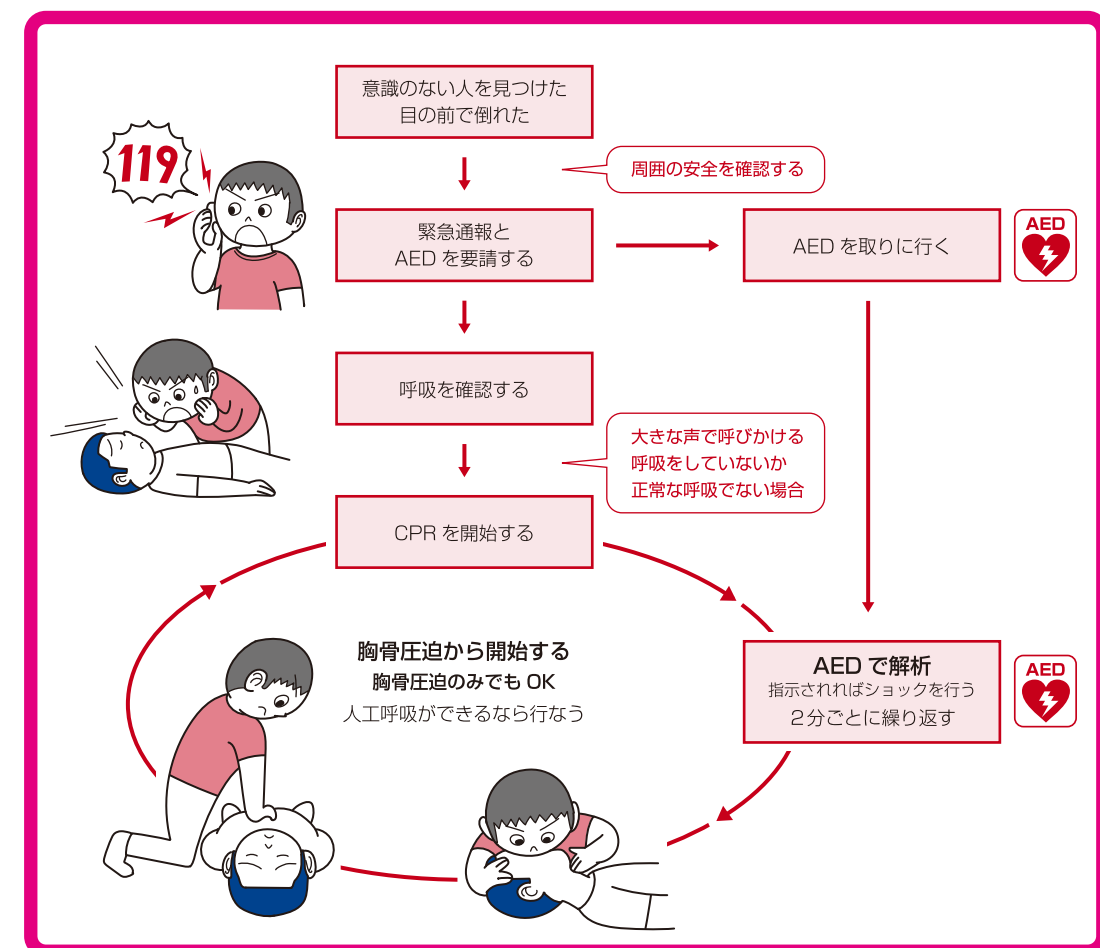
A: Secure the Airway

B: Breath

First, you have to secure the victim's airway, and perform chest compressions if they are not breathing. Always remember steps A & B when attempting to resuscitate a victim.

Whether you are performing CPR alone or with a partner, the basic ratio of chest compressions to mouth-to-mouth is to give mouth-to-mouth twice after every 30 chest compressions (the 30:2 rule).

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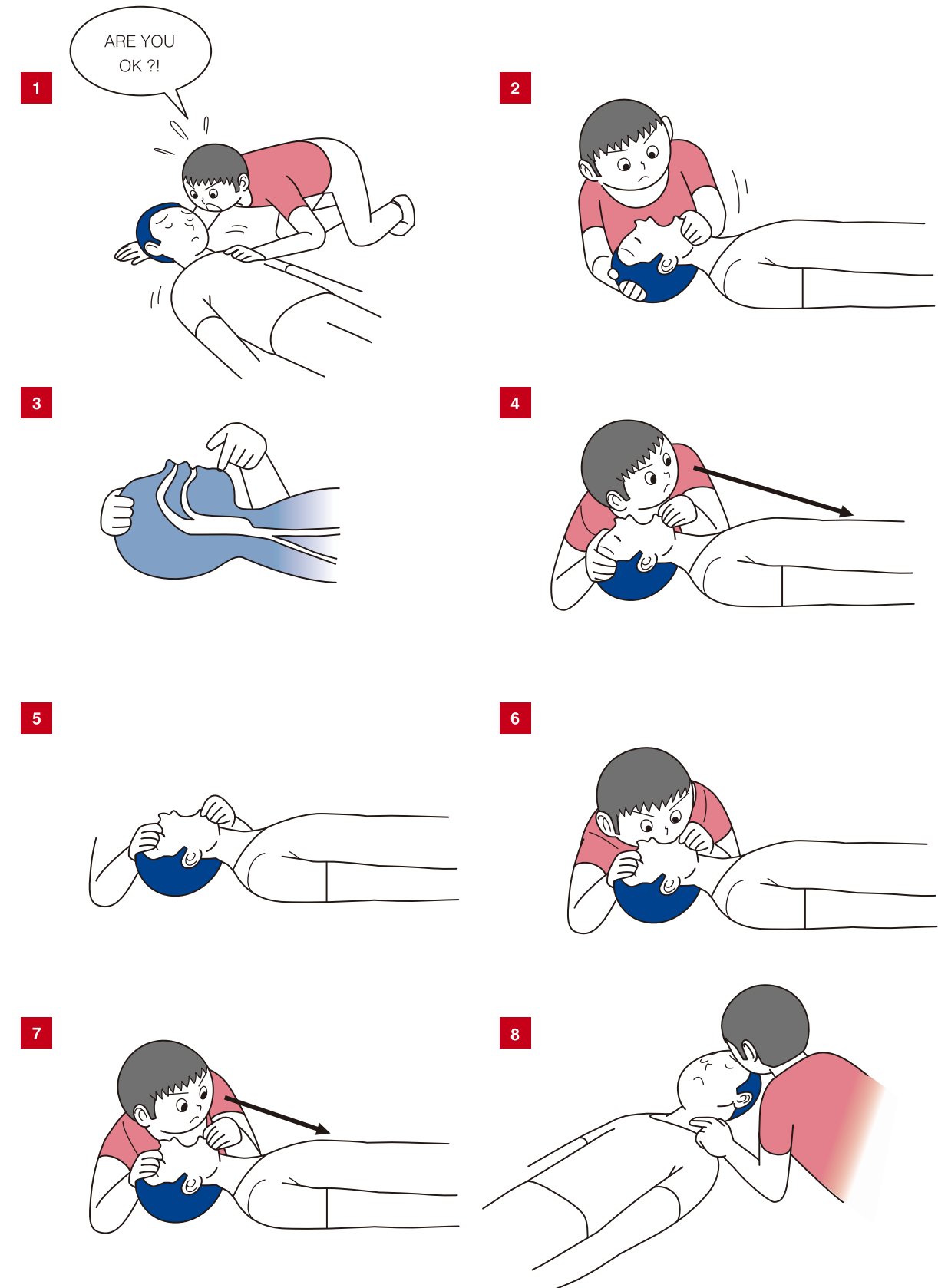


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Flowchart of cardiopulmonary resuscitation technique (CPR)

- 1) When someone becomes ill or is injured, first check if the person is conscious.
If the victim is unconscious, immediately call 119 for an ambulance, and at the same time ask to be brought an AED.
- 2) Secure the victim's airway.
An unconscious victim's tongue often droops back in their throat blocking their airway. To secure their airway, place your right hand on the victim's forehead to tilt their head back, and lift their lower jaw with your left hand.
- 3) Check if the victim is breathing. If they are not, perform 30 chest compressions.
Spend 10 seconds looking for indications that the victim is breathing.
Artificial respiration can be done using either the mouth-to-nose or mouth-to-mouth technique.
For both techniques, keep the victim's airway open using the maneuver explained above.
To perform mouth-to-nose respiration, close the victim's mouth by pushing your left hand against their lower jaw as if to lift up their mouth. Take a deep inhalation, open your mouth widely, and, holding their nose in your mouth, slowly blow air into the victim's nose for about two seconds.
To perform mouth-to-mouth respiration, close the victim's nose with the fingers of your right hand, and slowly blow air into the victim's mouth for about two seconds. If you would prefer not to put your mouth directly onto the victim's, you can spread a handkerchief over the victim's mouth and nose and blow through the handkerchief.
In either case, repeat the air-blowing step twice.
If the victim is breathing normally, you may put them in the recovery position and see how it goes.
- 4) Perform artificial respiration twice. You can also omit this step.
- 5) If the victim is not responding, repeat the combination of chest compressions and artificial respiration for four cycles at a ratio of 30:2. Chest compressions are to be done at the center of the victim's chest (where the breastbone is).
Keeping your elbows straight, lay your hands one on top of the other over the center of the victim's chest and press down. Push hard enough that the breastbone goes down 4 to 5 cm. This action may sometimes cause one of the victim's ribs to break, making a cracking sound, but don't let this concern you too much: your priority is to restore the victim's heartbeat. Push down on the ribs at a rate of once every 0.5 to 1 seconds (according to the international guidelines, 100 times per minute), and after pushing down 30 times perform artificial respiration twice.
You may use either mouth-to-nose or mouth-to-mouth respiration. For either technique, start by positioning the victim's head to secure their airway, as explained above. To perform the mouth-to-nose technique, close the victim's mouth by pushing your left hand against their lower jaw as if to lift up their mouth. Take a deep inhalation, open your mouth widely, and, holding their nose in your mouth, slowly blow air into the victim's nose for about two seconds. To perform the mouth-to-mouth technique, close the victim's nose with the fingers of your right hand, and slowly blow air into the victim's mouth for about two seconds. Use any personal protective equipment (PPE) that you have to hand to protect against infection. If you have no PPE and are reluctant to perform artificial respiration, or if you lack the skill to do it properly, simply continue with chest compressions.
- 6) Repeat the combination of chest compressions and artificial respiration at a ratio of 30:2 for four two-minute cycles, and then check whether the victim is responding. If they are not responding, continue performing chest compressions and artificial respiration until the paramedics arrive on scene. If you have an AED to hand, apply the pads and follow the directions given by the device. The AED will automatically analyze the victim's ECG.

Cardiopulmonary Resuscitation (CPR)





Chapter V: OIST Graduate University
Rules for Field Education/Research Activities
(DRAFT AMENDMENT)

沖縄科学技術大学院大学
野外における教育研究活動に関する規程

June 19, 2015
Decision by Dean of Research
平成27年6月19日
研究担当ディーン 決定

(Purpose 目的)

Article 1 第1条

These Rules are intended to stipulate the necessary matters for the field education/research activities to be conducted by the Okinawa Institute of Science and Technology Graduate University (hereinafter “the University”), to ensure that these field education/research activities are performed safely and appropriately based on Policies, Rules and Procedures (hereinafter “PRP”) 13.3.14..

本規程は、沖縄科学技術大学院大学（以下「本学」という。）基本方針・ルール・手続き（以下「PRP」という。）13.3.14 の定めるところにより、本学が実施する野外における教育研究活動に関し、必要な事項を定め、もって野外教育研究活動を安全かつ適切に実施することを目的とする。

(Definitions 定義)

Article 2 第2条

As used in these Rules, the terms have the meaning as defined below:

この規程における用語の定義は、次の各号に定めるところによる。

- （１）“Field Activities” mean educational or research activities that take place in the field such as wild lands, forests, oceans, cities, farms and other fields.
「野外活動」とは、原野、森林、海洋、市街、農場等野外における教育又は研究活動をいう。
- （２）“Participants” mean those who participate in the Field Activities conducted by the University, or any employees and students of the University who participate in the Field Activities conducted by any entity other than the University.
本学以外の者により実施される野外活動に参加する本学の教職員及び学生をいう。
- （３）"Lead Investigator" means a person who as the primary responsibility in the Field Activities. A relevant faculty member or section leader shall serve as the Lead Investigator in principle.
「責任者」とは、野外活動の実施責任者であり、原則として教員又はセクションリーダーをもって充てる。
- （４）“Supervisor” means a person who assists the Lead Investigator in order to ensure that Field Activities will be conducted safely and properly. In case that the Lead Investigator is not on the site, the Supervisor shall lead the Fields Activities.
「スーパーバイザー」とは、野外活動が安全にかつ適正に実施されるよう責任者を補佐する者であり、責任者が野外活動場所にいない場合、スーパーバイザーが当該野外活動実施を指揮する。



(Compliance Obligations 法令遵守の義務)

Article 3 第3条

- 1. The Lead Investigator and Participants shall observe any legal and regulatory provisions that apply to health and safety of personnel, protection of nature or wildlife, the Convention on Biological Diversity, the Safety and Health Management Rules and any other rules of the University.

責任者及び野外活動参加者は、安全及び衛生並びに自然及び野生動植物の保護又は生物多様性条約に関する法令、本学の安全衛生管理規程及びその他の規定を遵守しなければならない。

- 2. Certain Field Activities, for which specific qualifications or special training for the Lead Investigator or the Participants are required by legal and/or regulatory provisions, shall not be conducted without fulfilling said requirements.

野外活動のうち、法令によりその実施または参加に資格又は特別な教育等を必要とするものについては、責任者または参加者は法令の定める要件を満たさなければならない。

(Obligations to Ensure Health and Safety, and Protect Nature and Wildlife

安全及び衛生の確保並びに自然及び野生動植物の保護の義務)

Article 4 第4条

The Lead Investigator and Participants shall endeavor to ensure health and safety and protect nature and wildlife.

責任者及び野外活動参加者は、安全及び衛生の確保並びに自然及び動植物の保護に努めなければならない。



Chapter V: OIST Graduate University
Rules for Field Education/Research Activities (DRAFT AMENDMENT)

沖縄科学技術大学院大学
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(Formalities to Conduct Field Activities 野外活動の実施の手続き)

Article 5 第5条

1. To ensure that Fields Activities are implemented properly, and necessary measures can be promptly taken in case of any incident or accident, the Lead Investigator shall submit a General Field Activities Plan (hereinafter “the Plan”) which contains the following items to the Occupational Health and Safety (hereinafter “OHS”) Section Leader in advance at least once a fiscal year. The OHS Section Leader shall notify the Dean of Research and relevant section leaders as needed of the Plan being submitted. If there is any significant change in the anticipated risks, regulatory provisions applied to or descriptions of Field Activities, the change shall be notified to the OHS Section Leader without delay.

野外活動を適切に実施するため、または事件又は事故等が発生した場合に必要な措置等を迅速に講ずるため、責任者は、1 会計年度につき 1 回以上、以下の各号に示す内容を記載した野外活動計画書（以下「計画書」という。）を安全衛生（以下「OHS」という。）セクションリーダーに事前に提出しなければならない。OHS セクションリーダーは、必要に応じ、研究担当ディーン及び関連するセクションリーダーに提出された計画書を提出する。また、想定されるリスク、関連法令又は野外活動内容等について、当初の計画から大きな変更がある場合には、遅滞なくそれを OHS セクションリーダーに報告するものとする。

- （１）Field Activity site, schedule (or a period of Field Activities), and contact information on the site.
野外活動の実施場所、日程（又は野外活動期間）及び現地における連絡先
- （２）Names of Participants and their telephone numbers. When possible, include home or family members’ telephone numbers.
参加者の氏名及び参加者の連絡先。可能であれば自宅又は家族の連絡先も含めること。
- （３）Summary of Field Activities
野外活動の概要
- （４）Responses to formality requirements by law and to regulatory control.
If the Field Activities take place in a foreign country, information on how respond to legal requirements of the relevant countries shall be included. Full attention has to be paid whether the country has established the regulatory controls and/or procedures related to PIC, Prior Informed Consent, and MAT, Mutual Agreed Term, under the Convention on Biological Diversity and Bonn Guidelines.
法令規制への対応
日本国内外に関わらず、野外活動を行う国特有の規制への対応を記載すること。その際、当該国が生物多様性条約及びボン・ガイドラインに基づく PIC(Prior Informed Consent) 及び MAT(Mutual Agreed Term) に関する規制や手続きを制定していないか留意すること。



- （５）Emergency contact
Describe means of communication and that you will call for help to whom in case of an emergency.
緊急時の連絡方法：
緊急時にどのような通信手段を用いて、だれに救助を要請するのか記述すること。

2. Safety training, qualifications and conditions which are required to conduct Field Activities will be described in the OIST Field Activities Manual established separately, and/or posted in the websites of the OHS Section and Field Resources Section. The Lead Investigator and Participants shall check necessary qualifications and conditions beforehand and take necessary steps to fulfill the requirements.

各野外活動に必要な安全講習、資格及び条件は、別に定める OIST 野外活動マニュアル並びに OHS セクション及びフィールドサポートセクションのウェブサイトに掲載する。責任者及び野外活動参加者は、必要な資格や条件を事前に確認し、それらへの対応措置を執るものとする

(Responsibilities of the Dean of Research 研究担当ディーンの責務)

Article 6 第6条

1. The Dean of Research shall oversee the safe and proper implementation of the Field Activities that take place at the University.
研究担当ディーンは、本学における野外活動の安全かつ適切な実施を監督する。
2. The Dean of Research may order termination of specific Field Activities if the Dean of Research finds that there is a serious risk on human life or health or a serious problem on the Field Activities in terms of protection of nature or wild animals and plants.
研究担当ディーンは、当該野外活動が生命及び身体に重大な危険、又は自然及び野生動植物等の保護に重大な問題があると判断する場合、その中止を命じることができる。



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(Responsibilities of the OHS Section Leader OHS セクションリーダーの責務)

Article 7 第7条

1. The OHS Section Leader shall, regarding Field Activities, confirm that the health and safety aspects of the activity are ensured, and any relevant legal and regulatory provisions, as well as rules of the Universities, are observed by means of reviewing the Plan submitted by the Lead Investigator.

OHS セクションリーダーは、責任者により提出された計画書により、野外活動実施上の安全及び衛生が確保されているか並びに法令及び本学のルールが遵守されているかを確認する。

2. If the confirmation under the preceding paragraph cannot be made, the OHS Section Leader may recommend the Lead Investigator to revise the Plan.

OHS セクションリーダーは、前項に定める事項についての確認ができない場合、責任者に対し計画書の見直しを助言することができる。

3. The OHS Section Leader shall assist the Lead Investigator and the Participants in filing application or notification to public offices so that the Field activities can comply with the relevant laws and regulations in cooperation with relevant sections.

OHS セクションリーダーは、責任者および野外活動参加者が関連法令を遵守して当該野外活動が実施できるよう、関連部署と協力しながら係る官公庁への申請書類の作成及び届出を支援する。

4. The OHS Section Leader shall report and ask opinions to the Dean of Research on specific Field Activities being planned, if the OHS Section Leader is concerned that there is a serious risk on human life or health or a serious problem in terms of protection of nature or wild animals and plants.

OHS セクションリーダーは、計画された野外活動を実施することにより、生命または健康上の重大な危険、又は自然及び動植物の保護に関し重大な問題が生じるおそれがある場合には、研究担当ディーンに報告し意見を求めなければならない。

5. The OHS Section Leader shall provide the general safety training for Fields Activities.

OHS セクションリーダーは、野外活動に関する一般安全講習を提供する。

(Responsibilities of Field Resources Section Leader フィールドサポートセクションリーダーの責務)

Article 8 第8条

1. The Field Resources Section Leader shall provide advice and technical assistance for Field Activities, in cooperation with the OHS Section Leader.



フィールドサポートセクションリーダーは、OHS セクションリーダーと協力して野外活動に係る助言及び技術的支援を行う。

2. The Field Resources Section Leader shall be responsible for installation of research equipment and facilities in the fields, maintenance and management thereof and provision of technical assistance and preparation of operational manuals for conducting the Fields Activities. The Field Resources Section Leader shall also provide necessary specialized safety or technical training relevant to the Fields Activities.

フィールドサポートセクションリーダーは、野外における研究機器・施設の設置、それらの維持管理及び改修計画並びに野外活動に関する技術支援及びマニュアル等の作成を行う。また、フィールドサポートセクションリーダーは、野外活動に係る専門的な安全又は技術講習を提供する。

(Responsibilities of Faculty Members and Section Leaders
教員及びセクションリーダーの責務)

Article 9 第9条

1. As the Lead Investigators under Article 2 (3) and responsible leaders defined in Industrial Safety and Health Act, faculty members and section leaders shall be responsible for ensuring health and safety of Participants, and also ensuring compliance with the relevant legal and regulatory provisions as well as the rules of the University by the Participants.

教員及びセクションリーダーは、第2条（3）に規定する責任者及び労働安全衛生法に規定する職長として、野外活動参加者の安全及び衛生並びに野生動植物の保護を確保する責任を有し、野外活動参加者にこれらに関わる法令及び本学のルールを遵守させる義務を負う。

2. The faculty members and section leaders shall submit the Plan in accordance with Article 5, Paragraph 1, and thoroughly inform the Participants of the contents of the field Activities, anticipated risks and measures to evade said risks.

教員及びセクションリーダーは、第5条第1項に基づき計画書を事前に提出するとともに、野外活動の内容、想定されるリスク及びその回避措置について当該野外活動参加者に周知しなければならない。

3. For the Field Activities to be performed jointly by the University and another institution, the faculty members and section leaders shall have a prior discussion with the institution to determine all necessary matters including safety measures and emergency actions.

本学と本学以外の機関等が共同して行う野外活動において、教員及びセクションリーダーは、あらかじめ同機関等と協議のうえ、安全対策、緊急時の措置等の必要な事項について取り決めておかなければならない。

4. The faculty members and section leaders may appoint the Supervisor as needed.

教員及びセクションリーダーは、必要に応じてスーパーバイザーを任命することができる。



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(Field Activities Hosted by an Organization Other Than the University 本学以外の組織における野外活動)

Article 10 第10条

When any Participants are involved in any Field Activities to be hosted by an organization other than the University, they shall follow also all measures for ensuring health and safety and protecting nature and wildlife measures stipulated by the organization.

野外活動参加者が、本学以外の組織において野外活動を行う場合は、その組織が講ずる安全及び衛生の確保並びに野生動植物の保護のための措置に従わなければならない。

(Measures to Be Taken Under Emergency Situation 緊急時の措置)

Article 11 第11条

1. If a situation that jeopardizes the health and safety of any participants occurs, the Lead Investigator or the Supervisor shall promptly provide measures that are considered to be the best effort to prevent or minimize any harm or damage, and promptly notify the situation to the OHS Section Leader in accordance with procedures described in the PRP 13.2.5 and 13.5 of the PRP.

野外活動参加者の安全及び衛生が損なわれる事態が発生した場合、責任者又はスーパーバイザーは、当該被害又は損害に対する最善の対処を速やかに執るとともに PRP 13.2.5 及び 13.5 の手順に従い、遅滞なく OHS セクションリーダーに報告しなければならない。

(Exemptions 適用除外)

Article 12 第12条

The provisions of Article 5; Paragraphs 1, 2, and 4 of Article 7; and Paragraph 3 of Article 9 shall not apply to activities to be performed within the premises of the University or other activities that the OHS Section Leader determines an exemption from these provisions..

第5条、第7条第1項、第2項及び第4項並びに第9条第3項の規定は、本学の敷地内の活動及び OHS セクションリーダーが必要ないと判断した活動については適用しない。

(Miscellaneous Provisions 雑則)

Article 13 第13条

Any matters not specified herein but deemed necessary to ensure the health and safety in Field Activities or protect wild animals or plants shall be stipulated separately.

この規程に定めるもののほか、野外活動の安全及び衛生並びに野生動植物の保護に関し必要な事項は別に定める。

Supplementary Provisions
附 則

These Rules shall be effective from October 1, 2012.
この規程は平成24年10月1日から施行する。

Supplementary Provisions
附 則

These Rules shall be effective from June 19, 2015.
この規程は平成27年6月19日から施行する。



General Field Activities Plan

Reference #	*provided by the Research Safety Section for new applications
Date Received	

Date of Application: Month Date, Year

To: Research Safety Section Leader

I hereby submit the General Field Activities Plan, in accordance with Paragraph 1, Article 5 of the OIST Graduate University Rules for Field Education/Research Activities.

Lead Investigator

<div>Name(Print)</div>	<div>Signature/Seal</div>
<div>Phone# :</div>	<div>(e-mail) :</div>
<div>Faculty</div>	
<div>Name(Print)</div>	<div>Signature/Seal</div>
<div>Title of Field Activities:</div>	
<div>Name of Unit :</div>	

*Each registration shall be valid until March 31st of the respective fiscal year.

1 Activity Site	
2 Schedule	*In case of prolonged field activities, the long-term schedule can be filled in. In that case the Supervisor must inform at least the research administrator of when each field activity starts and ends so that anyone of the OIST community can recognize an abnormal situation immediately.
3 Contact Information on the Site	
4 Summary of Field Activities	
5 Responses to Formality Requirements By Law and to Regulatory Control	If the Field Activities take place in a foreign country, information on how respond to legal requirements of the country shall be included. Full attention has to be paid whether the country has established the regulatory controls and/or procedures related to PIC, Prior Informed Consent, and MAT, Mutual Agreed Term, under the Convention on Biological Diversity and Bonn Guidelines.
6 Emergency Contact	



7 Participants Information

	Name	Unit/Section	Telephone Number	Family Members' Telephone Number	Basic Life Support Training	Fields Activities General Training	Other training records or license
1							
2							
3							
4							
5							

8 Remarks

Emergency Communication Sheet



Name:

Address:

Postal code:

Phone number:

Emergency contact number (a parent, etc.):

OIST contact number:

Health Insurance Card No.:

Blood type:

● Description of Accident

(When)

(Where)

(How)

(Description of injury)

(Consciousness) Conscious • Unconscious

(Request for rescue) Necessary • Not necessary

(Name and contact number of the respondent who has made the report)



■ Emergency Telephone Numbers in Japan

Police: ☎110
Ambulance or Fire: ☎119
Coast Guard: ☎118

OIST Central Control Room (Bosai Center)
☎ 098-966-8989
✉ keibi.bousai@oist.jp

OIST OHS Section
☎ 098-966-1395 (Accident)
☎ 090-6859-7005 (Section Leader)
✉ research_safety@oist.jp
✉ toshinori.tanaka@oist.jp

● Epilogue

Field activities entail various risks that are very different from those that we might encounter in indoor experiments and lab work, and can sometimes result in serious accidents. Depending on where you are working, you may not be able to call for rescue or it may take hours to get medical attention. This is why it is so important to make sure that you have a well thought-through activity plan and know how to respond in the event of an emergency.

The basic safety measures are the same whether you are working in a laboratory or in the field: each individual participant needs to anticipate the risks, be familiar with the precautions, and be ready to follow the prescribed procedures and take the necessary measures unassisted. Before embarking on field activities, not only the lead investigator but everyone on your team must consider the potential risks, possible measures to minimize these risks, and what to do in the event of an unfortunate accident. This approach should be part of our work culture.

Some activities, such as collecting certain plants and animals and entering certain areas, are subject to legal or regulatory restrictions, so it is essential to check in advance that your fieldwork will comply with all the relevant laws and regulations. There are also several international frameworks that apply to field activities, including, for example, international rules that regulate access to genetic resources, and the sharing of benefits arising from their use, under the Biodiversity Treaty. If you are going to use genetic resources in a foreign country, you must therefore provide the necessary information in advance to the country that is providing those resources, obtain access consent, and establish a contract defining mutually agreed terms and conditions on profit sharing, etc. You must also be aware that field activities may involve intellectual property issues in addition to health and safety issues.

This manual has been prepared by the OHS Section in cooperation with Okinawa Prefecture' s Division of Pharmaceutical Affairs and Disease Control, the Okinawa Prefectural Institute of Health and Environment, the OIST Health Center and the OIST Field Resources Section, based on the "Policies on Health and Safety Management and Accident Prevention in Field Activities" formulated by the Division for Environment, Health and Safety of the University of Tokyo. We extend our deepest appreciation to everyone involved.

We hope this manual helps you to carry out your field activities safely.

<Please direct any inquiries regarding this manual to>
OIST Occupational Health and Safety Section
E-mail: research_safety@oist.jp

OIST Field Activities Manual
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